

PAPER I

Voluntary testing for HIV among a sample of Tanzanian teachers: A search for socio-demographic and socio-psychological correlates

Running head: **Testing for HIV among Tanzanian teachers**

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ABSTRACT

Knowledge of HIV status is paramount in prevention, treatment and care. This study determined the prevalence and factors associated with testing for HIV. Data was collected through a cross-section questionnaire survey among 918 primary school teachers in Mwanza region, Tanzania (mean age 38.4 years). About 20% (181) of the participants had been voluntarily tested for HIV. Teachers who were aged between 21 to 30 years, had easy access to HIV testing services, had a partner with a college or university education, and who perceived their health status positively were significantly more likely to have been tested for HIV. Teachers who had been tested for HIV were significantly less likely to perceive that it is not necessary to be tested for HIV in absence of a vaccine or cure for HIV/AIDS, to support the opinion that only people who suspect that they are HIV infected should be tested for HIV, and to believe that HIV infected people are likely to die quicker if they are tested for HIV and are informed about their positive results. The results of this study underscore the need to promote positive views of voluntary testing for HIV among Tanzanian teachers.

Key words: Testing for HIV, Teachers, Tanzania, Socio-demographic, Socio-psychological

INTRODUCTION

Since 1985, when a test for HIV first became available (Holtzman et al., 1998; Phillips & Coates, 1995), issues pertaining to HIV testing behaviour have been of considerable interest to research. Some of the issues raised in previous studies are the benefits of testing for HIV. One of the benefits is the reduction of risky sexual behaviours preventing HIV infection (MacNeil et al., 1999; Painter, 2001; Sangiwa et al., 2000; Voluntary HIV-1 Counselling and Testing Efficacy Study Group, 2000) and allowing early access to clinical care (La Croix & Russo, 1996; Day et al., 2003; Gayle & Lange, 2004). Likewise, factors such as lack of treatment and medical care among HIV infected people (Tanzania National AIDS Control Program, 2001; McNeil et al., 1999), HIV-related stigma and discrimination (Lie & Biswalo, 1996; Sangiwa et al., 2000; UNAIDS, 2000; UNAIDS and WHO, 2000; Lie & Lothe, 2002; Day et al., 2003; de Paoli et al., 2004; Wolf et al., 2005) and little or no perceived risk of HIV infection (Kilewo et al., 1998; Ministry of Health, 2002) have been identified as main barriers to HIV testing.

While HIV testing behaviour and associated characteristics have been studied in the general population, sector specific information is largely lacking. As articulated by the International Labour Organization (ILO, 2004), studies that contribute specifically to the multilateral effort to combat HIV/AIDS at workplaces are needed. Thus, the focus of this study is to address factors associated with HIV testing among Tanzanian teachers. We chose to target primary school teachers mainly because of the profound effects of HIV/AIDS in the basic education sector in Tanzania and other high prevalent countries of Sub-Saharan Africa (Bennell, et al., 2002; ILO, 2004; Kelly, 2000; UNAIDS/ILO, 2000; UNICEF, 2000; World Bank, 2000).

The objectives of this study were threefold. First, to determine the prevalence and background information related to HIV testing among primary school teachers in Tanzania; second, to investigate the association between voluntary testing for HIV and teachers' socio-demographic characteristics; and third, to examine the relationship between teachers' socio-psychological perceptions toward HIV testing and actual testing for HIV.

To accomplish these objectives, the study focused on testing for HIV within a theoretical framework of health care seeking and utilization behaviour as developed by Andersen & Newman (1973). This framework has successfully guided similar research that focused on HIV screening (for review see, Holtzman et al, 1998). The framework accounts for both individual and societal level determinants. On the one hand, the societal level determinants are related to health technology (e.g. availability of HIV-antibody test), as well as to social norms and health values (e.g. perceptions toward HIV-related stigma, confidentiality of HIV test results among service providers). Likewise, the nature of health care seeking and utilization may be characterized differently depending on: the type of health service (e.g. hospital services, free-standing VCT site, home-based services), the purpose (e.g. preventive health services such as screening for HIV in asymptomatic population, diagnostic HIV testing), and the unit of analysis (e.g. visiting health services as a couple or as an individual; a single visit or a series of visits). On the other hand, individual determinants that may affect health care seeking and utilization include predisposing factors (e.g. age, sex, marital status, education level), enabling factors (e.g. affordability of costs related to VCT services, location of residence, and accessibility of services), and illness level (e.g. self-rated health status or perceived susceptibility). In this study, we expected both individual and societal level determinants to influence the likelihood of being tested for HIV.

METHODS

Design and sample

Primary school teachers in Mwanza, Tanzania, participated in a cross-section questionnaire survey between September and November 2003. The study covered fifty-four primary schools in four districts namely Mwanza town, Magu, Sengerema and Geita. Participant districts were selected based on the availability of HIV testing services while schools were selected according to location (rural, semi-urban and urban). All teachers in the sample schools were eligible to participate; 94% participated (918 of 977). The non-participants were mainly teachers who were absent when the questionnaire was administered.

Research procedures

The research instrument was originally constructed in English and thereafter translated into Kiswahili (the widely spoken language in Tanzania). The questionnaire was pilot tested before the main study. Ethical clearance was sought and obtained from the Regional Committee for Medical Research Ethics in Norway while the research approval was obtained from the University of Dar Es Salaam, Tanzania. In addition, permission to carry out the study was granted by Mwanza Regional Education Authority and the education authorities of the respective districts.

Variables and measures

HIV testing information: Participants were asked the question, “Have you ever been voluntarily tested for HIV to learn about your HIV status?” (yes or no). Those who responded yes were then asked to provide the background information related to their last test for HIV as shown in Table 1. Desire of testing for HIV was measured by three items, i.e., how were respondents likely to: a) need, b) request, and c) accept HIV counselling and testing services the next time they would seek for health care services. Responses were given on a 4-point scale ranging from *'not likely at all'* to *'very much likely'* and an index for intention was constructed (Cronbach alpha = 0.75).

Socio-demographic characteristics: Except for age, which was measured as a continuous variable, the other demographic variables, including school location, sex, marital status and the educational level of a partner, were measured as categorical variables.

Enabling and illness factors: Participants were asked to rate on a 4-point scale the extent to which they thought it was either easy or difficult for them to: (1) pay the user fee for VCT services, and (2) access VCT services (*very easy* to *very difficult*). Participants were further asked to rate their health status on a 5-point scale ranging from *very poor* to *very good*. We also measured perceived HIV susceptibility by asking respondents to rate the extent to which they either agreed or disagreed with a statement indicating that they or their partners were probably already HIV infected (2 items) as well as their possibility of becoming HIV infected in the future (2 items). Responses with respect to perceived susceptibility were

provided on a 4-point scale ranging from '*strongly agree*' to '*strongly disagree*' and an index for perceived susceptibility was constructed (Cronbach alpha = 0.86).

Social and psychological factors: using a 4-point scale, participants reported how much they either agreed or disagreed with six belief statements related to HIV testing (*Refer to Table 3 for items*). Responses ranged from *strongly agree* to *strongly disagree*.

Data analysis

The data were analysed using the Statistical Package for the Social Sciences (SPSS) version 13. The background information on testing for HIV was analysed and presented as frequencies and percentages (Table 1). Responses were dichotomized before performing the binary logistic regression analysis which was used to assess the association between testing for HIV and socio-demographic characteristics, as well as socio-psychological factors related to testing for HIV. Odds ratio (OR) and 95% confidence intervals (CI) are reported (Table 2 and 3).

RESULTS

Sample characteristics

The mean age of the study group (n=918) was 38.4 (range 21–59) years. The sample included teachers from urban areas (34.7%), semi-urban areas (31.9%) and rural areas (33.3%). Most of respondents were female teachers (65.7%). Of the respondents, 76.8% were married, 12.7% were single and 10.1% were divorced, separated or widowed; 0.3% did not indicate their marital status. Concerning the education of partners, 15.8% had primary education or below, 26.1% had secondary education and 39.9% had college or university education; 17.9% reported that they had no spouse or partner or did not know their educational level and 0.3% was missing information.

Prevalence and background information on HIV testing

Out of the 918 teachers surveyed, about 20% (181) reported that they had been voluntarily tested for HIV. The majority of respondents (Table 1) had been tested for HIV more than three months prior to the study at hospitals or clinics. A substantial proportion of respondents received counselling before an HIV test and prior to being informed about their HIV test results. The average cost was 1,612 Tanzanian shillings (about 1.5 US\$) among those who paid for the services.

(Insert Table 1 here)

Association between testing for HIV and socio-demographic characteristics

An unadjusted logistic regression analysis (Table 2) revealed that teachers who were aged between 21-30 years, living in urban areas, with easy access to HIV testing services, with a partner who had college or university education, and perceived their health status positively were significantly associated with an increased rate of having been tested for HIV. The results of unadjusted and adjusted logistic regression were similar to a large extent. There were, however, a few exceptions including living in urban areas, having a partner with secondary education and being aged between 51-60 years. For these, the association was not statistically significant when the analysis was adjusted for location, age, partners' education, access of HIV testing, and self-rated health status.

(Insert Table 2 here)

Association between testing for HIV and related socio-psychological perceptions

Results of the bivariate logistic regression analysis show that the rate of having been tested for HIV was significantly associated with social-psychological perceptions including: HIV-related stigma, absence of vaccine and cure for HIV/AIDS, risk of HIV infection, uncertainty about confidentiality of HIV test results, and fear of dying quicker if tested for HIV and being informed about positive results. However, in the multivariate analysis (controlling for

the effect of socio-demographic characteristics), only three factors were significantly associated with testing for HIV as shown in Table 3.

(Insert Table 3 here)

DISCUSSION

Our findings revealed a low rate of testing for HIV among a sample of primary school teachers in Mwanza region, Tanzania. We had anticipated a higher rate of testing for HIV because of previous HIV prevention programs that targeted the region (Grosskurth et al., 2000; Mgalla, et al., 1998). Nevertheless, the rate of testing for HIV in this sample is slightly higher than that reported in the general population surveys by the Tanzania Demographic and Health Survey (1996) and the African Medical and Research Education Foundation (2001). Whereas the two reported 12% and 11% respectively, our results indicate a rate of about 20%.

The statistically significant association between reported easy access to VCT services and testing for HIV was somewhat expected. Ideally, HIV policy considers that VCT services should be accessible to everyone who wants them (United Republic of Tanzania, 2001). However, the offer of VCT services in many places in the country does not cover the actual demand (Lugalla et al., 2004). In response of inadequate supply of VCT services, the Tanzanian government has set the goal of establishing six VCT facilities in each of the districts by the year 2007 (United Republic of Tanzania, 2003).

The difference between rural and urban areas with respect to the rate of testing for HIV is likely to emanate from rural-urban differences in terms of easy access to HIV testing services. To ascertain this, we conducted a further analysis and observed that odds ratios of easy access to HIV testing services were significantly higher among the teachers in urban areas than rural teachers [(OR=2.93; 95% CI: 2.15-3.89), $p<.001$]. Besides, our results corroborate the findings of a study conducted among pregnant women in Northern Tanzania (de Paoli et al., 2004) in that the rate of voluntary testing for HIV was low in rural areas (4.8%) compared to urban areas (9.2%).

The observation that young teachers were more likely to have been tested for HIV coincides with the reported AIDS cases in Tanzania. Most of the cases fall within the age group 20-49 years, with the highest proportion reported in the age group of 25-34 years and 30-39 years for females and males respectively (Ministry of Health, 2001; 2002). The study conducted in Kagera region, Tanzania also revealed an increasing tendency for young people to be tested for HIV especially before marriage (Lugalla et al., 2004). Along with our findings, several population based studies conducted in Tanzania and elsewhere revealed an association between testing for HIV and age; as age increases, the rate of testing for HIV decreases (Flykeness & Siziya, 2004; Gage & Ali, 2005; Mbago, 2004; Renzi et al., 2001).

Concerning partners' level of education, the results have shown that teachers with partners who had a college or university education were more likely to have been tested for HIV compared to those who had partners with secondary or primary education. This finding supports the notion that highly educated individuals are more sensitive to the outcome of testing for HIV than less educated people (Mbago, 2004).

In this study, teachers who had been tested for HIV possibly cleared their worries about being HIV infected and were thus more likely to rate their health status more positively. In contrast, a study on the determinants of readiness for voluntary HIV counselling and testing revealed that poor self-rated health status appears to be a powerful factor towards the readiness for voluntary HIV counselling and testing. For example, people who rated their health status negatively were more likely to accept VCT compared to those who rated their health status positively (Flykeness & Siziya, 2004).

Overall results of the bivariate logistic regression analysis revealed that teachers who had favourable perceptions toward HIV testing were more likely to have been tested for HIV. However, considering the results of the multivariate logistic regression three factors merit a detailed discussion.

First, our findings suggest that people get tested for HIV not mainly for the sake of receiving a vaccine or cure for HIV/AIDS but rather to know about their HIV status. This observation is considerable especially in resource poor countries like Tanzania where the medical care in the health system is very limited. Even the advent of highly active antiretroviral drugs may have not made a big difference because antiretroviral drugs are very expensive. For instance, according to the WHO (2004), the cost of the antiretroviral drugs in year 2003 was US\$ 360 (395,280 Tanzanian shillings) per person per year which was higher than the per capita expenditure on health that was US\$ 12 (13,176 Tanzanian shillings).

Secondly, the finding in relation to risk perception and testing for HIV is not consistent with the available information on the use of VCT services. The surveillance reports in Tanzania (Ministry of Health, 2001, 2002) indicate that people who suspected that they are HIV infected are more likely to use HIV counselling and testing services in Tanzania. Previous studies conducted in the general population have also shown a statistically significant relationship between testing for HIV and perceived susceptibility to HIV infection (Flykeness & Siziya, 2004; Gage & Ali, 2005; Holtzman, 1998). Nonetheless, it is important for HIV testing interventions to take into account messages that aim both at people who are more susceptible and less susceptible to HIV infection.

Third, people who voluntarily test for HIV are likely to have psychological efficacy as AIDS is both physically incapacitating and psychologically debilitating. In practice, people who test for HIV and get informed of their positive results may die quicker due to intense worries especially when they experience strong negative psychological outcomes such as: strong anxiety, severe depression, and resilient guilt feelings about their past behaviour. This is particularly true when there is little or no psychological support in the form of continuous counselling and care among people who are informed about their positive test results.

Methodologically, the present study suffers the limitations inherited from the study design and the data collection technique. First, as with all cross-sectional research, our ability to infer causality was restricted. Secondly, our results are likely to be affected by the self-reported information that may, to some extent, provide biased information. Third, the absence of respondents' sexual histories limited any further exploratory analysis. Despite

these methodological constraints, this study provides empirical information with regard to the use of HIV testing services among Tanzanian teachers.

CONCLUSIONS

This study has several implications in terms of designing VCT interventions. From the public health perspective, expanding access to HIV testing on its own may not be sufficient in enhancing the use of HIV testing. The effort of expanding the coverage of VCT facilities should be matched with promoting the use of the services. Accordingly, the research to identify relevant messages and approaches that are likely to effectively enhance the use of VCT services is a prerequisite. It is strongly suggested that the validity and acceptability of HIV testing messages should be tried before they are relayed to the general public.

ACKNOWLEDGEMENTS

We thank teachers who participated in our study as well as Richard, Alison and Namisi who edited the manuscript. We are also grateful to the two anonymous reviewers for their invaluable comments. The study was funded by the Programme for Development Research and Education of the Norwegian Council for Higher Education (NUFU) through the Counselling, Education and Health Promotion (CEHP) Project 15/2002.

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Table 1: Background information on HIV testing among ever tested group (N = 181)

	<i>n</i>	%
Time last tested for HIV		
Within the past 3 months	33	18.2
More than 3 months ago	148	81.8
Place last tested for HIV		
Hospital or clinic	110	60.7
Free-standing VCT centre	47	26.0
Nongovernmental organization	22	12.2
Private laboratory	2	1.1
Got pre-test counselling		
Yes	123	67.9
No	58	32.1
Got post-test counselling		
Yes	118	65.2
No	63	34.8
Amount paid		
No payment at all	104	57.5
≤TZS 1000 (USD 0.91)*	42	23.7
>TZS 1000 (USD 0.91)*	35	18.8

TZS: Tanzanian shillings; US\$: United States dollar

*Based on exchange rate of 1,098 TZS to 1 US\$

Table 2: Unadjusted and adjusted logistic regression analyses for having tested HIV status (no = 0; yes =1) by socio-demographic factors (n = 918)

Predictors	*n	Ever tested for HIV		Unadjusted OR (95% CI)	+ Adjusted OR (95% CI)
		yes (%)	no (%)		
Location					
Rural	319	15.7	84.3	1.00	1.00
Urban	599	21.9	78.1	1.50 (1.05–2.16)*	1.15 (0.77-1.71)
Sex					
Male	315	17.8	82.2	1.00	1.00
Female	603	20.7	79.3	1.21 (0.85–1.72)	1.06 (0.70–1.61)
Age (in years)					
21–30	221	27.6	72.4	1.00	1.00
31–40	318	19.2	80.8	0.62 (0.42–0.93)*	0.60 (0.38–0.95)*
41–50	286	16.1	83.9	0.50 (0.33–0.77)**	0.46 (0.26–0.78)**
51–60	90	14.4	85.6	0.44 (0.23–0.86)*	0.51 (0.24–1.10)
Marital status					
Married	705	19.1	80.9	1.00	1.00
Unmarried	117	25.6	74.4	1.46 (0.92–2.30)	1.57 (0.86–2.88)
Divorced or widowed	93	16.1	83.9	0.81 (0.45–1.46)	0.60 (0.75–3.40)
Partner's education					
Tertiary or university	366	23.2	76.8	1.00	1.00
Secondary	240	15.4	84.6	0.60 (0.39–0.92)*	0.82 (0.50–1.34)
Primary or below	145	15.2	84.8	0.59 (0.35–0.99)*	0.39 (0.20–0.78)**
Unknown/ no partner	164	22.6	77.4	0.96 (0.62–1.19)	0.84 (0.53–1.33)
Affordability of HIV testing cost					
Easy to meet the cost	415	21.7	78.3	1.00	1.00
Difficult to meet the cost	499	18.2	81.8	0.81 (0.58-1.12)	0.80 (0.57-1.12)
Accessibility of HIV testing					
Easily accessible	768	21.7	78.3	1.00	1.00
Not easily accessible	145	18.2	90.3	0.45 (0.28-0.78)**	0.62 (0.40-0.98)*
Self-rated health status					
Poor/very poor	84	9.5	90.5	1.00	1.00
Fair	492	19.9	80.1	2.36 (1.10-5.06)*	2.22 (1.02-4.84)*
Good/very good	325	23.3	76.9	2.85 (1.32-6.17)**	2.54 (1.15-5.62)*
Intention of testing for HIV					
Non-intenders	160	16.9	83.1	1.00	1.00
Intenders	739	20.3	79.7	1.25 (0.80-1.97)	1.18 (0.75-1.88)

Perceived HIV susceptibility

Not susceptible to HIV infection	465	19.8	80.2	1.00	1.00
Susceptible to HIV infection	452	19.7	80.3	0.99 (0.72-1.38)	0.98 (0.78-1.88)

OR, odds ratio; CI, confidence interval. *p<.05; **p<.01

[†]Controlled for: location, age, partners' education, access of HIV testing, and self-rated health status

*Cases with missing information are excluded from the analysis

Table 3: Bivariate and multivariate logistic regression analyses for having tested HIV status (no = 0; yes =1) by socio-psychological factors related to testing for HIV (N = 918)

Socio-psychological perceptions related to voluntary testing for HIV:		*n	Ever tested for HIV		Bivariate OR (95% CI)	†Multivariate OR (95% CI)
			yes (%)	no (%)		
I would be stigmatize if people were to know that I am going for an HIV test	Agree	615	16.8	83.3	1.00	1.00
	Disagree	301	25.9	74.1	1.72 (1.23-2.40)*	0.92 (0.60-1.42)
It is not necessary to test for HIV because there is neither vaccine nor cure for HIV/AIDS	Agree	612	15.5	84.5	1.00	1.00
	Disagree	302	28.5	71.5	2.19 (1.56-3.06)**	1.50 (1.01-2.33)*
Only people who suspect that they are HIV infected should test for HIV	Agree	423	26.2	73.8	1.00	1.00
	Disagree	492	14.0	86.0	0.63 (0.46-0.88)**	0.52 (0.33-0.81)**
People should not test for HIV because AIDS is a very frightening and dangerous disease	Agree	157	14.0	86.0	1.00	1.00
	Disagree	758	20.7	79.3	1.62 (0.98-2.64)	1.05 (0.63-1.78)
People who offer HIV testing services do not keep results confidentially	Agree	457	16.2	83.8	1.00	1.00
	Disagree	459	22.9	77.1	1.51 (1.08-2.11)*	0.85 (0.57-1.26)
HIV infected people are likely to die quicker if tested and get informed about their positive results	Agree	520	12.7	87.3	1.00	1.00
	Disagree	395	28.9	71.1	2.87 (2.04-4.03)**	1.93 (1.26-2.95)*

OR, Odds Ratios; CI, Confidence Interval. *p<.05; **p<.01

†Controlled for: location, age, partners' education, access of HIV testing, and self-rated health status

*Cases with missing information are excluded from the analysis