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2013 No. 101

DEMOGRAPHIC AND HEALTH SURVEYS

September 2013

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ICF International
Calverton, Maryland, USA

September 2013

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ACKNOWLEDGEMENTS

The authors of this paper would like to express their appreciation to those organizations and individuals who contributed to the successful preparation of this paper. Specifically the team would like to thank the facilitators Wenjuan Wang, Sarah Staveteig, Tom Pullum and Kerry MacQuarrie for their appropriate guidance, constructive comments and suggestions, which improved this manuscript.

The program would not have been successful without permission and support from the Institute of Rural Development Planning; the authors appreciate the institutional support and encouragement. Furthermore, our thanks go to the facilitators for their participatory facilitation method, which made possible the contribution from participants and experience sharing. The authors thank the United State Agency for International Development (USAID) for fellowship financial support through the MEASURE DHS project at ICF International Inc.

ABSTRACT

Background: The study on the role of women's empowerment and HIV testing in Tanzania was conducted using data from the 2010 Tanzania Demographic and Health Survey (TDHS).

Objective and Conceptual Framework: The study analyzed the influence of women's empowerment on HIV testing. Specifically, indicators of women's empowerment were linked to women's socioeconomic characteristics and to HIV testing. Women's characteristics include age, education, wealth, employment, residence and whether the woman had given birth in the five years preceding the survey. Women's empowerment indicators include participation in household decision-making, attitudes disapproving wife beating and attitudes that women can refuse sex if their husbands have a sexually transmitted infection.

Methods: The study involved 6,406 women age 15-49 and currently married and living together with their husbands. Descriptive analysis was used to determine the women's socioeconomic characteristics. Bivariate and multivariate (logistic regression) analyses were used to determine the association between socioeconomic characteristics and women's empowerment in influencing HIV testing.

Results: Out of the 6,406 women, 4,246 had been tested for HIV. The odds of being tested were higher among women who participated in household decision-making, had disapproving attitudes toward wife beating, and approving attitudes toward refusal of sex. Both for women without a recent birth and for women who gave birth in the past five years and who used ANC services, empowerment is associated with higher likelihood of HIV testing.

Key Words: Women's empowerment, HIV testing, birth in past five years, Tanzania

INTRODUCTION

Background

Women's empowerment is important for addressing the HIV epidemic. It builds women's confidence to test for HIV and thus to know their HIV status and to be able to prevent transmission from mother to child, as well as to prevent new infections to their partners. Women's access to HIV testing depends substantially on the level to which a woman has been empowered. It is believed that a woman who is empowered, culturally or politically or professionally, has confidence to decide to go for HIV testing, as she does not depend on her husband or partner to make decision for her on whether to test for HIV or not.

In Tanzania, as in other countries in sub-Saharan Africa, more women are affected with HIV than men, at 6% and 4%, respectively, according to the 2011-2012 Tanzania HIV/AIDS and Malaria indictor survey (TACAIDS et al., 2013). Similarly, a study on Voluntary Counseling and Testing Clinics in Dar-es-Salaam, found that HIV prevalence among young women and men age 15-24 was higher for women than men (Maman et al., 2002).

The leading factors for women being more infected than men include a culture which disempowers women. For example Miller (2011) in a study on the determinants of women's empowerment and HIV status in sub-Saharan Africa reported: "Increased female vulnerability to HIV stems from limited access to health care and lack of autonomy to make decisions regarding sexual health and education". Moreover, such cultural practices as trusting men to take household decisions, believing that if a wife is beaten by her husband or partner it is the sign of love, and believing that a married woman is not allowed to use a condom for sex with her husband or partner whom she suspects has a sexually transmitted infection (STI) put women into web of silence which denies them decision-making power and makes them submissive when they are beaten.

Hasbullah (2013) has reported that "violence against women remains hidden behind a culture of silence." Maman and colleagues (2002) found that "lack of financial autonomy, control of household income, women's inability to negotiate for condom use, lower education of both partners and low household income" are factors which prevent women from using HIV voluntary counseling and testing services in Tanzania.

Another Tanzanian study by Maman and colleagues (1999) found gender differences in decision-making concerning the use of HIV voluntary counseling and testing (VCT) services. “While men made the decision to seek voluntary counseling and testing independent of others, women felt compelled to discuss testing with their partners before accessing the service, thereby creating a potential barrier to accessing VCT services.”

In order to address HIV/AIDS, in 2001 The Government of Tanzania adopted an HIV/AIDS policy “to promote early diagnosis of HIV infection through voluntary testing with pre- and post-test counseling and to reassure and encourage the 85%-90% of the population who were HIV negative to take definitive steps not to be infected, and those who were HIV positive to receive the necessary support in counseling and care to cope with their status, prolong their lives and not to infect others” (URT, 2001).

Moreover, in 2007 Tanzania developed the provider-initiated opt-out testing through the National Prevention of Mother to Child Transmission (PMTCT) guideline “to promote and support the delivery of quality HIV prevention, care, treatment and support service” and “HIV counseling to ensure a dialogue between a group of clients and health care provider aimed at enabling clients to make informed personal decisions about their HIV testing in order to know sero status.” Knowledge of one’s HIV status may act to mobilize support networks, increase sensitivity and decrease stigma, open dialogue regarding future plans and status disclosure, and discourage risky sexual behaviors (Staveteig et al, 2013).

Theory of HIV Counseling and Testing

Some theories underlying HIV testing discuss factors that motivate and discourage testing at the same time. Client Motivation Theory underlies on factors motivating individuals to get tested for HIV. For example Kamengaa and colleagues (2001) observe that the decision to undergo HIV testing remains difficult for many people. This difficulty is compounded by factors such as stigma and discrimination, distance to services and cost of services. Various motivations have been reported for those who choose to be tested for HIV, including fear of having been exposed to HIV, feeling sick, an important life commitment (e.g., marriage, new partner), and requirement for a benefit (e.g., visa, scholarship).

Hullet (2006) used functional theory of attitudes and stimulation of fear in motivating college students to get tested for HIV. The theory advocates that value expressive appeals to get tested for the purpose of taking care of one's own health could be effective if that goal is desired by message recipients who are sexually active and unaware of their sexually transmitted disease status. The effectiveness of these appeals is increased by the arousal of uncertainty and fear. Furthermore, the theory holds that messages advocating testing for the self-interested reason of one's own health would be more effective than messages advocating testing for the goal of protecting ones partners.

Kamengaa and colleagues (2001) reported that the core components of HIV counseling and testing include pretest counseling, HIV testing, and post-test counseling. HIV counseling and testing interventions are promoted as voluntary and confidential. This approach is believed to contribute to people's right to know their HIV sero-status and prevent HIV transmission. It is based on the belief that knowledge of HIV sero-status helps in decision-making (e.g., changes in sexual behavior, prevention of mother-to-child transmission [PMTCT] uptake) and that access to treatment, care and support services from the government and other stakeholders follow from HIV testing. These theories concur with this study, which emphasizes the right of women to HIV testing.

Greig and Koopman (2003) in their study on the explored relationships between women's empowerment and HIV prevention at the national and individual levels, with a focus on Botswana, asserts that among sub-Saharan African countries, HIV prevalence was positively correlated with indirect indicators of women's empowerment relating to their education (female enrollment in secondary education and ratio of female to male secondary school enrollment), but not to their economic status (women's share of paid employment in industry and services) or political status (women's share of seats in national parliament). Condom use at last sexual encounter was positively and significantly correlated with both indicators of women's educational empowerment. Moreover, women's negotiating power and economic independence were the factors most strongly related to condom use. Economic independence was found to be the strongest factor likely to influence women's negotiating power.

Socio-demographic factors, such as marital status, area of residence, religion and ethnicity influenced VCT completion among males and females in different ways, while self-

perceived risk of HIV, prior knowledge of VCT, and sex with a high-risk partner emerged as important predictors of VCT completion among both sexes. This contributed to a higher proportion of HIV-positive males knowing their status compared with HIV-positive females.

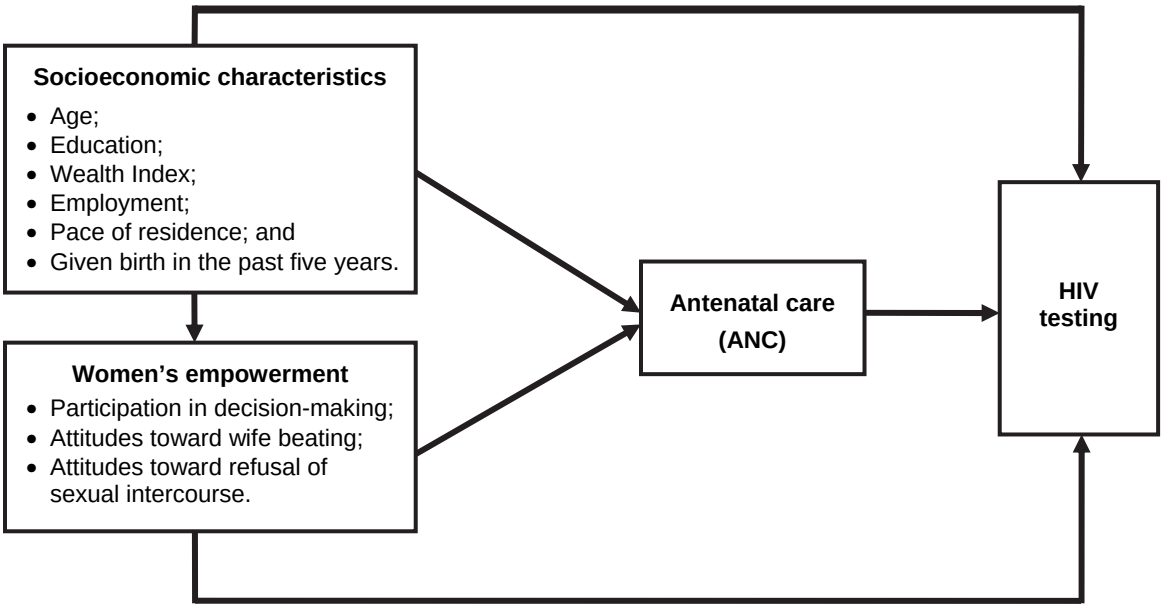
TDHS 2010 and THMIS 2013 indicate, respectively, that 41% and 33% of women age 15-49 had never tested for HIV. The effort to combat HIV includes ensuring that gender perspectives are incorporated into efforts to combat HIV/AIDS (Germain, 2009). Kominami and colleagues (2007) found that 68% of the participants had already had HIV testing. The study hypothesized that women's empowerment influences HIV testing. Therefore, this study describes the relationship between socioeconomic characteristics, women's empowerment and HIV testing.

Conceptual Framework

Behal (2011) has defined empowerment as "increasing the spiritual, political, social or economic strength of individuals and communities. It often involves the empowered developing confidence in their own capacities". Empowerment is a process or an outcome/goal and can take place at different levels. Moreover, it is a process through which women currently most discriminated against can achieve gender equity (Behal, 2011).

The conceptual framework in Figure 1 shows the relationship between three predictor variables thought to affect the explanatory variable, HIV testing. The predictor variables were classified into two parts. Women's socioeconomic characteristics include age, level of education, wealth index, employment, and place of residence and given birth for the past five years. Women's empowerment includes participation in decision-making, attitudes toward wife beating and attitudes toward refusal of sexual intercourse.

Figure 1. Conceptual Framework



The first assumption is that women age 15-49 who are empowered decide to go for testing voluntarily, not just if they attend antenatal care (ANC). The determinants under this assumption are women taking major decisions at the household level, having the ability to refuse unsafe sex and not approving of wife beating. The second assumption is that there are some clients (women age 15-49) whose testing for HIV is initiated when they are pregnant, provided as part of ANC.

In Tanzania pregnant women are eligible to attend ANC. However, not all pregnant women are able to attend ANC due to one reason or another, such as distance from a clinic, especially for the rural population, while some women fear to receive HIV-positive results, due to stigmatization from community members (Yang et al., 2005). Moreover, the Tanzania National Policy on HIV/AIDS (United Republic of Tanzania, 2001) reported that "stigma leads to secrecy and denial that tends to hinder openness about the HIV and prevents people from seeking counseling and testing for HIV."

ANC was considered in the conceptual framework because it is obligatory for all pregnant women in Tanzania to attend ANC, and through ANC attendance they get tested for HIV. In health facilities where there are no HIV testing services, pregnant women are referred to

other health facilities for HIV testing. Therefore, the hypothesis that women's empowerment influences HIV testing was considered to compare women who have given birth in the five years preceding the 2010 TDHS with women who did not give birth in the last five years.

In order to attain the general objective of this study on the role of women's empowerment in HIV testing, this study has to explore the relationship between women's socioeconomic characteristics and HIV testing. It is assumed that empowerment stimulates women's desire for HIV testing, despite the fact that all pregnant women should test for HIV. HIV testing and counseling serves as both critical prevention and treatment in the control of HIV epidemic (WHO, 2004). As Staveteig and colleagues

(2013) have observed, "HIV testing is an essential part in providing medical care to persons living with HIV and key to preventing HIV transmission. For people who test HIV-positive, testing is the starting point for care and management of the disease. It is also an entry point for efforts to prevent infection of their sexual partners and their children. Even for people who test HIV-negative, the testing process is an opportunity for counseling about HIV transmission that may strengthen prevention efforts and reduce stigma."

DATA AND METHODS

Data

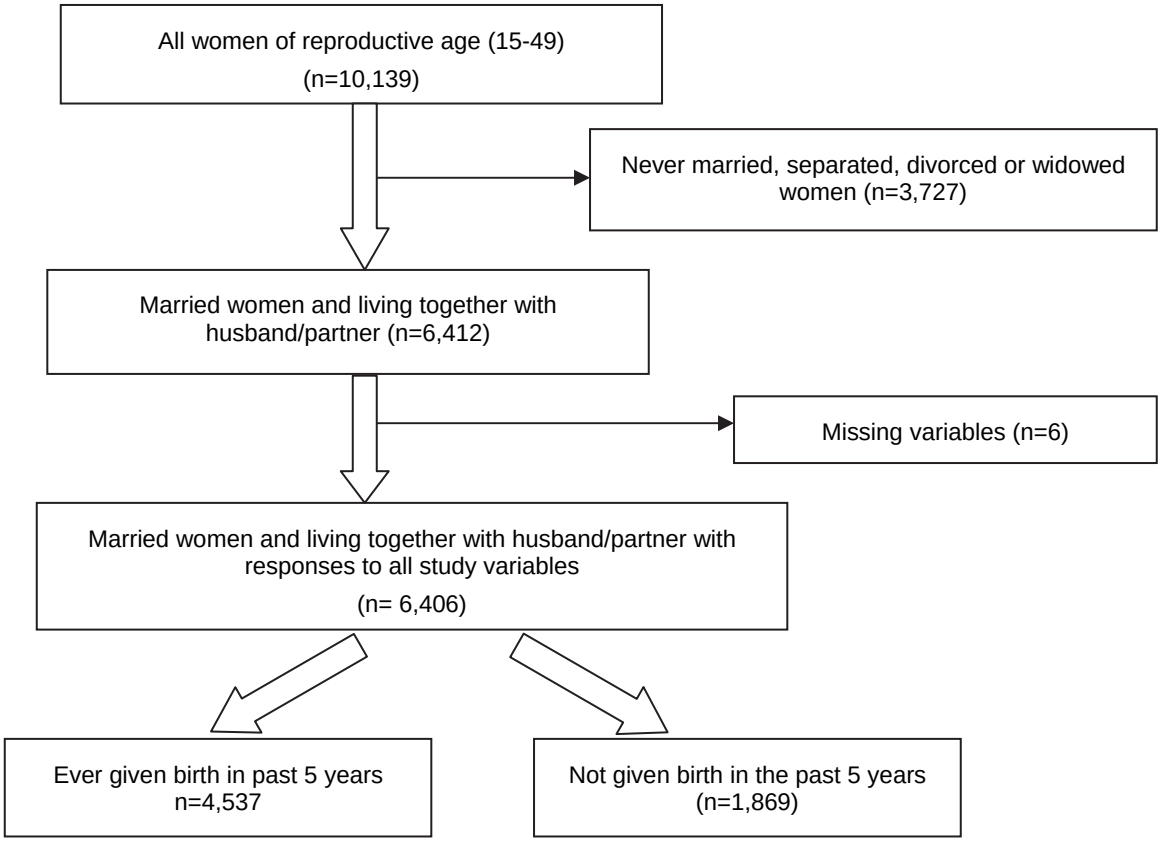
The 2010 Tanzania Demographic Health Survey (TDHS) was the source of data for this study (NBS and ICF Macro, 2011). The survey was the fifth in a series of DHS surveys conducted in Tanzania since 1991-92. In addition, three AIDS Indicator Surveys (AIS) have also been conducted.

Sample Design

The sample design included women age 15-49 because "pregnant women who are HIV-positive are at risk of transmitting the virus to their infants during pregnancy, delivery, or while breastfeeding (Staveteig et al., 2013). Figure 1 summarizes the samples and subsamples of this study. The total sample comprised 10,139 women, while only married women living together with their husbands (n=6,412) were included in the present study because of the study's focus on negotiation for HIV testing. Subsamples included women who had given birth in the five years preceding the survey (n=4,537) and women who had not given birth in this period (n=1,869).

Kabeer (1999) defines empowerment as "a process by which those who have been denied ability/power to make strategic life choices acquire the ability to do so. For women, strategic life choices may include capacity to choose a marriage partner, a livelihood, whether or not to have children". This definition views women's empowerment as both a process and an end result. The author further argues that, for this power to come about, three interrelated dimensions are needed. They include access to and control of resources; agency (the ability to use these resources to bring about new opportunities); and achievements (the attainment of new social outcomes).

Figure 2. Flow chart of samples and subsamples



To measure women's empowerment, three variables have been developed: women's participation in household decision-making, women's attitudes toward wife beating and women's attitudes toward a wife's right to refuse sexual intercourse with her husband or partner. The first variable (either 0 or 1) corresponds with whether a woman is involved or not involved in household decision-making, an area that affects women's lives and environment. A high score on this variable indicates a high level of empowerment (NBS and ICF Macro, 2011).

The second variable (either 0 or 1) corresponds with whether the respondent accepts the reasons that a husband is justified in beating his wife, or does not accept these reasons. A low score on variable two is interpreted as reflecting greater sense of self worth and higher status of women (NBS and ICF Macro, 2011). The third variable (either 0 or 1) corresponds with whether the respondent feels that a woman is justified in refusing sexual intercourse with her husband or partner if she knows he has sexually transmitted infection (STI). The third variable reflects

perceptions of sexual roles, women's right over their bodies and related women's sense of self and empowerment (NBS and ICF Macro, 2011). Ever given birth in the past five years was considered in order to differentiate women who tested for HIV on a voluntary basis (women who had not given birth) from women with a recent birth, as in Tanzania women during pregnancy are obliged to test for HIV as part of ANC.

The distribution of these variables was linked to women's socioeconomic characteristics and HIV testing. The rationale of employing these variables is based on the assumption that women who make decisions at the household level are more likely to have unrestricted beliefs about gender and are likely to disapprove the practice of wife beating and to support a woman's right to refuse sex with her husband if she believes that he has an STI (NBS and ICF Macro, 2011).

Analytical Framework

Descriptive statistics were used to examine levels of HIV testing, women's empowerment, gave birth in last five years and socioeconomic variables. Bivariate analysis was used to identify the factors associated with the outcome variable, HIV testing.

Logistic regression analysis was used to build multivariate model for identifying the factors that were independently associated with HIV testing outcome. Six models were involved in model 1 the relationship between women's involvement in decision-making and HIV testing was studied. In model 2, the influence of women's attitudes toward wife beating on HIV testing was assessed, and model 3 was employed to assess the relationship between attitudes toward a woman refusing sex when a husband has STIs and HIV testing.

Moreover, a combination of three models was established to determine the effects on HIV testing of women's decision-making, attitudes toward wife beating, and attitudes toward refusing sex if the husbands have STIs. Each of the first four models controlled for having had a birth in the past five years and a number of background variables, including level of education, age, wealth, employment and place of residence. Having given birth was added to the model in order to investigate the influence of women's empowerment on HIV testing for women eligible to attend ANC and thus have exposure to provider-initiated (opt-out) HIV Test, and for hose who

are not obliged to attend ANC. Each model is a logistic regression of the form $HIV \text{ testing } = \beta x_{ij} + \varepsilon_{ij}$ with a vector of covariates, and odds ratios reported.

This study addressed three categories of variables: women's empowerment, given birth in the last five years and socioeconomic characteristics. The women's empowerment category contained three indicators: household decision-making, attitudes toward wife beating and attitudes toward the right to refuse sex if husband has STIs. Given birth in the last five years was considered to be important, as pregnant women in Tanzania are obliged to attend ANC, where they get the opportunity for provider-initiated testing for HIV. Comparing this group with women who have not recently been pregnant disaggregates women whose HIV test was obligatory from women who tested voluntarily for HIV.

RESULTS

Socioeconomic Characteristics

Table 1 shows that most women studied were between the ages of 20 and 39. Just 6% were age 15-19 and 20% were age 40 or older. The majority (69%) had a primary education, while 24% had no education and 8% had secondary and above education. About two-thirds (65%) were involved in agriculture and 24% in non-agricultural work, while 11% were not working. By level of household wealth, 40% of women were in the rich group, 39% poor, and 22% in the middle group. Three-fourths of women lived in rural areas.

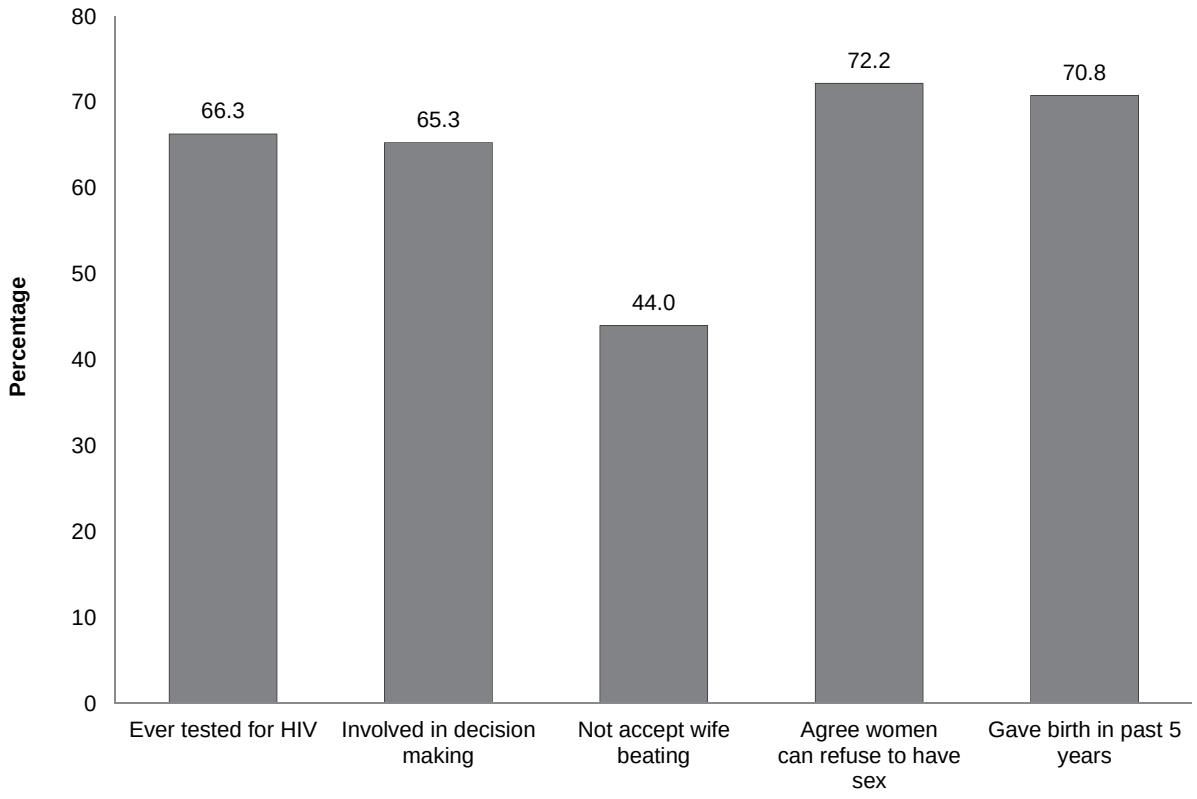
Table 1. Women's socioeconomic characteristics (N=6,406)

Characteristics	Frequency (weighted)	Percentage
Age		
15-19	399	6.2
20-24	1,210	18.9
25-29	1,338	20.9
30-34	1,134	17.7
35-39	1,035	16.2
40-44	740	11.5
45-49	549	8.6
Education		
No education	1,524	23.8
Primary	4,389	68.5
Secondary	492	7.7
Occupation		
Not working	730	11.4
Non agriculture	1,524	23.8
Agriculture	4,152	64.8
Wealth		
Poor	2,509	39.2
Middle	1,333	20.8
Rich	2,565	40
Residence		
Urban	1,582	24.7
Rural	4,824	75.3
Total	**6,406**	**100.0**

HIV Testing and Women's Empowerment

Figure 2 summarizes findings on the percentage of women tested for HIV, the percentage in the three categories of empowerment indicators and the percentage with a birth in the five years preceding the 2010 TDHS. Two-thirds of women had ever tested for HIV. For the three indicators of women's empowerment, 65% of women were involved in household decision-making, 44% of women did not agree with any of the reasons justifying wife beating, and 72% of women agreed with the attitude that a wife can refuse to have sex if her husband has STIs. A large majority of women (71%) had given birth in the past five years.

Figure 2. HIV testing, women's empowerment and birth in past five Years (N=6,406)



Bivariate Analysis on Women's Empowerment and HIV Testing

As Table 2 indicates, 69% of women who were involved in decision-making were tested for HIV, compared with 62% who were not involved in decision-making. Similarly, 69% who do not accept the reasons given to justify wife beating and 64% who accept justifications for wife beating reported that were tested for HIV, respectively.

Table 2. Bivariate results on women's empowerment and HIV testing (N=4,246)

Empowerment indicators	Frequency (weighted)	%	X^2
Decision-making			$X^2=28.8^{***}$
Not involved in decision-making	1,376	62.0	
Involved in decision-making	2,870	69.0	
Attitudes toward wife beating			**$X^2=6.7^{*}$**
Acceptable	2,290	64.0	
Not acceptable	1,956	69.0	
Attitudes toward refusal to have sex			$X^2=49.5^{***}$
Not agree	1,059	59.5	
Agree	3,187	68.9	
Gave birth in past 5 years			$X^2=436^{***}$
Not gave birth	877	46.9	
Gave birth	3,369	74.3	
Total	**4,246**	**66.3**	

Table 2 also shows that 69% of women who agree that a woman can refuse to have sex with her husband or partner when he has STIs reported that they had ever tested for HIV, compared with 60% of women who do not agree that a woman can refuse to have sex. As mentioned, the study examined given birth in the last five years to assess HIV testing among women who have had the opportunity for provider-initiated HIV tests through ANC, and among women who make their own decision to test for HIV outside of ANC. As Table 2 shows, 47% of women who did not give birth in the last five years reported that they had ever tested for HIV, compared with 74% of women who gave birth in the last five years (and thus were likely to have attended ANC). All empowerment indicators and ever given birth in last past five years were found to be significantly associated with HIV testing.

Women's Socioeconomic Characteristics and HIV Testing

Women's socioeconomic characteristics also are associated with HIV testing. Table 3 shows that the uptake of HIV testing is much higher among women age 20-39 than among other age groups. Women with secondary education and above were more likely than women with lower levels of education to have been tested for HIV. Women who were not working and women who worked in non-agriculture were more likely to have been tested for HIV than women working in agriculture. Levels of HIV testing were higher among women from rich households and those living in urban areas. All characteristics were significant.

Table 3. Bivariate analysis on socioeconomic characteristics and HIV testing (N=4,246)

Socioeconomic indicators	Frequency (weighted)	%	X^2
Age			**X^2=301.7*****
15-19	216	54.2	
20-24	914	75.6	
25-29	974	72.8	
30-34	831	73.3	
35-39	655	63.3	
40-44	430	58.1	
45-49	225	41.0	
Education			**X^2=187.8*****
No Education	827	54.2	
Primary	2,997	68.3	
Secondary	423	85.8	
Occupation			**X^2=193.6*****
Not working	546	74.8	
Non-Agriculture	1,199	78.7	
Agriculture	2,501	60.2	
Wealth			**X^2=191.1*****
Poor	1,447	57.7	
Middle	851	63.9	
Rich	1,948	76.0	
Residence			**X^2=187.1*****
Urban	1,273	80.5	
Rural	2,973	61.6	
Total	**4,246**	**66.3**	

Multivariate Analysis on Women's Empowerment and HIV Testing

Logistic regression was used to examine the relationship of the three indicators of women's empowerment and of socioeconomic characteristics with HIV testing. Also, as in the bivariate analysis, given birth in the last five years was considered as a proxy indicator attending ANC. For the multivariate analysis six models were constructed. The first three models were analyzed to assess the direction of relationship between decision-making and HIV testing, when considered independently. Model 4 was analyzed to assess the relationship between decision-making and HIV testing, when the three models were combined. Models 5 and 6 were considered to compare the direction of relationship between women who gave birth and those who did not gave birth in last five years and HIV testing.

Table 4 indicates the level of significance for each individual indicator's association with HIV testing, and is divided into four models. In model I attitudes toward wife beating and refusal to have sex if husband has an STI were excluded; in model 2 decision-making and refusal to have sex if husband has an STI were excluded; in model 3 decision-making and attitude toward wife beating were excluded. Thus the first three modules addressed empowerment variables independently while controlling for other variables (level of education, age, wealth, employment and residence). In the fourth model shown in Table 5 all indicators were run together to examine their combined association with HIV testing.

As Table 4 shows in the separate models, each empowerment variable is associated with increased odds of having tested for HIV. In model 1, women who were involved in decision-making were 1.3 times more likely to be tested for HIV than those who were not involved in decision-making. In model 2, women who do not accept the reasons for wife beating were 1.1 times more likely to be tested for HIV than those who did not accept the reasons for wife beating. In model 3, women who agree with attitudes that women can refuse sex were 1.5 times more likely to be tested for HIV than those who do not agree that women can refuse to have sex.

In model 4, when considering the effects of all models, women who were involved in decision-making were 1.3 times more likely to be tested for HIV than women who were not involved in decision-making. Women who do not accept the reasons for wife beating were no more likely to test for HIV than women who do accept one. Women believing that a woman can

refuse sex if the husband or partner has STIs were 1.5 times more likely to test for HIV compared with women who said a woman does not have the right to refuse sex.

Gave Birth in the Past Five Years

Giving birth in the five years preceding the survey turns out to be a prominent variable and is robust (consistent) across models. For example, in all models 1-3, women who had given birth in last five years were nearly four times more likely to have tested for HIV compared with women who had not given birth. In the combined model, the odds ratio remained at 3.8, indicating that women who have had a birth were more likely to test for HIV after controlling for all empowerment variables and background characteristics. The likelihood of having tested for HIV increases incrementally with education and with wealth, net of other factors. Compared with the youngest age group, age 15-19, women age 20-34 were significantly more likely to have tested for HIV, while women age 35 and older were neither more nor less likely to test than women age 15-19. Compared with urban women, rural women were nearly 40% less likely to test for HIV.

These results are consistent, with small fluctuations to the odds ratio, across models for the various empowerment variables, and largely in the same direction as suggested by the bivariate results in Table 3.

Table 4. Multivariate analysis on women's empowerment and HIV testing by socioeconomic characteristics

	Model 1 (n=6,406)		Model 2 (n=6,406)		Model 3 (n=6,406)		Model 4 (=6,406)	
	OR Sig	CI 95%	OR Sig	CI 95%	OR Sig	CI 95%	OR Sig	CI 95%
Women's empowerment								
Decision-making	1.3***	1.1 – 1.5	-	-	-	-	1.3**	1.1 – 1.4
Attitude toward wife beating	-	-	1.1	0.9 – 1.3	-	-	1.0	0.8 – 1.3
Attitudes toward refusing sex	-	-	-	-	1.5***	1.2 – 1.7	1.4***	1.2 – 1.7
Give birth in last five years (ANC)	3.7***	3.2 – 4.4	3.7***	3.1 – 4.4	3.8***	3.2 – 4.4	3.8***	3.2 – 4.5
Education								
No education (RC)	1.0							
Primary	1.5***	1.3 – 1.8	1.6***	1.3 – 1.9	1.5***	1.3 – 1.8	1.5***	1.3 – 1.8
Secondary +	3.1***	2.1 – 4.5	3.2***	2.2 – 4.6	3.0***	2.1– 4.4	2.9***	2.0 – 4.2
Age								
15 – 19 (RC)	1.0							
20 – 24	1.7**	1.2 – 2.5	1.8**	1.2 – 2.6	1.8**	1.2 – 2.6	1.7**	1.2 – 2.5
25 – 29	1.4	1.0 – 2.0	1.5*	1.0 – 2.1	1.5*	1.0 – 2.1	1.4	1.0 – 2.0
30 – 34	1.5*	1.0 – 2.2	1.6*	1.1 – 2.4	1.6*	1.1 – 2.3	1.5*	1.0 – 2.2
35 – 39	1.2	0.8 – 1.8	1.3	0.8 – 1.9	1.2	0.8 – 1.9	1.2	0.8 – 1.8
40 – 44	1.2	0.8 – 1.7	1.2	0.8 – 1.8	1.2	0.8 – 1.8	1.2	0.8 – 1.7
45 – 49	0.9	0.6 – 1.3	0.9	0.6 – 143	0.9	0.6 – 1.4	0.9	0.6 – 1.3
Wealth								
Poor (RC)	1.0							
Middle	1.2*	1.0 – 1.5	1.2*	1.0 – 1.5	1.2*	1.0 – 1.5	1.2*	1.0 – 1.5
Rich	1.5***	1.2 – 1.8	1.5***	1.2 – 1.8	1.5***	1.2 – 1.8	1.5***	1.2 – 1.8
Employment								
Not employed (RC)	1.0							
Non-agriculture	1.1	0.8 – 1.5	1.1	0.8 – 1.6	1.1	0.7 – 1.5	1.0	0.7 – 1.5
Agriculture	0.7*	0.5 – 0.9	0.6*	0.5 – 1.0	0.7*	0.5 – 0.9	0.7	0.5 – 0.9
Residence								
Urban (RC)	1.0							
Rural	0.6***	0.5 – 0.8	0.6***	0.5-0.8	0.6***	0.5 – 0.8	0.6**	0.5 – 0.8
Const	0.6*	0.3 – 0.9	0.7*	0.4 – 1.0	0.5**	0.3 – 0.8	0.4**	0.3 – 0.8

Key: * = p<0.05, ** = p<0.01, and *** = p<0.001

Given Birth in the Last Five Years and HIV Testing

This section is intended to assess whether women's empowerment influences HIV testing when women attend ANC, or otherwise. Results for the multivariate regression among women who had a birth in the last five years (model 5) are similar to those for the full sample. Women who made household decisions and women who believed that a woman could refuse sex with her husband had 30% and 50% higher odds, respectively, for having tested for HIV. Women with accepting attitudes toward wife beating had lower odds of testing.

Among women who had not had a birth in the past five years, however, only attitudes toward refusing sex were significantly associated with testing for HIV. While these women have higher odds compared with women not asserting women's ability to refuse sex, the odds ratio of testing for HIV among these women was not as high as among women having had a birth in the last five years (OR 1.3 vs. 1.5).

In contrast to the case for women who gave birth in the last five years, socioeconomic variables are more prominent in determining HIV testing for women who did not have a birth in the past five years (model 6). The role of education in determining HIV testing is similar for both samples of women, but the magnitude of education's effect is larger for women who had not given birth. Among women who had a recent birth, as shown in Model 5, women with primary or secondary education have higher odds of having tested for HIV compared with women with no education. Among women without a birth in the last five years, as shown in model 6, these odds are 1.6 (primary education) and 4.1 (secondary education).

The effects of age and wealth on HIV testing are likewise greater for women who have not had a birth in the past five years. Women age 20-24 who had given birth had 50% greater odds of HIV testing compared with the reference category, while among women who had not given birth, women age 20-24 were at more than 200% increased odds. No other age categories are significant.

Table 6. Multivariate analysis on women's empowerment and HIV testing, women who gave birth and who did not give birth in last five years

	Model 5: Gave birth last five years (n=4,537)		Model 6: No birth in last five years (n=1,869)	
	OR Sig	**CI 95%**	**OR Sig**	**CI 95%**
Women's empowerment				
Decision-making	1.3**	1.1– 1.6	1.1	0.8 – 1.5
Attitude toward wife beating	1.1	0.9 – 1.5	1.4	0.6 – 1.3
Attitudes toward refusing sex	1.5***	1.2 – 1.9	1.3*	1.0 – 1.7
Education				
No education (RC)	1.000			
Primary	1.4***	1.2 – 1.8	1.6**	1.2 – 2..3
Secondary +	2.1**	1.2 – 3.7	4.1***	2.5 – 7.0
Age				
15 – 19 (RC)	1.000			
20 – 24	1.5	0.9 – 2.4	2.4**	1.3 – 4.5
25 – 29	1.3	0.8 – 2.0	1.7	1.0 – 3.1
30 – 34	1.3	0.8 – 2.1	2.1**	1.3 – 3.4
35 – 39	1.1	0.7 – 2.0	1.2	0.7 – 2.1
40 – 44	1.0	0.5 – 1.6	1.5	0.9 – 2.5
45 – 49	0.7	0.4 – 1.4	1.1	0.7 – 1.7
Wealth				
Poor (RC)	1.000			
Middle	1.1	0.9– 1.4	1.5*	1.1-2.1
Rich	1.4*	1.0 – 1.8	1.8**	1.3 – 2.5
Employment				
Not employed (RC)	1.000			
Non-agriculture	1.1	0.7 – 1.8	1.0	0.7 – 1.6
Agriculture	0.6*	0.4 – 0.9	0.8	0.5 – 1.2
Residence				
Urban (RC)	1.000			
Rural	0.5 **	0.3 – 0.7	0.8	0.5 –1.1
Const	2.3*	1.1 –4.6	0.3**	0.1 – 0.7

Key: * = p<0.05, ** = p<0.01, and *** = p<0.001

Both middle and rich wealth categories have 50-80% increased relative odds among women who have not given birth in the last five years, whereas only the richest category is significantly more likely to have tested for HIV among women who have given birth in the last five years. In contrast, employment and place of residence have no effect on odds of HIV testing

among women without a recent birth, although women engaged in agriculture and women in rural areas have lower odds for HIV testing compared with women who had given birth in the last five years.

DISCUSSION

The study results confirm the hypothesis that empowerment influences HIV testing, as does potential exposure to ANC. Women who are empowered, as measured by decision-making, not accepting wife beating and being able to refuse sex, are more likely to be tested for HIV than less empowered women. Moreover, decision-making and attitudes toward refusing sex are the strongest empowerment variables in our models. In contrast, women's attitude toward wife-beating is weak in comparison, as this measure loses significance when controlling for the other empowerment measures.

The findings of multivariate analysis on women's empowerment and HIV testing show that women's education, place of residence and wealth index were associated with HIV testing. Primary and secondary and above education levels were significantly associated with HIV testing in all four models. These results are consistent with findings from a study conducted in Ethiopia by Abebaw and colleagues (2009). In contrast, a study in Ghana by Holmes (2008) found that women with secondary education were less likely to accept testing for HIV than those with no formal or primary education. Concerning the wealth index, rich was significantly associated with HIV testing in three models, all except model 2. By place of residence, rural was associated with HIV testing in all four models. The results are consistent with a study conducted by Karamagi and colleagues (2006) in rural eastern Uganda, which found that "HIV testing was significantly lower in multipara women as they had lower perceived risk of HIV".

Our hypothesis was that empowerment would be more influential in HIV testing for women who did not have a recent birth and, therefore, may have not had opportunity for provider-initiated, opt-out testing through ANC. It was our belief that empowerment would not determine testing among women who gave birth in the last five years because testing in this context may be more routine and require less motivation, while testing outside of ANC may require more initiative and will. This was not the case, however.

CONCLUSION

This study provides nationally representative statistics related to women's empowerment and HIV testing among married women age 15-49 in Tanzania. The role of women's empowerment in influencing HIV testing identified in this study will be a guide for future interventions and policies aiming at empowering women and encouraging HIV testing in the country. HIV testing is associated with women's participation in decision-making, not accepting wife beating, giving birth in past five years (receiving ANC) and refusal to have sex with a husband if he has STIs. Among women's socioeconomic characteristics, education, age 20-34 and wealth index were associated with HIV testing. In contrast, rural residence, age 15-19 and age 44-49 and employment in agriculture had no association with HIV testing.

HIV testing is still a challenge in Tanzania, as 34% of married women age 15-49 in the TDHS had never tested for HIV. Therefore, more efforts should aim at raising awareness on HIV testing among women, especially women involved in agriculture and women residing in the rural areas. Moreover, the government through the Ministry of Health (MoHC) and the Ministry of Community Development Gender and Children (MCDGC) should find the mechanism of empowering women to enable them to go for HIV testing on a voluntary basis. Also, women should be educated on the importance of HIV testing.

Further analysis should be done on women's economic empowerment, such as resource ownership, income and the way they are likely to influence HIV testing and receipt of HIV test results. Research should be done on the attitude toward refusal to have sex if husbands are infected with STIs, as this predictor variable could be one of the factors for the persistence of HIV/AIDS in Tanzania and many other parts of Africa.

More data analysis should be done on availability of and access to ANC services in rural areas. Further, more research on the extent to which women's empowerment is influencing HIV testing across the regions of Tanzania is also needed to enable the availability of information on the variation among regions.

REFERENCES

Abebawa, D., D. Amare, and A. Mulumebet. 2009. "Determinants of Acceptance of Voluntary HIV Testing among Antenatal Clinic Attendees at Dil Chora Hospital, Dire Dawa, East Ethiopia." *Ethiop.J.Health* 23(2).

Behal, A. 2011. "Education, Women Empowerment and Related Issues." *International Educational E-Journal* I(I).

Germain, A. 2009. "Integrating Gender into HIV Programm in Health Sector: Tool to Improve Responsiveness to Women's Needs." *Bulletin of the World Health Organization* 87: 883.

Greig, F.E., and C. Koopman. 2003. "Multilevel Analysis of Women's Empowerment and HIV Prevention: Quantitative Survey Results from a Preliminary Study in Botswana." *Journal on AIDS and Behavior* 7(2): 195-208.

Hasbullah, M.S. 2013. *"Culture of Silence" Hinders Reporting of Violence.* Indonesia: The social resilience statistics chief at the Central Statistics Agency (BPS).

Holmes, C.N., P.O. Preko, R. Bolds, J. Baidoo, and P.E. Jolly. 2008. "Acceptance of Voluntary Counselling, Testing and Treatment for HIV among Pregnant Women in Kumasi, Ghana." *Ghana Med J.* 42(1): 8–15.

Hullet, C.R. 2006. *Using Functional Theory to Promote HIV Testing: The Impact of Value Expressive Messages, Uncertainty and Fear.* Tucson, Arizona, USA: University of Arizona.

Kabeer, N. 1999. "Resources, Agency, Achievements: Reflections on the Measurement of Women's Empowerment." *Development and Change* 30(3): 435-464.

Kamengaa, C.M., and M.S. Gloria. 2001. "Theory and Practice of HIV Counseling and Testing (Action for West Africa Region)-HIV/AIDS Project." Ghana: Family Health International.

Karamagi, C.A.S., J.K. Tumwine, T. Tyllerkar, and K. Heggenhougen 2006. "Antenatal HIV Testing in Rural Eastern Uganda in 2003: Incomplete Rolling of the Prevention of Mother to Child Transmission of HIV Programme." *BioMed Center International Health and Human Rights* 6:6.

Kominami, M., K. Kawata, M. Ali, H. Meena, and H. Ushijima. 2007. *Factors Determining Prenatal HIV Testing for Pprevention of Mother to Child Transmission in Dar Es Salaam, Tanzania.* Tokyo, Japan: Department of Developmental Medical Sciences, Graduate School of Medicine, University of Tokyo.

Maman, S., J. Mbwambo, M. Sweat, N. Hogan, and G. Kilonzo. 1999. "Women's Barriers to HIV Testing and Disclosure: Challenges for Voluntary Counseling and Testing." Presented at XI International Conference on AIDS and STDs in Africa, Lusaka, Zambia. August 12-16.

Maman, S., J.K. Mbwambo, N.M. Hogan, P.G. Kilonzo, J.C. Campbell, H. Weiss, and M.D. Sweat. 2002. "HIV–Positive Women Report More Lifetime Partner Violence: Findings from Voluntary Counseling and Testing Clinics in Dar-es-Salaam, Tanzania." *American Journal of Public Health* 92(8).

Miller, M. 2011. "Determinants of Women's Empowerment and HIV Status in Sub-Saharan Africa." Thesis for Colorado College, Colorado Springs, Colorado, USA.

National Bureau of Statistics (NBS) [Tanzania], and ICF Macro. 2011. *Tanzania Demographic and Health Survey 2010.* Dar es Salaam, Tanzania: NBS and ICF Macro.

Staveteig, S., S. Wang, S. Head, S.E.K. Bradley, and E. Nyibro. 2013. *Demographic Patterns of HIV Testing Uptake in Sub-Saharan Africa.* DHS Comparative Reports Number 30. Calverton, Maryland, USA: ICF International.

Tanzania Commission for AIDS (TACAIDS), Zanzibar AIDS Commission (ZAC), National Bureau of Statistics (NBS), Office of the Chief Government Statistian (OCGS), and ICF International. 2013. *Tanzania AIDS and Malaria Indicator Survey 2011-2012.* Dar es Salaam, Tanzania: TACAIDS, ZAC, NBS, OCGS and ICF International.

United Republic of Tanzania. 2001. *National Policy on HIV/AIDS.* Dar es Salaam, Tanzania.

Yang, Y., K.L. Zhang, K.Y. Chan, and D.D. Reldpath. 2005. "Institutional and Structural Forms of HIV-Related Discrimination in Health Care: A Study Set in Beijing." *AIDS Care* 17(Suppl. 2): S129–S140.