Couple Concordance in Home-based Voluntary Counseling and Testing for HIV in Malawi

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Abstract

Since HIV epidemic began, there has been considerable effort to expand the delivery of voluntary counseling and testing (VCT) services. To address barriers to testing, home-based VCT for couples may be a promising strategy in HIV prevention. Using Malawi 2004 DHS data on consent-to-test, we employ logistic and multinomial regression analysis methods to identify individual-level variables associated with sex-specific and couple-concordance consent-to-test. The independent variables that are significantly related tend to differ by sex. This suggests a couple-level dynamic influencing the outcome that cannot be assessed by focusing on only one partner. We found that while education seems more pronounced in its effect on the male partner's test acceptance, exposure to mass media appears more influential for the female partner; recent experience with STI symptoms is important for both. Since access to HIV testing in Malawi is likely to expand, increasing uptake of the service will benefit from addressing couple-level behaviors and individual determinants.

Introduction

Since the start of the HIV epidemic, there has been considerable effort to expand the delivery of voluntary counseling and testing (VCT) services for HIV and some evidence of its efficacy for disease prevention (VCT Efficacy Study Group 2000; Painter 2001). Although efforts continue to encourage greater numbers of people to test, VCT uptake tends to remain at low levels, even in areas where need is high. In this sense, home-based VCT has shown promise to increase participation dramatically (Wolf et al. 2005). Home-based VCT has the potential to reduce the stigma often associated with testing, as well as alleviating barriers to testing such as time away from home, transportation costs, lost wages, and inconvenient clinic hours.

Many individual-level HIV prevention interventions are only as successful as one's ability to execute them within a sexual relationship or encounter. For persons in long-term partnerships, initiating and maintaining safe-sex practices may require first engaging one's sexual partner in HIV awareness and prevention activities. Couples-based VCT has shown promise in overcoming this challenge by encouraging partners to share results with each other in a safe, mediated environment, as well as engaging both partners in understanding and commitment to prevention (Painter 2001; Baiden et al. 2005; Mlay, Lugina, & Becker 2008).

To address both of the access and partner-relationship challenges at one time, home-based VCT for couples may be the next strategy in HIV prevention. Our study focus is to assess the role of selected socio-economic, demographic, HIV knowledge, sexual risk, and couple relationship covariates in an individual and couple's willingness to participate in home-based VCT. Using data on consent-to-test, we employ logistic and multinomial regression analysis methods to identify and assess individual-level variables associated with both sex-specific consent-to-test and couple-concordance in consent to test.

Methods

The 2004 Malawi Demographic and Health Survey (MDHS) included HIV sero-prevalence testing. Individuals participating in the household survey were asked if they were willing to have their blood tested for HIV but were not provided with pre- or post-test counseling or test results. Our analytic sample is of 1850 couples who were interviewed as individuals in the MDHS. A majority of the partners, male (77.0%) and female (78.5%), consented to being tested for HIV.

The data analysis first involves modeling individual likelihood of consent-to-test for both males and females with logistic regression. Two models are estimated. Model A is based on the same set of predictor variables for both males and females, while Model B includes some measures available only for one females. We then estimate a multinomial regression model of couple concordance in consent-to-test with four outcome categories: both consent; both refuse; wife consents-husband refuses; and wife refuses-husband consents. The polytomous outcome model is estimated first with female covariates only and then male covariates are included. This enables us to assess the additive contribution of the other partner's covariates on the likelihood both will consent to test. All regressions are weighted by sample weights to control for non-response and clustering from the complex survey design. Analyses are completed using STATA statistical analysis software, version 10.

Results

Data were collected from female and male partners of 1850 couples. Seventeen women were missing data on the HIV test outcome of interest, reducing the effective sample size to 1833 couples. With data missing occasionally on individual covariates, we were able to analyze variation in consent to test for 1835 men, 1791 women, and 1777 couples. (The female sample for Model B was further reduced to 1655 because questions about domestic violence were included for only a sub-sample of DHS participants.)

In modeling the likelihood of individual consent to test, only associations with two variables were statistically significant for both males and females: parity and residing in the central region of Malawi. While increased parity reduced the odds of refusal, living in the central region increased the odds of refusal by two times for males and nearly 4 times for females. For males, additional covariates that significantly reduced the odds of refusal included having a secondary or higher level of education, living in the southern region, being sexually active in the last month, and being supportive of premarital VCT. For males, the odds of refusal increased more than two times if they came from households in the highest wealth quintile,. For females, additional covariates that significantly reduced the odds of refusal included low media exposure, being in the second-poorest wealth quintile, reporting experience with STI symptoms in the last year, and holding the attitude that domestic violence is justified.

In the multinomial regression analysis, we assess the associations between male and female covariates separately with couple-concordance test outcomes. We find patterns of association differ by sex across the four outcome categories. Variables that have statistically significant relationships with female refusal-male acceptance, as compared to both partners accepting, are different than those that predict either the male or both partners will refuse.

There are a few exceptions to this observation, primarily involving socio-demographic variables of wealth quintile and region of residence, which are household-level measures that are the same for both partners. Again, the highest wealth quintile is significantly related with to one or both partners' refusal to be tested. Among the other variables, only parity and STI symptoms are significantly related for both sexes. No one covariate is significantly related for either sex to all three outcome-categories relative to both partners consenting, although within partner sex, nearly all covariates are significantly related to one or more outcomes. Covariates that are not strongly associated with couple testing concordance are the middle and fourth highest wealth quintiles, urban-rural residence, high media exposure, and partner communication about HIV.

When both partners' covariates are included in the multinomial regression model, fewer of them are associated at a statistically significant level for any outcome category. The second-poorest and highest wealth quintiles and central region residence remain significant covariates. Report of STI symptoms in the past year is the only covariate significant associated with consent to test for both sexes. Recent experience with STI symptoms appears to increase the odds that both partners will consent to test, which suggests field-based VCT to be helpful in lowering access barriers.

Each additional birth (parity) increases the odds by 30% that the female refused to be tested while her husband consented. Low media exposure levels for women reduce the odds that both partners will have refuseed. For both partners, supporting premarital VCT reduces the odds of couple refusal. For males, the belief that a healthy person can still have HIV reduces the odds of couple discordance in testing. Among women who hold the attitude that spousal abuse is justified, the odds that both partners will refuse are again reduced.

Discussion

It is encouraging to note that the majority of the survey respondents consented to the HIV test, and the majority of couples were concordant in the consent category. The interpretation of these results, however, cannot be extended beyond the limited context in which consent-to-test for HIV was measured. In DHS data collection, outside individuals visited respondents in their home and following completion of the core survey, asked individuals to consent to an HIV test. This request involves the respondent providing a blood sample without having to learn the results or receive any HIV counseling. (The respondent is referred to a local health center where s/he can obtain test results.) Unlike individuals who present themselves to VCT centers for testing, the field and home-based VCT is delivered to them. This reduction in access barriers augurs well for expanding VCT to rural residents. Similarly because partners'

reports of recent STI symptoms are significantly related to simultaneous acceptance of HIV testing, their awareness of the linkages between those infections and HIV transmission seems established.

Wealthier individuals, particularly males, were more likely to refuse to be tested. HIV prevalence is highest among this subgroup in Malawi and their refusal may also reflect fewer access barriers and more previous testing experience.

The partner data provide important insight as to which individuals and couples might consent to a couples- and home-based approach to VCT services. The independent variables that are significantly related to raise or lower odds that both partners will consent to test tend to differ by sex. This pattern holds both when comparing the regressions results from using only one partner's variables at a time and when both partners' covariates are included concurrently. For example, while male primary education reduces the odds that he will refuse, even if his partner consents, it does not seem to affect the odds that his partner will refuse if he consents or that both partners will refuse. Similarly, female STI symptoms raised the odds that both partners will test, while male STI symptoms only raise the odds that the male partner will consent to be tested.

The fact that there are gender-specific covariates significantly related to couple test outcomes suggests that there may be a couple-level dynamic influencing the consent-to-test outcome that cannot be assessed by focusing on one partner's test behavior alone. Both partners' test motivations and decisions are significant to HIV prevention and treatment efforts for different reasons. In our analysis, while education seems to be more pronounced in its effect on the male partner's test acceptance, exposure to mass media appears more influential for the female partner's acceptance, and recent experience with STI symptoms is important for both. Since access to HIV testing in Malawi is likely to expand in the future, arresting the epidemic will benefit from addressing couple-level behaviors as much as individual risk determinants.

This study provides some insights to a context-specific decision by each partner to be tested and important correlates of their common but individual decision.

Table 1. Variables used in statistical models.

Variable Name	Definition	Range
Age	Modeled continuously in 1-year increments.	(15, 54)
Education	Categorical: No Education; Completed Primary; Completed Secondary or More.	(0, 2)
Parity	Modeled continuously; Male and female partners are not always the same	(0, 9)
Media	Categorical, measuring frequency of exposure to newspaper, TV, and radio: No Exposure; Low Exposure; Medium Exposure; High Exposure.	(1, 4)
Wealth Quintile	Categorical. Male and female partners are the same.	(1, 5)
Rural	Categorical: Urban or Rural residence. Male and female partners are the same.	(1, 2)
Region	Categorical: Northern; Central; or Southern. Male and female partners are the same.	(1, 3)
HIV Knowledge Scale	Continuous, based on answers to 9 questions regarding HIV prevention and transmission	(0, 9)
Know a Place for VCT	Categorical: Yes or No. "Do you know a place where you could go for an AIDS test?"	(0, 1)
Healthy People Can Have HIV	Categorical: Yes or No. "Is it possible for a healthy-looking person have the AIDS virus?"	(0, 1)
Extramarital Partners	Categorical: Yes (outside partners) or No (wife only). "How many women have you had sex with in the last 12 months?"	(0, 1)
Sexually Active (last 4 weeks)	Categorical: Yes or No. Has the individual been sexually active in the last 4 weeks.	(0, 1)
STI Symptoms (last 12 months)	Categorical: Any symptoms or no symptoms including discharge, sores, ulcers, or STD diagnosis	(0, 1)
Polygamous	Categorical: One wife or more than one wife.	(0, 1)
HIV Communication	Categorical: Yes or No. "Have you ever talked about ways to prevent getting the virus that causes AIDS with your spouse?"	(0, 1)
Support Premarital VCT	Categorical: Yes or No. "Do you think that men and women who intend to marry should be tested for the AIDS virus before marriage?"	(0, 1)
Husband consults/ spends time with wife often	Categorical: Never/Sometimes or Frequently. Cumulative based on 4 questions about the couple's relationship (husband spends free time with wife; consults on household matters; is affectionate; and respects the wife's wishes).	(1, 2)
Domestic Violence - Justified	Categorical: Ever or Never. Is a husband justified in beating his wife in 6 different situations. Ever is Yes to any of the given situations.	(0, 1)
Domestic Violence – Experience	Categorical: Ever or Never. In the last 12 months, has your husband been abusive (9 different ways). Ever is Yes to any type of abuse listed.	(0, 1)

Table 2. Background Characteristics of Male and Female Partners: 2004 Malawi DHS Couples (N=1850)

	Female		Male	
	N	%	N	%
Background Characteristics				
Age				
15-19	191	10.3		
20-24/15-24*	520	28.1	230	12.4
25-29	404	21.8	445	24.0
30-34	304	16.4	387	20.9
35-39	219	11.8	241	13.0
40-49/40-44*	212	11.5	253	13.7
45-54*			294	15.9
Education				
None	503	27.2	273	14.8
Primary	1182	63.9	1202	79.7
Secondary or more	165	8.9	375	20.3
Parity				
No Children	136	7.4	107	5.8
1 Child	280	15.1	225	12.2
2 Children	332	18.0	267	14.4
3-5 Children	716	38.7	650	35.1
6-7 Children	229	12.4	284	15.4
8+ Children	157	8.5	317	17.1
Media Exposure to Newspaper, TV, or Radio				
No exposure	703	38.1	373	20.2
Low exposure	769	41.7	612	33.2
Medium exposure	277	15.0	557	30.2
High exposure	97	5.3	302	16.4
Missing	4	0.2	6	0.3
Residence				
Urban		203	11.0	
Rural		1647	89.0	
Region				
North		235	12.7	
Central		761	41.1	
South		854	46.2	
Household Wealth Quintile				
Lowest		245	13.2	
Second Lowest		422	22.8	
Middle		488	26.4	
Fourth Highest		419	22.7	
Highest		276	14.9	

Table 3. Enabling Characteristics of Male and Female Partners: 2004 MDHS

	Female		Male	
	N	%	N	%
HIV Knowledge				
Know Place to get AIDS Test				
Yes	1488	81.7	1620	87.7
No	334	18.3	228	12.3
Missing	28	1.5	2	0.1
HIV Knowledge Score				
None	55	3.0	7	0.4
Low	549	29.7	356	19.2
Medium	1098	59.4	1273	68.8
High	148	8.0	214	11.6
Missing	1	0.1	1	0.1
Sexual Risk Behaviors				
Number of Wives				
1	1621	87.6	1639	88.6
> 1	228	12.3	211	11.4
Missing	1	0.1	-	-
Number of Other Sexual Partners				
0			1737	94.0
1+			111	6.0
Missing			2	0.1
STD, Sore, Ulcer in last 12 mos				
Yes	141	7.6	80	4.3
No	1699	91.9	1765	95.5
Missing	2	0.1	2	0.1
Recent Sexual Activity				
Active in Last 4 wks	1472	79.7	1506	81.5
Not Active in Last 4 wks	376	20.4	342	18.5
Missing	2	0.1	2	0.1
Couple Relationship				
Believe Couples Should Test for HIV Before Marriage	1673	92.1	1747	94.5
Discussed Avoiding AIDS with Partner	1265	69.5	1583	85.6
Emotional Closeness Index				
Husband spends time/consults wife never/sometimes	627	33.9		
Husband spends time with/consults wife often	1081	58.4		
Missing	142	7.7		
OK to Hit Wife				
Ever	569	30.8	224	12.1
Never	1281	69.2	1626	87.9
Experience of Abuse Index				
Ever	442	23.9		
Never	1266	68.4		
Missing	142	7.7		

Table 4. Individual Consent-to-Test for HIV.

Variable	Model A		Model B	
	Males	Females	Males	Females
	N=1835	N=1791	N=1835	N=1655
	Odds Ratio		Odds Ratio	
Sociodemographics				
Age	1.01	1.02	1.01	1.01
Education *(Ref-None)*				
Primary	0.80	0.75	0.80	0.77
Secondary or more	0.51**	0.73	0.52**	0.73
Parity	0.89	0.82¥	0.89§	0.84
Media (Ref-No Exposure)				
Low Exposure	1.18	0.70**	1.19	0.72**
Medium Exposure	0.75	0.66*	0.76	0.67
High Exposure	0.85	0.82	0.86	0.93
Wealth Quintile (Ref- Lowest)				
Second Lowest	0.78	0.60**	0.78	0.58**
Middle	0.88	0.85	0.88	0.85
Fourth Highest	0.90	0.77	0.89	0.76
Highest	2.22**	1.38	2.20**	1.34
Rural	0.63*	0.66	0.63*	0.68
Region (Ref - Northern)				
Central	2.16§	3.69¥	2.15*	4.56¥
Southern	1.62*	1.52	1.61§	1.75
Knowledge				
HIV Knowledge Scale (0-9)	1.04	0.92	1.04	0.94
Know a Place for VCT	0.73	0.87	0.73	0.89
Healthy People Can Have HIV	0.82	0.80	0.83	0.80
Sexual Activity				
Extramarital Partners	*NA*	*NA*	0.80	*NA*
Sexually Active (last 4 wks)	0.70*	1.14	0.70*	1.06
STI Symptoms (last 12 mo)	0.87	0.45§	0.89	0.45§
Couple Relationship				
Polygamous	1.33	1.03	1.34	1.04
HIV Communication	1.08	0.78	1.08	0.77
Support Premarital VCT	0.43¥	0.77	0.42¥	0.85
Husband consults/spends time with wife often	*NA*	*NA*	*NA*	1.20
Domestic Violence - Justified	1.09	0.62§	1.11	0.64**
Domestic Violence - Experience	*NA*	*NA*	*NA*	0.72*

* Significant at p<.10; ** Significant at p<.05; § Significant at p<.01; ¥ Significant a p<.001

Table 5. Couple concordance in consent-to-test using each partners co-variates.

	Female Predictors Female Sample Weights			Male Predictors Male Sample Weights		
	Female Consent	Male Consent	Both Refuse	Female Consent	Male Consent	Both Refuse
	N=1791 RRR			N=1819 RRR		
Sociodemographics						
Wealth Quintile (Ref- Lowest)						
Second Lowest	0.82	0.38**	0.69	0.92	0.39**	0.65
Middle	1.02	0.81	0.85	1.43	0.83	0.73
Fourth Highest	1.01	0.51	0.91	1.42	0.52	0.69
Highest	2.49*	0.88	2.02*	4.30§	0.75	1.62
Rural	0.58	0.60	0.62	0.69	0.65	0.58*
Region (Ref - Northern)						
Central	1.16	6.79¥	3.10¥	1.13	7.22¥	3.40¥
Southern	1.62	2.39	1.43	1.61	2.86	1.71*
Age	1.00	1.04**	1.01	1.01	1.01	1.00
Education *(Ref-None)*						
Primary	1.22	0.71	0.79	0.50**	0.52*	0.90
Secondary or more	0.47	0.44	0.75	0.39	0.62	0.61
Parity	0.96	0.77¥	0.84§	0.91*	0.96	0.87§
Media (Ref-No Exposure)						
Low Exposure	1.35	1.07	0.63§	1.54	0.92	0.98
Medium Exposure	0.50*	1.20	0.46**	0.62	1.07	0.81
High Exposure	0.56	0.56	0.76	0.47	0.84	0.97
Knowledge						
HIV Knowledge Scale (0-9)	0.93	0.96	0.90	0.91	0.96	1.09
Know a Place for VCT	1.34	1.05	0.84	1.22	2.57	0.66*
Healthy People Can Have HIV	1.20	0.76	0.85	0.72	0.44	0.74
Sexual Activity						
Sexually Active (last 4 wks)	1.02	1.16	1.14	0.84	0.70	0.61**
STI Symptoms (last 12 mo)	1.23	0.57	0.42**	0.39*	2.51**	1.23
Couple Relationship						
Polygamous	0.91	1.05**	0.88	1.51	0.89	1.29
HIV Communication	0.70	0.79	0.73*	1.08	0.88	1.08
Support Premarital VCT	0.63	0.57	0.82	0.53	1.10	0.39¥
Domestic Violence - Justified	1.05	0.60*	0.63**	1.15	0.88	1.05

* Significant at p<.10; ** Significant at p<.05; § Significant at p<.01; ¥ Significant a p<.001

Table 6. Couple concordance in consent-to-test using both partners' covariates.

VCT Consent Concordance	Full Model, Male Sample Weights		
	Female Consent	Male Consent N=1777 RRR	Both Refuse
Sociodemographics			
Wealth Quintile (Ref- Lowest)			
Second Lowest	0.90	0.33**	0.65
Middle	1.35	0.77	0.80
Fourth Highest	1.50	0.47	0.88
Highest	5.02§	0.76	2.18**
Rural	0.58	0.61	0.61
Region (Ref - Northern)			
Central	1.07	7.06¥	3.40¥
Southern	1.26	2.35	1.57
Age			
Male	1.04*	1.00	1.02
Female	0.96	1.04	1.00
Education			
Male - Primary School	0.42§	0.64	1.18
Male - Seconday or More	0.37**	0.75	0.79
Female - Primary School	1.38	0.78	0.78
Female - Secondary or More	0.73	0.58	0.82
Parity			
Male	0.92	1.12	0.92
Female	1.03	0.71¥	0.89
Media Index			
Males - Low Exposure	1.52	0.91	1.20
Medium Exposure	0.59	0.93	0.84
High Exposure	0.45	0.82	1.10
Females - Low Exposure	1.26	1.09	0.64**
Medium Exposure	0.51*	1.21	0.46**
High Exposure	0.68	0.58	0.73
Knowledge & Attitudes			
Know a Place for VCT			
Male	1.20	2.58*	0.77
Female	1.39	0.97	0.86
HIV Knowledge Index			
Male	0.95	0.98	1.12
Female	0.97	0.96	0.91
Healthy People Can Have HIV			

Male	0.71	0.41**	0.70
Female	1.43	0.73	0.81
Sexual Activity			
Sexually Active (last 4 wks)			
Male	0.95	0.63*	0.67*
Female	1.03	1.00	1.04
STI Symptoms (last 12 mo)			
Male Report	0.40*	2.81**	1.61
Female Report	1.44	0.57	0.36§
Couple Relationship			
Polygamous			
Male Report	1.54	0.58	1.35
Female Report	0.80	1.08	0.84
HIV Communication			
Male Report	0.98	0.95	1.07
Female Report	0.73	0.73	0.74
Support Premarital VCT			
Male	0.52	1.46	0.44§
Female	0.61	0.62	0.89
Domestic Violence - Justified			
Male	1.04	0.98	1.11
Female	0.96	0.62*	0.63**

* Significant at p<.10; ** Significant at p<.05; § Significant at p<.01; ¥ Significant a p<.001

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