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Full Length Research Paper

Gender differentials in factors associated with HIV testing intentions in Kenya: An application of the health belief model

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Demand for HIV testing and counseling has been growing with intensified efforts to scale up antiretroviral treatment globally. In Kenya, HIV testing and counseling programs have been expanding at an unprecedented pace. Knowledge of levels and associates of testing intentions is of essence. To obtain such knowledge, a recent nationally representative sample of reproductive-aged women and men was analyzed applying the health belief model. Among 5,441 women and 2,407 men studied, 68 and 70% expressed interests to be tested. After adjusting for socio-demographic variables, perceived severity (women: adjusted odds ratio (AOR)=1.16, [95% confidence interval (CI)=0.99-1.36]; men: AOR=1.29 [1.01-1.66]), perceived benefits (women: AOR=1.10 [1.05-1.15]; men: AOR=1.14 [1.05-1.24]) and perceived barriers (women: AOR=0.94 [0.88-1.01]; men: AOR=0.85 [0.79-0.93]) were associated with intentions to test among both sexes. Among women, perceived susceptibility, as measured by having sexually transmitted infections (AOR=1.58 [1.12-2.24]) and self-reported risk of HIV infection (moderate risk (vs. no risk): AOR=1.36 [1.10-1.69]; great risk or has AIDS: AOR=1.65 [1.25-2.17]), also correlated with desire for testing; whereas among men cues to action was significantly yet negatively associated with testing intentions (AOR=0.69 [0.56-0.87]). When scaling up HIV testing and counseling, a gendered approach is recommended in Kenya.

Key words: HIV testing intentions, Kenya, the health belief model, gendered approach.

INTRODUCTION

HIV testing and counseling has been shown to be a cost-effective intervention for HIV prevention, treatment and care in many settings (Allen et al., 1992a; 1992b; Grinstead et al., 2001; Sweat et al., 2000; The Voluntary HIV-1 Counseling and Testing Efficacy Study Group, 2000). Scaling up HIV testing and counseling is one of the essential steps to tackle HIV/AIDS in a generalized epidemic. Recently, with the on-going efforts to achieve universal access to HIV prevention treatment and care (WHO, 2010), the demand for HIV testing and counseling has been rapidly increasing (Chiang et al., 2009).

A person's intentions are the best guide to his or her behavior (Fishbein et al., 1996). Therefore, targeting individuals who desire testing could be an effective strategy when scaling up HIV testing and counseling. A number of studies examined levels and factors associated with intentions to test using nationally representative samples. In Tanzania and Uganda, more than 60% of reproductive-aged women and men wanted to test for HIV in early 2000s (Gage et al., 2005; Mbago, 2004). A set of socio-demographic characteristics, including age, education, residence, religion and wealth, were identified to be associated desire for testing. Various constructs of health beliefs were also found to significantly correlate with testing intentions, such as HIV knowledge, knowing people living with HIV or died of AIDS, knowledge of a testing site, spousal communication about HIV, and having sexually transmitted infections (STI) (Gage et al., 2005; Koku, 2011; Mbago, 2004; Misiri et al., 2004). In addition, the associations are sometimes different for women and men.

Several community-based studies also examined HIV testing intentions and their associates. In Zambia, 37% of study participants expressed willingness to be tested at

baseline (Fylkesnes et al., 1999). Self-perceived risk and number of sexual partners were positively associated with readiness for testing. When the readiness was reassessed in a follow-up study three years later, 49% among age group 20-24 years and 23% among age group 40-49 years expressed interests (Fylkesnes et al., 2004). Self-perceived risk was still positively associated with intentions, although only among younger participants. In another study conducted among Zambian youths, self-predicted risk, sexual experiences and having discussed testing with others were all positively associated with testing intentions (Denison, 2005). In summary, a number of socio-demographic and health belief related variables have been identified to correlate with desire for HIV testing and these associations could be different for women and men.

Kenya is selected as the study country as it faces countless challenges but also many opportunities in its battle against HIV/AIDS. The adult HIV prevalence in Kenya was estimated to be 6.7% in 2003 (8.7% among women and 4.6% among men) and 6.3% in 2008-2009 (8.0% among women and 4.3% among men) (Central Bureau of Statistics (CBS) Kenya, 2004; Kenya National Bureau of Statistics (KNBS) et al., 2010). Recognizing the impact of the AIDS epidemic, the Government of Kenya has published a series of HIV testing and counseling guidelines and regulations in the past few years (National AIDS and STD Control Programme, 2001; National AIDS and STI Control Programme et al., 2008) and has embraced universal access to HIV testing and counseling which aims to help 80% of Kenyans know their HIV status by 2010.

Under current policies, HIV testing and counseling programs have been expanding at an unprecedented pace since 2000 (Marum et al., 2006; National AIDS and STI Control Programme et al., 2008). The number of HIV testing and counseling sites jumped from 3 in 2000 to over 900 by the end of 2007(National AIDS and STI Control Programme, 2008). Voluntary counseling and testing alone served 545,000 person-times in 2005 compared to only 1,100 person-times in 2000. Maximizing these positive synergies requires knowledge of HIV testing intentions in Kenya. The current study seeks to contribute to this area by quantifying the level of HIV testing intentions and characterizing women and men with such intentions.

METHODS

Applying the health belief model

Originated in the 1950's, the health belief model (HBM) is used to explain why people do or do not adopt certain preventive health behaviors, such as seeking HIV testing (Strecher et al., 1997; World Health Organization, 2003). The HBM posits that individuals will adopt preventive health behaviors under the following four conditions: if they perceive themselves to be susceptible to a disease; if acquiring the disease has severe consequences; if they believe that it is possible to effectively avoid the disease so that it is beneficial to adopt the preventive approaches; and if they believe that the benefits of adopting such behaviors outweigh the financial and social costs of doing so and if they are competent to take the necessary actions (Fishbein et al., 1996; Strecher et al., 1997). Under these conditions, the HBM constitutes five main constructs, that is, perceived susceptibility, perceived severity, perceived benefits, perceived barriers and cues to action. During the evolution of the model, self-efficacy was added as the sixth component (Rosenstock et al., 1988). Socio-demographic characteristics are also thought to influence health-related behaviors indirectly (Fishbein et al., 1996).

Applying the HBM to the present study, it is hypothesized that the likelihood of one intending HIV testing is affected by perceived susceptibility and severity of HIV infection. In addition, the perceived benefits of desiring testing also need to outweigh the perceived barriers of doing so. The external influences on testing intentions, or cues to action, positively reinforce the process of adopting testing intentions. One's ability to successfully create intention to test, or self-efficacy, further facilitates adoption of the testing intentions. Lastly, socio-demographic characteristics may exert influence on the afore process indirectly. The study theoretical conceptual framework is depicted in Figure 1.

Study data

A nationally representative sample of reproductive-aged women and men were interviewed in the 2003 Kenya Demographic and Health Survey (KDHS). The 2003 KDHS is the fourth DHS conducted in Kenya to collect information on population, health and nutrition. Details of the design and implementation of the survey were published elsewhere (Central Bureau of Statistics (CBS) Kenya, 2004). Briefly, the 2003 KDHS is a household survey with a two-stage clustered sampling design. The country was first stratified into urban and rural areas with urban areas over-sampled. Four hundred clusters were randomly selected from the master frame of the enumeration areas. Women aged 15-49 years in every household and men aged 15-54 years in every other household were eligible to be interviewed. Face-to-face interviews were conducted using paper-based standardized questionnaires[*]. The survey includes completed interviews from 8,195 women and 3,578 men. A total of 5,441 women and 2,407 men who had ever had sex, heard of AIDS and had never been tested constituted the final analytical sample of this study.

Measurement

The study outcome is intentions to test for HIV, which was defined based on answers to the question "would you want to be tested for the AIDS virus?" (yes vs. no / do not know/missing). Inclusion of the study variables was guided by the HBM as shown in Figure 1. Five of the six HBM constructs were operationalized using information available from the 2003 KDHS. Specifically, perceived susceptibility was measured by levels of self-perceived risk of infection (no risk, small risk, moderate risk, or great/has AIDS) and known risk factors including history or symptoms of STI and having multiple sexual partners. Perceived severity was indicated by knowing someone who died of AIDS. Perceived benefits and barriers were measured by HIV knowledge and stigma, respectively. The knowledge and stigma composite scores were each constructed by applying principle component analysis to abstract common variance from a

[*] The questionnaire can be accessed on line at: http://www.measuredhs.com/pubs/pdf/FR151/21AppendixE.pdf. Accessed July 21, 2011.

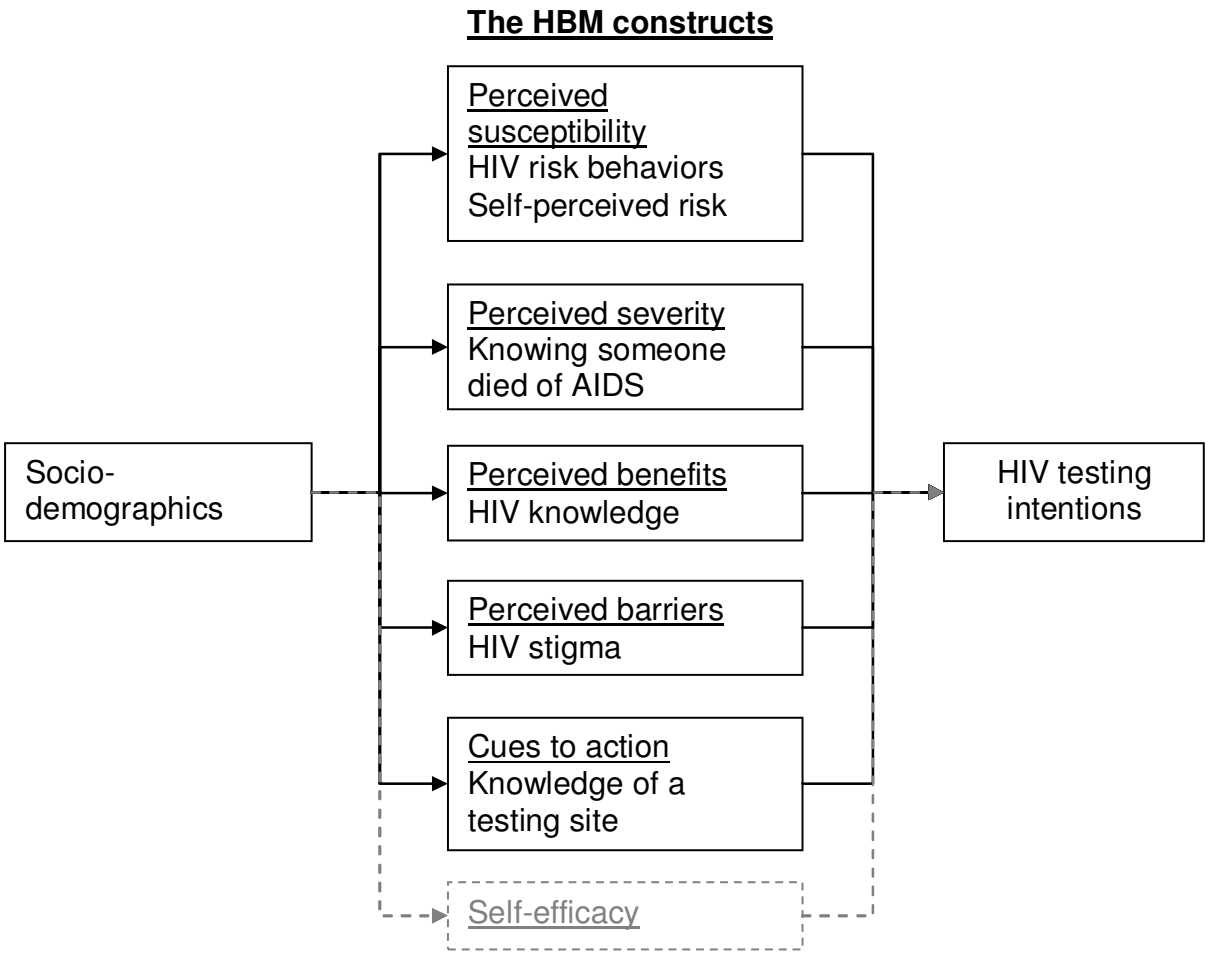

Figure 1. Conceptual framework depicting the relationship between the Health Belief Model constructs and HIV testing intentions, Kenya, 2003.Component in grey was not directly measured.

standard set of HIV knowledge and stigma questions[†]. Based on the eigenvalue of the components, only the first component was kept. Higher score means more knowledge or stigma. Cues to action were represented by knowledge of an HIV testing site. Self-efficacy was left unmeasured due to the lack of relevant information in the study data.

The following socio-demographic variables were also included as control variables: education (no education/preschool, primary, secondary, higher), wealth (poorest, poorer, middle, richer, richest) (Rutstein, 2008), residence (urban, rural), province, religion (Roman Catholic, Protestant/other Christian, Muslim, no/other religion), age groups (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-59, 50-54 (only among men)), age at first sex (earlier than median (17 years), at or after median age, at first union), union status (never in union, in monogamous union, in polygynous union or in union but did not know whether monogamous, widowed/divorced/separated), parity, whether currently pregnant (yes, no), and history of child death (yes, no). Ethnicity was not included due to its high correlation with province and religion.

[†] The HIV knowledge score was based on the following six questions: (1) "Can people reduce their chances of getting the AIDS virus by having just one sex partner who has no other partners?" (2) "Can people get the AIDS virus from mosquito or other insect bites?" (3) "Can people reduce their chances of getting the AIDS virus by using a condom every time they have sex?" (4) "Can people get the AIDS virus by sharing utensils with a person who has AIDS?" (5) "Can people reduce their chances of getting the AIDS virus by not having sex at all?" And (6) "is it possible for a healthy-looking person to have the AIDS virus?" The HIV stigma score was based on the following five questions: (1) "Would you buy fresh vegetables from a vendor who has the AIDS virus?" (2) "If a member of your family got infected with the virus that causes AIDS, would you want it to remain a secret or not?" (3) "If a relative of yours became sick with the virus that causes AIDS, would you be willing to care for her or him in your own household?" (4) "If a female teacher has the AIDS virus, should she be allowed to continue teaching in school?" And (5) "should children aged 12-14 be taught about using a condom to avoid AIDS?"

Data analyses

The socio-demographic characteristics and the HBM constructs were first described among women and men. Bivariate analysis was performed and significant covariates were entered into the multivariate logistic regression to examine the independent association between the HBM constructs and intentions to test. All analyses were done separately for women and men to investigate the gender differences.

The complex survey design of the 2003 KDHS, including stratification (urban vs. rural), over-sampling of urban areas and clustering at the primary sampling unit level, was considered

throughout the analysis. To examine the significance of the bivariate association between intentions and categorical covariates, the Pearson chi-square statistic was corrected using the second-order correction of Rao and Scott (Rao et al., 1984) and was converted to an F statistic (StataCorp, 2003). Wald-tests were carried out to examine statistical significance of the associations between intentions and continuous covariates. In the multivariate logistic regressions, standard error (SE) and 95% confidence interval (CI) were calculated using the Taylor linearization. Adjusted odds ratios (AOR), 95% CI and significance levels based on p-values were reported from the logistic regressions. The analyses were conducted using STATA 10, with the series of "svy" commands applied to take account of the survey design (StataCorp, 2007).

RESULTS

Sample characteristics

Among women and men who were sexually experienced, had heard of AIDS and were never tested, 68% of women and 70% of men wanted to be tested for HIV in the study population (Table 1). Less than 5% of women and men reported having STI in the past year. Significantly more men than women had more than one sexual partner in the past year (14% vs. 2%). Women tended to significantly perceive themselves at higher risk of infection than men. About three quarters of women and men knew someone died of AIDS. The levels of HIV knowledge and stigma were comparable between the two sexes. A large proportion of individuals also knew an HIV testing site, although significantly more men than women did so (74% vs. 67%).

Women and men differed significantly in almost all aspects of socio-demographic characteristics (Table 2). Less than 10% of the study population received higher education and significantly more men did so than women (9% vs. 4%). More than three-fourths of the study participants lived in rural areas and certain provinces (e.g. Rift Valley, Nyanza or Eastern Province). Men tended to come from relatively wealthier households than women. Majority of the respondents were either Catholics or Christians, although men were significantly more likelynot to have any religious affiliations. Men were also more likely to be younger than 20. More than one third of men were never married, yet the corresponding fraction for women was only 15%. On a related note, only 3% of men had sex for the first time when they were married compared to 18% of women. Almost 10% of women were pregnant when surveyed. The average number of live births women and men had were 3.5 and 2.7, respectively. Lastly, one-fourth of women and 18% of men experienced child deaths in this population.

Bivariate

For women, all the HBM constructs were significantly associated with intentions to test (p-values<0.002). For men, however, only perceived severity (p=0.005), perceived benefits (p<0.001) and perceived barriers (p<0.001) were significant factors. Almost all the socio-demographic variables were associated with testing intentions among men and women except history of child death. It was excluded from the subsequent multivariate analyses.

Multivariate

The independent association between desire for testing and the HBM constructs is presented in Table 3. Among the five studied HBM constructs, perceived susceptibility was significantly associated with testing intentions among women, but not among men. Specifically, women with STI were at 1.58 times higher odds (95% CI=1.12-2.24) of wanting to be tested compared to those without. Relative to women who perceived themselves at no risk of infection, those at some risk were more likely to have testing intentions (moderate risk: AOR=1.36 [1.10-1.69]; great risk or has AIDS: AOR=1.65 [1.25-2.17]).

Women and men with perceived severity, as indicated by whether knowing someone died of AIDS, were both more likely to desire testing (women: AOR=1.16 [0.99-1.36]; men: AOR=1.29 [1.01-1.66]. Perceived benefits, as measured by HIV knowledge, was strongly associated with testing intentions among both sexes (women: AOR=1.10 [1.05-1.15]; men: AOR=1.14 [1.05-1.24]). Perceived barriers, as quantified by HIV-related stigma, were negatively associated with intention to test among the study population (women: AOR=0.94 [0.88-1.01]; men: AOR=0.85 [0.79-0.93]). Cues to action had divergent association with testing intentions among women and men. Knowledge of a testing site did not increase women's intention to test, but significantly decreased men's intention to do so (AOR=0.69 [0.56-0.87]).

DISCUSSION

Guided the HBM, the present study quantified levels of HIV testing intentions in Kenya and characterized women and men with such intentions using nationally representative data. It was found that among women and men who had never been tested, more than two-thirds expressed willingness to be tested. Several HBM constructs were associated with desire to test among both sexes, including perceived severity, perceived benefits, and perceived barriers. Different associations were also observed between women and men, where women with higher perceived susceptibility and men with fewer cues to action were more likely to have intended testing.

The level of desire for testing found in this study was comparable to what was observed in national surveys in Uganda and Tanzania (Gage et al., 2005; Mbago, 2004), lower than that in the US (Benotsch et al., 2004), but higher than that from community studies in Zambia (Fylkesnes et al., 1999, 2004). The levels are likely to be conservative estimates since the question used to

Table 1. Desire for HIV testing and the health belief model constructs of study women and men, Kenya, 2003.

Outcome variable	Women (N=5441)	Men (N=2407)	P-value
Desire for HIV testing			
No/do not know	32.5	29.7	0.059
Yes	67.5	70.3	
HBM constructs			
Perceived susceptibility: STI history or symptoms in the past year			
No/do not know	95.5	97.0	0.009
Yes	4.5	3.0	
Number of partners in the past year			
0	15.7	15.5	p<0.001
1	82.3	70.5	
2+	2.0	14.0	
Self-perceived risk			
No risk at all	30.2	31.0	p<0.001
Small	41.3	53.4	
Moderate	18.0	10.7	
Great/has AIDS	10.6	5.0	
Perceived severity: Knowing someone died of AIDS			
No	25.2	23.8	0.307
Yes	74.8	76.2	
Perceived benefits			
HIV knowledge score	0.0	0.0	0.671
Perceived barriers			
HIV stigma score	0.0	0.0	0.587
Cues to action: Knowing a testing site			
No	33.4	25.8	p<0.001
Yes	66.6	74.2	

measure intention in this study was only asked among individuals who had never been tested, yet evidence suggested that tested individuals were more likely to accept testing (Fylkesnes et al., 2004; Myers et al., 1993). It is therefore suggested that the question on HIV testing intentions should be asked among all individuals, irrespectively of their testing status.

Supporting the study hypotheses, all five HBM constructs were significantly associated with testing intentions. Consistent evidence is available on the correlation between testing intentions and perceived benefits and barriers (Gage et al., 2005; Koku, 2011; Mbago, 2004; Vermeer et al., 2009). However, evidence about other identified relationships is mixed in the literature. Positive associations between perceived susceptibility and intentions were also found among youths in Zambia (Denison, 2005; Fylkesnes et al., 2004), but negative associations were observed among medical students in Tanzania (Vermeer et al., 2009). The association between testing intentions and perceived severity was not previously identified (Gage et al., 2005; Koku, 2011; Mbago, 2004; Misiri et al., 2004). This might indicate that knowing someone who died of AIDS is not an optimal measure of perceived severity. Surprisingly, cues to action, as indicated by knowledge of a testing site, were negatively associated with testing intentions among men. Similar association was also found in Malawi (Misiri et al., 2004). It was suspected that this was a selection effect that as motivated men who desired testing and knew a testing site could have already gone for testing before the survey.

The most important finding of this study is perhaps that factors associated with testing intentions are sometimes different for women and men. Similar results were also

Table 2. Socio-demographic characteristics of study women and men, Kenya, 2003.

Characteristic	Women (N=5441)	Men (N=2407)	P-value
Education			
No education/preschool	15.2	6.9	p<0.001
Primary	60.7	57.3	
Secondary	19.7	26.7	
Higher	4.4	9.1	
Residence			
Urban	22.0	23.7	0.086
Rural	78.0	76.3	
History of child death			
No	74.6	81.7	p<0.001
Yes	25.4	18.3	
Wealth			
Poorest	18.8	15.9	p<0.001
Poorer	19.7	17.8	
Middle	18.9	17.4	
Richer	20.5	23.2	
Richest	22.2	25.6	
Province			
Nairobi	8.4	9.8	p<0.001
Central	13.1	14.1	
Coast	8.8	6.6	
Eastern	16.8	17.4	
Nyanza	16.7	12.4	
Rift Valley	22.2	27.6	
Western	11.8	10.7	
North Eastern	2.4	1.4	
Religion			
Roman Catholic	25.2	27.9	p<0.001
Protestant/other Christian	64.3	59.2	
Muslim	8.2	5.7	
No/other religion	2.4	7.2	
Age group			
15-19	11.8	15.7	p<0.001
20-24	20.2	19.9	
25-29	18.8	14.7	
30-34	15.1	12.9	
35-39	13.2	12.7	
40-44	12.7	10.1	
45-49	8.3	6.5	
50-54	NA	7.5	
Union status			
Monogamous union	58.0	52.9	p<0.001
Never in union	15.3	37.0	
Polygynous union/donot know whether monogamous	14.6	5.6	

Table 2. Contd.

Polygynous union/don't know whether monogamous	14.6	5.6	
Widowed/divorced/separated	12.2	4.5	
Age at first sex			
<Median age (17 years)	42.4	48.1	
At median age or later	39.4	49.4	p<0.001
At first union	18.2	2.6	
Currently pregnant			
No or unsure	90.7	NA	
Yes	9.3		
Parity	3.5	2.7	p<0.001

Table 3. Multivariate association between women and men's HIV testing intentions and the HBM constructs, Kenya, 2003.

HBM Constructs	Women		Men	
	OR	95% CI	OR	95% CI
Perceived susceptibility: STI history or symptoms				
No	1.00		1.00	
Yes	1.58*	1.12, 2.24	1.09	0.51, 2.32
Number of partners in the past year				
0	1.00		1.00	
1	1.24†	0.96, 1.61	1.12	0.80, 1.59
2+	1.09	0.61, 1.97	1.41	0.93, 2.14
Self-perceived risk				
No risk at all	1.00		1.00	
Small	1.15†	0.98, 1.36	1.04	0.81, 1.32
Moderate	1.36**	1.10, 1.69	1.29	0.89, 1.86
Great/has AIDS	1.65***	1.25, 2.17	1.19	0.66, 2.14
Perceived severity: Knowing someone died of AIDS				
No	1.00		1.00	
Yes	1.16†	0.99, 1.36	1.29*	1.01, 1.66
Perceived benefits				
HIV knowledge score	1.10***	1.05, 1.15	1.14**	1.05, 1.24
Perceived barriers				
HIV stigma score	0.94†	0.88, 1.01	0.85***	0.79, 0.93
Cues to action: Knowledge of an HIV testing site				
No	1.00		1.00	
Yes	1.02	0.87, 1.18	0.69**	0.56, 0.87
F-statistic	F(41, 170) = 10.88		F(41, 179) = 4.79	
N	5441		2407	

† p<0.10; * p<0.05; ** p<0.01; ***p<0.001

observed in Northern Nigeria and Zimbabwe (Babalola, 2007; Sherr et al., 2007). It implies different reasoning for the two sexes when deciding whether wanting to be tested. Significantly more men than women reported to have multiple sexual partners, but the high risk behavior appears to exert different effect on perceived susceptibility between women and men. Specifically, it might positively influence women's perceived susceptibility but had no effect on men's (Schieman, 1998). As a result, men demonstrating high risk behaviors did not consider themselves at heightened risk of infection and did not want to be tested. The reason that the association between cues to action and desire for testing is different for women and men is unclear. However, if the specu-lation is founded that the negative association observed among men was due to a selection effect, it is suspected that women's lack of empowerment or autonomy may explain in part why they were no more likely to desire testing despite of knowing a testing site.

These findings on gender differentials highlight a pressing need to develop a gender-specific strategy to promote HIV testing and counseling in Kenya. On one hand, women are more vulnerable than men since they have higher susceptibility to HIV infection (Carpenter et al., 1999; Padian et al., 1997) and have higher HIV prevalence (Central Bureau of Statistics (CBS) Kenya, 2004; Kenya National Bureau of Statistics (KNBS), 2010). On the other hand, women tend to have more opportunities to access HIV prevention treatment and care. Women may be able to access testing through antenatal and delivery care, which is often offered for the purpose of prevention of mother-to-child transmission. Men, how-ever, do not usually have such opportunities. The reverse gender discrepancy is also manifested by the fact that a higher proportion of eligible women than men are receiving antiretroviral treatment in sub-Saharan Africa (Gage et al., 2005; Mbago, 2004; United Nations General Assembly, 2008). Because of the male disadvantage in accessing AIDS treatment and care, male involvement should be particularly encouraged in regular HIV testing and counseling programs to benefit both sexes.

A number of limitations are acknowledged regarding the present study. Given that the 2003 KDHS was a cross-sectional survey, no causal inference can be drawn from the findings. Future prospective studies examining the predictors of testing intentions and the actual behaviors are warranted. The sample size of female respondents is more than twice that of male respondents, which may explain some of the differences observed between the two sexes. However, it is considered a minor issue since nearly 2,500 men were included in the analysis. Lastly, all data were self-reported and collected through face-to-face interview. The results may be subject to "social desirability" and other biases (Ghanem et al., 2005).

Intentions to test may not always be a good predictor of the actual behavior of seeking or receiving tests. In the Zambia study mentioned earlier, only 9% of those initially willing to be tested actually did so within six months at baseline (Fylkesnes et al., 1999). However, participants who expressed interest were not offered voluntary counseling and testing (VCT) on site. Instead they were referred to VCT centers where testing results were not immediately available. The follow up study showed that acceptance was 12% among individuals who received VCT at the local clinics, but increased to 56% when home testing was offered (Fylkesnes et al., 2004). The high acceptance of home testing could be a result of increased confidentiality and ease of access. The two studies showed the importance of testing modality and its effect on testing acceptance among individuals who were willing to be tested. When combined with optimal testing modalities, intentions to test could help predict the actual uptake of HIV testing.

Self-efficacy, as one of the HBM constructs, could not be examined in the current study. But it was found to correlate with VCT intentions in Tanzania (Vermeer et al., 2009). Other barriers to testing, such as transportation, are also important factors. But they were not included either due to lack of relevant information in the 2003 KDHS. Failure to include these factors may introduce bias to the other associations observed.

Notwithstanding these caveats, the current study characterized women and men who expressed interests to be tested in Kenya. A number of constructs in the health belief model were identified to be significant associates. Such information could prove valuable in the process of scaling-up HIV testing and counseling in Kenya. A gendered approach is particularly recom-mended during the rapid expansion. On our way toward universal access to antiretroviral treatment, HIV testing and counseling should serve not only as the entry point, but also as an indispensable component of HIV/AIDS prevention, treatment and care.

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