Risk Perception and Response to Perceived Risk Models: Findings from the Slums of Nairobi[1]

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Abstract

This study uses the Nairobi Cross-sectional Slum Survey to examine factors affecting AIDS risk perception by sexually active females and the impact of risk perception and marital status on the adoption of HIV/AIDS preventive measures. I find that autocratic male control is slightly related to risk perception and response to risk perceived by using condoms and practicing monogamy. analyzes show that cohabitation, being of Luo ethnicity, domestic abuse, and suspecting partner infidelity are associated with higher odds of perceiving moderate to high risk. Women perceiving such level of risk are twice as likely to reduce their number of sexual partners as those perceiving small risk. Overall, women who perceive some level of risk are more likely to adopt preventive measures that can be implemented independently rather than measures requiring collaboration such as condom use. Campaigns promoting collaboration between sexual partners are, therefore, urgently needed to dampen Africa's AIDS epidemic.

Introduction

Over 10 million people and about 15% of the adult population worldwide were HIV positive in 2001 (UNAIDS et al 2003). Sub-Saharan Africa, with less than 10% of the world's population (Caldwell & Caldwell 1993), is most affected. Two-thirds of the world's HIV-positive population lives in sub-Saharan Africa. In Kenya, the HIV prevalence was estimated to be 6.7% in 2003 with significant rural-urban difference in prevalence. The prevalence rate was 10% in urban areas while the rate in rural areas was 5.6% (KDHS 2003). This higher prevalence in urban areas is particularly alarming because urbanization is expected to be even more rapid in the future. Furthermore, the risk of AIDS is no longer constrained to high-risk behavior populations; it is increasingly prevalent in the general population (Caldwell et al 1993; Awusabo-Asare 1999). Persons aged 15 to 49, who are most likely to engage in high-risk HIV behaviors, represent over a quarter of Kenya's population and a higher proportion of the urban population. This age group continues to impact, and be most impacted, by the spread of HIV/AIDS.

Increasing rural-urban migration and rapid urbanization has resulted in significant number of people living in precarious conditions of severe deprivation (Rivers & Aggleton 2004). Nairobi, one of Africa's fastest growing cities (APHRC 2002), has evidenced rapid population growth in recent years. Its 2.3 million population have an HIV prevalence rate of 9.9% and a growth rate that triples that of the country (Zulu, Dodoo, & Ezeh 2002; KDHS 2003). In the 1980s and 1990s, Nairobi grew by 7.4% annually compared to the country's 2.8% growth rate. The high growth rate in Nairobi resulted in high

population density, poverty, and deteriorating economic and health conditions. There is little hope that the situation will get any better; with no proposed improvement in infrastructure, Nairobi is projected to gain more than five million people over the next two decades (Zulu, Dodoo, & Ezeh 2003).

Nairobi's worsening condition is further compounded by the deplorable condition in its slums. Sixty percent of Nairobi's population resides in the slums which occupy only 5% of its land area and is not recognized as a formal settlement by the Kenyan government (Matrix Development Consultants 1993; Zulu, Dodoo, & Ezeh 2002). Because of the government's lack of recognition for the slum, basic amenities such as electricity, running water, and health and educational services are absent. The appalling living condition in Nairobi's slums, coupled with limited employment opportunities and low wages, makes it a conducive environment for various social ills such as risky sexual behavior and teenage pregnancy (Zulu, Dodoo, & Ezeh 2003). Women and chidren are exposed to HIV/AIDS and other sexually transmitted diseases as a result of poverty-driven commercial sex, early sexual activities, domestic violence, child abuse, and poor access to reproductive health services due to social and geographic isolation, low income, and illegal residences in the slum (APHRC 2002). Because these same factors can affect risk perception and the ability to respond to perceived risk, Nairobi's slums are excellent contexts for studying HIV/AIDS risk perception and response.

Although AIDS has wrought major havoc in sub-Saharan Africa, few studies have examined the perception and response to risk of persons living in dire conditions such as Nairobi's slums. Research suggest that persons living in conditions of deprivations such as those in severe poverty have little power over the choices they make; for most females in such environment, unsafe sex is an economic necessity (Hughes & McCauley 1998; WHO 1998). Because women are more vulnerable in such contexts, this paper pursues this question by first identifying some of the factors associated with females' ability to perceive HIV/AIDS risk in Nairobi slums. It proceeds further to examine if risk perception is indeed disconnected from these females' ability to adopt preventive measures and if the same factors affecting risk perception are associated with the likelihood of adopting preventive measures.

Literature Review

AIDS is one of the leading causes of death for females of reproductive ages in Africa (Holland, et al. 1990; Auerbach 2003). Extant studies suggest that women's understanding of risk and how to negotiate sexual relationships will result in safer sex and, as a result, will be key in limiting the spread of AIDS and mortality resulting from such (for example see Holland, et al. 1990). In reality, this proposition is not as simple as it sounds; women's ability to perceive risk and respond accordingly are challenged by many factors. Understanding these factors will be key to designing effective interventions.

Two main streams of research have contributed to our understanding of factors affecting risk perception and the ability to respond to risk perceived: health-risk-behavior theories and models and feminist and feminist-related theories. Both fields have shaped, and continue to shape, the design of intervention programs that seek to augment individuals' ability to perceive and respond to risk, in particular HIV/AIDS risks.

Health-risk-behavior theories were antecedent in providing some understanding of factors affecting risk perception and risky behaviors. Consequently, well-known health-risk-behavior models such as the health-belief model and social learning theory (for example see Fishbein & Azjen 1975; Janz & Becker 1985; Bandura 1992) significantly influenced the design of early HIV/AIDS prevention programs. These approaches promoted interventions that sought to alter individuals' perception of risk and equip them with skills by which they could lower their risks of infection. Sadly, evaluations of these interventions showed they had little or no effect in reducing risky sexual behaviors (Hughes & McCauley 1998). In hindsight, this lack of effectiveness is not surprising because the models do not adequately represent the complexity of preventive decision-making in sexual relationships and, hence, do not provide the framework needed for studying HIV/AIDS risk perception. Further, the interventions were individualistic and falsely based on the premise that individuals' acquisition of appropriate knowledge and skills would traslate into behavior alteration and, as a result, health enhancement (Rivers and Aggleton 2004). The models view preventive behavior as a result of rational decision making and see

individuals as wielding immense power to effect changes if they can accurately perceive risk. While this logic may hold for some risky behavior, it is not functional in the complex sexual domain in which HIV/AIDS is situated.

Research in feminist studies and related fields moved away from this individualistic approach. They acknowledge that individual risk perception by itself is not sufficient to effect behavioral changes. They suggest that the ability to transmit risk perception into behavioral changes is determined by various factors. They propose that models should capture the social context in which individuals are embedded and recognize that sexual decision making, in particular, is not rational (Hulton et al 2000). Based on this conceptualization, effective interventions need to integrate not only the economic, social, and cultural contexts in which individuals are situated, but also background variables such as gender, ethnicity, marital status, education, and social background (see Aggleton 1996). Other studies also suggest that risk perception may be associated with individuals' socio-demographic characteristics and their environment (Asiimwe, Kibombo, and Neema 2003). HIV/AIDS risk perception, in particular, may compete with poverty, hunger, and other more pressing needs such that the ability to initiate preventive behaviors may be affected by power dynamics of sexual decision making, sexual exchanges, and social and cultural values affecting such decision-making and exchanges (Worth 1989).

Feminist theorists suggest that the ferocity of the AIDS epidemic in sub-Saharan Africa is further enhanced by gender relations that has proven resilient to social change. Premarital sexual relationships, which is increasing due to higher ages at marriage and westernization, also incorporate these gender roles. While women are expected to be chaste, with their partner monopolizing their sexuality (Nwanunobi 1997), the same is not expected of men (Anarfi & Awusabo-Asare 1993). Surprisingly, these double standard norms are embraced by women as well (for example, see Holland 1990, Lary et al. 2004). Even in marriages, wives are not expected to concern themselves with their spouses' extramarital sexual relations (Caldwell et al. 1993; Anarfi & Awusabo-Asare 1993). In this AIDS era, these stereotypical

gender-biased expectations may affect women's ability to perceive risk and does not bode well for African women's health.

Further, in social contexts where young women are pressured to guard their reputation, power imbalance in sexual relationships diminishes women's control and ability to practice safer sex and renders decision making about such rather erratic (Holland et al. 1990). For many of such women, the fear of being identified as sexually-active supercedes the fear of AIDS and may predispose women to engage in less noticeable but more risky sexual behavior. The AIDS epidemic further entrenches some gender stereotypes and, thus, places women at increased risk of HIV (Gupta et al. 1996; Rivers & Aggleton 2003). For example, awareness of the epidemic has led older men to increasingly seek younger female partners who are less likely to be sexually experienced or, in their view, HIV positive (Petchesky & Judd 1998). Also, families burdened by HIV/AIDS may seek economic safety by marrying their young daughters to older well-to-do men (Holland et al. 1990). In such situations, the young girls may be unable to accurately perceive their risk of contracting AIDS or respond to risk perceived.

Cultural dimensions such as gender relations are important barriers to sexual behavior change (Awusabo-Asare 1999). Feminist theory suggests that male control over female sexuality is an important way in which sexual hierarchy is reproduced and male violence against female is an important tool in maintaining that control (Holland et al. 1990). Intimate partner violence is rooted in socially constructed gender relations (Instituto Promundo 2002). This is an important factor to consider in the AIDS discourse because strong association is found between gender-based violence, HIV risky behavior, and HIV infection (Lary et al. 2004). The odds of being HIV positive was found to be strongly associated with intimate partner violence and male dominance in the relationship even after controlling for women's risky behavior (Dunkle et al. 2004).

Conflicting pressures result in women having little control over decision-making and the use of contraception (Zelaya et al. 1997). For example, girls are usually socialized to be submissive to men (Zelaya et al. 1997) and are often pressured by boys to have sex as a proof of love and intimacy. Bauni

and Jarabi (2000) find that Kenyan women report little independence in important sexual decision-making even when their well-being is at risk. Holland et al. (1990) suggest that young females'control over their sexual practices risks is limited by their confusion of ideas of sexuality with their anticipation of romance, love, and caring. Women are less likely to resist pressures to practice risky sex when love, romance, and fear of losing partners are salient (Holland et al 1990). In addition, economic insecurity may hinder women's ability to insist on safe sex. Therefore, although African survey respondents identify abstinence, non-penetrative sexual practices, monogamy, and condoms use as preventive measures for HIV/AIDS (Riehman et al 1998, Worth 1989), there is little assurance that these measures can be adopted by women.

Studies show that condom use, the most studied of the above-mentioned four measures, has not been well-adopted by Africans. Unlike some other contraceptive methods that can be used without partner's knowledge, condoms require cooperation and acceptance by both partners (Riehman et al 1998, Worth 1989). Studies show that many women cannot openly negotiate with their partner on contraceptive and sexual decisions (Rutenberg et al 2000). Furthermore, studies report that wives feel their marriage may be threatened if they suggest their husband should use condoms (Meursing & Sibindi 1995). In most developing countries, women face conflict, violence, and loss of economic support if they suggest condom use with their partner (Gupta et al. 1996). Also, in United States, researchers found that women with little sexual decision-making power in their relationships are reluctant to use condoms (Campbell 1995, Worth 1989). Condomless sex is perceived as demostrating commitment and monogamy in relationships (Obbo 1995) while condom use is seen as portending lack of trust, lack of intimacy, and multiple sexual partners (Carovano 1992; Ulin 1992; Sacks 1996; Bauni & Jarabi 2000). Although some studies have examined factors associated with condom use, few studies have examined factors affecting the adoption of other HIV/AIDS preventive measures. This gap in research needs to be remedied.

The link between poverty and AIDS is nowhere more apparent than in Africa. With most of the transmission due to heterosexual relations, poverty-inducing sexual relations involve risky sexual behavior and affect the ability to perceive and respond to risk inherent to such behavior (Carael and Allen

1995; Meekers and Calves 1997; Zulu, Dodoo, & Ezeh 2002). Studies reveal that while African premarital and extramarital sexual relationships are not usually in the context of commercial sex, some women receive financial and non-financial gifts from these relationships (Akuffo 1987; Balmer et al. 1997; Fuglesang 1997). "Sugar daddy" relationships amongst young girls, a frequent phenomena in African cities such as Nairobi, is associated with significant age differences and power imbalance between partners. Even if the women in such relationships were able to adequately evaluate their risk levels, their ability to repond may be compromised, further spurring the spread of HIV/AIDS. Thus, although feminist studies and related field propose a broader framework that encapsulate the physical and social contexts that may affect women's ability to perceive and respond to risk, they fail to distinctly distinguish between factors affecting sexual risk perception and those affecting response. No study has examined whether the same factors are responsible for both, which would suggest that well-designed interventions could affect two critical issues at the cost of one.

The slums of Nairobi contain some of the poorest and most disenfranchised members of the Kenyan society. Power dynamics in sexual relationships in this setting may be more intense and may significantly affect risk perception and the ability to translate such perception into preventive behavior. The Nairobi Cross-sectional Slum Survey data allows us to examine how cultural norms, gender roles, power dynamics, and individual background characteristics affect risk perception by females in Nairobi slums. Gender roles and power dynamics are captured in male dominance in decision making, males' exerting control by physically abusing partner, and females' internalization of norms of female subservience. This study also examines the association between risk perception and the ability to adopt preventive measures. This study asks (1) how attitudes and power imbalance in relationships affect AIDS risk perception. (2) How do individual background factors affect risk perception? And (3) how do marital status and risk perception affect the propensity to implement four selected AIDS risk-perception responses of interest?

Data

This paper uses data from Nairobi Cross-sectional Slum Survey (NCSS) conducted from February to June 2000. The NCSS serves as an urban poor survey with its focus on the city's slum. The survey included 3,627 women aged 12-49 of which 2568 were sexually active. Because the focus of this study is on HIV/AIDS risk perception and most HIV/AIDS infection occur in heterosexual relationships, this paper includes only sexually active females. A woman is sexually active if she is married, cohabiting, or in a non-cohabiting sexual relationship. The sample is self-representing and, hence, needs no weighting.

Research methods

Risk Perception

Respondents were asked whether they think their chances of getting AIDS were small, moderate, great, or if they felt they have no risk at all. Less than 20% of the respondents perceived no risk of contracting HIV/AIDS. Hence, a significant proportion of respondents perceived some risk of contracting HIV/AIDS. More than 50%, 24%, and 4% of respondents perceived small, moderate, and great risks of contracting HIV/AIDS. Respondents' risk perception is strongly correlated with actual risky behavior and deleterious outcomes. For example, in the year before survey, 11.9% of respondents who perceived great risk of contracting HIV/AIDS had a sexually transmitted disease compared to 0.4%, 0.5%, and 3.5% of those perceiving no risk, small risk and moderate risk of infection.

Multinomial logistic model is used to model this dependent variable of risk perception, with those perceiving no risk as the base category. The model measures the net effect of male dominance in decision making and having subservience female attitude on the likelihood of perceiving the different levels of risk. Educational attainment, religion, ethnicity, age, and marital status are known to affect risk perception and are, therefore, included as controls. Significant effect of male dominance and female subservience attitude on risk perception in the presence of these controls provides more evidence that these are real effects (Zulu, Dodoo, & Ezeh 2002). Table 1 shows the mean and, in other cases, the percentage of

occurrence of certain attributes in the sample. More than half of the respondents are married, have more than primary school education, and are protestant. Less than 5% are Muslim or of other religions. The modal age for the respondents is 19-25 years. Less than 10% are younger than 18 years old. Although few women report being physically abused, that is hit, slapped, or physically hurt on purpose by their partner, in the year before the survey, we include a dichotomous variable for the incidence of abuse to capture a physical form of male dominance. More than six percent of women report being physically abused by their husband or sexual partner.

Table 1: Summary Statistics

Variable	%/Mean
Male power	2.468
Primary Education	17.03
More than primary Education	77.75
Protestant	64.89
Catholic	30.30
Kikuyu	21.97
Luo	24.64
Abuse	6.19
Married	73.71
Cohabitating	5.38
12-18 yrs.	9.10
19-25 yrs.	41.30
26-32 yrs.	27.63
32+ yrs.	21.97
Attitude	1.067
Unfaithful	35.03

Source: Nairobi Cross-sectional Slum Survey (NCSS) 2000

Of the 16 variables in the model, 14 are dichotomous dummy variables and two are indices. One of the indices, respondent's attitude towards female subservience, is measured using an index numbered 1 to 5, with 5 being indicating strong female subservient attitude. The scale has an alpha reliability of 0.72 and a mean value of 1.07. Factor and reliability analysis confirmed a one-factor solution. The index is obtained from survey questions relating to stereotypical gender-biased values. The more of the following statements that respondents agree to, the higher the level of subservient female attitude they are coded to possess:

- A woman has to take her husband's permission for everything

- If a woman differs with her husband opinion she should accept his
- If a girl has not gone to school, the best thing is to marry early
- If a boy asks for marriage, a girl has to accept
- If a man wants children, a woman has to comply.

Autocratic male dominance in relationships is measured using an index numbered 1 to 6, with 6 indicating highest possession of the characteristic of interest. The scale has an alpha of 0.53 and a mean of 2.468. Factor and reliability analysis were in favor of a one-factor solution. One is assigned if the partner makes the decision in each of the following cases, and zero otherwise. The sum of the number assigned for each question is the index of male power.

- Who usually has more say about whether to have sex?
- Who usually has more say about when you talk about things?
- In general, who has more power in the relationship?
- Who usually has more say about whether to use condom?
- Who usually has more say when you talk about family planning?
- Who usually has more say when you talk about the number of children?

Preventive Measure Adoption

Table 2: Behavioral Responses to AIDS

Change	Number	Percent
Restricted sex to one partner	1724	69.77
Asked spouse to be faithful	631	25.54
Reduced number of partners	194	7.85
Started using condoms	103	4.17
No behavior change	356	11.44
Other	27	1.09
Stopped injections	17	0.69
Stopped all sex	9	0.36
Didn't start sex	5	0.20
No more homosexual contacts	0	0

Source: Nairobi Cross-sectional Slum Survey (NCSS) 2000

The dependent variable for our model of preventive measure adoption was derived from the following question. Since you have heard of AIDS, have you changed your behavior to prevent getting

AIDS? If yes, what did you do? The behavioral change options offered were not mutually exclusive; respondents could choose multiple behavior change. Table 2 shows the prevalence of each the ten response options provided. Fourteen respondents claimed they "stopped all sex" and/or "didn't start sex". Although few respondents chose these options, these should be less likely response options for married, cohabiting, and other sexually active females.

To evaluate the effect of marital status and risk perception on the adoption of preventive measures we focus on the four highlighted HIV prevention responses (see Table 2). These are: (1) reduction in number of partner (2) having just one partner (3) condom use, and (4) asking partner to be faithful. We chose these four responses because they occur frequently and they are the most effective of the ten response options. Logistic regressions are used to analyze the four dichotomous response of interest. Marital status and interaction between marital status and risk perception are included as explanatory variables. The final model controlled for male dominance and abuse. Models including individual background characteristics did not provide a better fit.

RESULTS

HIV/AIDS RISK PERCEPTION

Various factors have been identified by past studies as important in HIV/AIDS risk perception. Male dominance and having an attitude in favor of female subservience are key factors that have been linked to females' inability to negotiate safe sex. This paper is hypothesizing that these factors are associated with risk perception as well. Two forms of male dominance are included in model 1 - a measure of male dominance in decision-making and a measure of male physical dominance in terms of physical abuse. These and other individual background variables are included in model 1 to determine how they affect the odds of perceiving the three level of risk of interest as opposed to no risk using multinomial logistic regression. The results from Model 1 are presented in Table 3 below. The chi-square for the joint significance of the slope coefficients is 463.45 on 45 degrees of freedom, indicating the slopes are jointly significant.

Table 3: Factors Affecting HIV/AIDS Risk Perception

Odds Ratio	Small	Moderate	High
Male power	**0.977(0.029)**	**0.929(0.032)***	**0.936(0.055)**
Attitude	**0.974(0.042)**	**0.976(0.052)**	**0.937(0.096)**
Abuse	**1.46(0.365)**	**1.846(0.527)***	**3.785(1.596)****
Primary Education	2.533(0.694)**	1.56(0.482)	1.814(0.873)
More than primary Education	2.091(0.519)**	1.615(0.452)+	1.319(0.593)
Protestant	1.719(0.402)*	1.751(0.518)+	2.261(1.435)
Catholic	2.098(0.521)**	2.324(0.72)**	3.157(2.055)+
Kikuyu	0.921(0.129)	0.951(0.16)	1.251(0.351)
Luo	0.984(0.136)	1.386(0.222)*	1.993(0.516)**
Married	0.622(0.094)**	0.799(0.141)	0.612(0.171)+
Cohabitation	2.489(1.05)*	4.96(2.174)***	3.795(2.147)*
12-18 yrs.	0.554(0.14)*	0.305(0.095)***	0.096(0.067)**
19-25 yrs.	0.676(0.122)*	0.538(0.112)**	0.400(0.141)*
26-32 yrs.	0.931(0.159)	0.737(0.142)	0.719(0.21)
Unfaithful	0.838(0.11)	4.631(0.657)***	4.701(1.109)***
N/LR Chi(df)		2472/463.45(45)	

Source: Nairobi Cross-sectional Slum Survey (NCSS) 2000

Contrary to our expectation, the two indices of male dominance in decision making and possession of female subservience attitude are not associated with higher odds of perceiving some level of risk for contracting HIV/AIDS. On the contrary, being in a relationship where the male dominate in decision making is associated with a significantly lower odd of perceiving moderate rather than no risk. Lower female and higher male dominance in decision-making related to sexual matters is associated with lower odds of perceiving small, moderate, and high risk as opposed to no risks. This process may operate in two ways. Females in relationships where the man makes most of the sexual decisions may be more likely to perceive lower levels of risk because they trust their partner and do not expect him to put them at risk; they may expect him to make mutually beneficial decisions. On the other hand, their risk perception may be based on their behavior; they may be less likely to engage in sexually risky behavior such as having multiple partners because they have more domineering partners. Domestic abuse measures another dimension of male domination and this form of domination, and not the decision making dominance, seem to matter more for risk perception. Women that were physically abused in the one-year period before the survey report nearly twice and four times the odds of perceiving moderate and high risk respectively rather than no risk compared to those who were not abused.

Individual background characteristics variables – education and religion –result in higher likelihood of perceiving small rather than no risk. Females who have some primary school education and those who have more than primary school education are twice as likely to perceive small level of risks rather than no risk compared to those with no education. Although they also have higher odds of perceiving moderate and high risks, these odds are not significant. Females who are christians report higher odds of perceiving some level of risk as opposed to no risk compared to non-christians. Both catholics and protestants have twice the odds of perceiving small rather than no risk compared to non-christian females. Being of Luo or kikuyu ethinicity is not associated with higher odds of perceiving small rather than no risk. However, being of Luo ethnicity is associated with higher odds of perceiving moderate and high risk rather than no risk compared to females who are not Luo.

Marriage and cohabitation have opposing effects on the odds of perceiving some risk of contracting AIDS. While marriage is associated with higher odds of perceiving no risk, cohabitation is associated with higher odds of perceiving some risk as opposed to no risk compared to non-cohabiting and non-married females. Cohabiting women are most likely to perceive moderate risk of contracting HIV/AIDS. They are 2.5, 4.9, and 3.8 times more likely to perceive small, moderate, and high risk as opposed to no risk compared to non-cohabiting and non-married females. The observed opposing effect of marriage and cohabitation may be because cohabitating relationships offer less security and is less able to enforce monogamy on partners compared to marriage. Also, females face different levels of sanctions on risky sexual behavior in both forms of relationships.

Not surprisingly, suspecting partner to be unfaithful is associated with higher odds of perceiving moderate to high risk as opposed to no risk. Females who suspect their partners are unfaithful report four times the odds of perceiving moderate and high rather than no risk of contracting HIV/AIDS. Although we expected younger respondents to have higher odds of perceiving some risk of contracting AIDS, our findings contradict this expectation. Females above age 32 were more likely to perceive every level of risk compared to women of other ages. The younger a female is, the lower the likelihood of perceiving any level of risk.

ADOPTION OF HIV/AIDS PREVENTIVE MEASURES

Monogamy is the most cited response to knowing about AIDS. Condom use, which offers the highest protection from HIV/AIDS, is cited by less than five percent of respondents. More than 60% of those using condoms are unmarried sexually active female; even then, the majority does not use condoms. Less than 14% of unmarried sexually active females in the slum use condom. The following analysis examines each of the four responses of interest to see if their likelihood of adoption is determined by risk perception, marital status, or either forms of male dominance.

Although respondents identify various methods of preventing HIV/AIDS, various factors determine the method(s) respondents will adopt. This paper hypothesizes that the level of risk perception should influence respondents' likelihood of adopting a measure; we expect that the higher the level of risk perceived by respondents, the higher should be the likelihood of adopting any of the measures. Also, we expect that the higher the level of risk perceived, the more stringent will be the method adopted. That is, respondents perceiving highest risk should have higher odds of adopting condoms.

Of the four preventive methods included in this study, only monogamy and condom use are highly effective. Even then, monogamy only guarantees one person's behavior and does not guarantee the partner's monogamy. None of the females indicated using the four measures simultaneously; 18 or 0.73% were using three of the four measures; 21.09% and 62.18% report using two and one measure(s) respectively. This section uses logistic regression to examine the odds of adopting any of the following preventive measures – monogamy, reducing number of partner, asking partner to be faithful, and using condom. Women perceiving no risk were exempted from this analysis.

Some studies have identified that East African women have little or no decision making power (Lary et al. 2004). Lack of power in decision making may affect females' ability to negotiate the use of preventive measures involving cooperation from partner e.g. condom use. Marital status can be expected to play an important role in adopting preventive measures. Several studies have found that the adoption of certain forms of prevention (for example, condoms) in marriages is highly unlikely. Studies report that

African respondents report that condom use hints at users' infidelity or users accusing partner of the same.

Model 2 (Table 4) examines the odds of respondents adopting any of the four preventive measures of interest as a result of perceiving some risk of contracting HIV/AIDS. Contrary to our expectation, high risk perception is not associated with higher likelihood of condom use. Persons perceiving high risk are not any more likely to use condoms as expected. However, persons perceiving high risk are more likely to reduce the number of their sexual partners. Persons perceiving moderate risks are more likely to reduce number of partner and ask partner to be faithful than persons perceiving small risk. Perceiving moderate to high risk is associated with lower odds of responding by initiating monogamy (Table 2). Moderate risk perception is associated with a greater likelihood of using condom and asking partner to be faithful compared to small risk perception. Thus, the common measure that all persons perceiving more than small level of risks are more likely to adopt is reduction in the number of sexual partners.

Married and cohabiting females do not have higher odds of responding by reducing the number of their partners, being monogamous, or using condoms than single sexually active females. Married respondents are more likely to ask their partner to be faithful; the effect for cohabiting females is not significant. Married respondents who perceive high risk are not any more likely to adopt any of the measures but married respondents who perceive moderate risk are significantly more likely to adopt monogamy. They are twice as likely to adopt monogamy as a response option compared to unmarried sexually active females. They are also less likely to ask partner to be faithful. The interaction variables between cohabitation and perceived risk have little effect on the odds of adopting any measure; only the interaction between high risk perception and cohabitation is associated with significantly higher likelihood of monogamy. Being in a relationship where the male dominates in decision-making is associated with only negligibly higher odds of responding to risk by practicing monogamy and lower odds of condom use.

Male dominance in decision making is significantly associated with higher odds of practicing monogamy and lower odds of using condoms. Increasing level of male dominance in decision making is only associated with slightly higher odds of monogamy (9.4%). Intimate partner violence is significantly associated with higher odds of reducing number of sexual partner and using condoms. The higher odd in condom use is un-expected and contrary to findings from most studies. The level of deprivation in the slum may create a unique dynamics that reverses previously found effect. Males that physically abuse their partner in this context may have multiple sexual partners or may suspect partner of infidelity, which is usually an accepted ground for physical abuse and violence in some culture. Thus, those men themselves may be ones initiating condom use.

Thus, our hypothesis was not fully substantiated. High-risk perception is not always associated with higher odds of adopting preventive measures. In the preceding analysis, high-risk perception is only associated with higher odds of reducing partners. Furthermore, it is not associated with higher odds of condom use.

Table 2: Preventive Responses to Perceived Risk

Odds ratio	Monogamy	Fewer partner	Ask Partner to be faithful	Condom use
Moderate risk	0.467(0.105)**	2.139(0.572)**	2.107(0.709)*	1.009(0.314)
High risk	0.368(0.151)*	3.121(1.393)*	0.98(0.754)	0.755(0.487)
Married	0.873(0.138)	0.166(0.046)***	5.631(1.347)***	0.122(0.038)***
Cohabitation	0.359(0.103)***	0.105(0.108)*	1.546(0.712)	0.319(0.197)+
Married*high risk	1.281(0.61)	1.698(1.017)	0.974(0.791)	3.02(2.749)
Married*moderate risk	2.022(0.526)**	1.394(0.537)	0.398(0.144)*	0.8(0.459)
Cohabitation *high risk	5.396(4.631)+	9.187(12.065)+	0.987(1.353)	------
Cohabitation*moderate risk	1.343(0.589)	6.909(7.583)+	2.618(1.551)	1.164(1.044)
Male power	1.094(0.029)**	1(0.046)	0.967(0.027)	0.859(0.054)*
Abuse	1.212(0.252)	2.226(0.627)**	1.203(0.247)	2.394(0.887)*
N/LR Chi	1986/68.91	1985/134.70	1976/107.27	1986/99.64

-------- Dropped because it predicts failure perfectly. Source: Nairobi Cross-sectional Slum Survey (NCSS) 2000

Conclusion

Findings from the preceding analysis validate some of this paper's hypothesis and repudiate others. Male dominance in decision-making, one of the factors expected to be a major force driving risk perception, was not found to be significant except for perceiving moderate risk. However, it affects the odds of

responding to risk by practicing monogamy and using condoms. Abuse by intimate partner, surprisingly, is associated with significantly high odds of using condoms and reducing of partners. Individual background factors such as ethnicity and education also did not show significant effect for the most part.

Monogamy is the most cited response to knowing about AIDS in the slum. Married and cohabiting females perceiving moderate and high risk respectively were more likely to report this as their response. High-risk perception did not have the desired effect on the adoption of preventive measures. Persons perceiving high risk may be those in relationship where they have little or no power to influence the adoption of any of the examined measures. The interaction between marital status and high-risk perception did not have as much effect on adopting preventive measures as expected. The only significant effect was for cohabiting females who perceive high risk. It is unclear whether the lack of expected significance in the marital status and risk perceived interaction variable is because these measures had been adopted prior to perceiving moderate to high risk, hence, as a response to small or no risk, or if the responses are truly absent as the findings suggest. Further research on this issue is needed.

The low level of condom-use in the slum coupled with high prevalence of perceiving some chance of contracting HIV/AIDS paints a very disturbing picture. Also, the lack of significance of high risk perception and cohabitation especially, which was associated with markedly higher odds of perceiving moderate to high risk, on adopting any of the four preventive measures reiterate the need for more research on Africa's high risk behavior population if any gain in reducing the AIDS epidemic is to be made.

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