Utilization of HIV Testing and Counseling Services by Men in the Bolgatanga Municipality

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Authors' contributions

This work was collaboratively implemented by both authors. Author EA conceived the study idea, and participated in study design with author AL. Author AL supervised study tools development and data analysis. Authors EA and AL drafted different sections of the manuscript. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Background: In the absence of an effective vaccine and cure for Human Immunodeficiency Virus (HIV), testing and counseling for HIV remains an important intervention in the control of the infection. However, utilization of this service in Ghana is very low especially among men. This study assessed the utilization of HIV testing and counseling (HTC) and the associated reasons for use or non-use of the service among men in the Bolgatanga Municipality.

Methods: The study was a population-based cross-sectional survey. A total of 610 men, aged 18–59 years residing in Bolgatanga Municipality were randomly selected using a modified WHO cluster sampling technique. Data was collected using a structured questionnaire through home visits over a period of three weeks. Associations between the outcomes and each of the explanatory variables were assessed using bivariate Chi squares test. A p-value less than 0.05 was taken to be statistically significant.

Results: Majority of the respondents (99.3%) knew of a test that could identify HIV in an individual; however, 63.6% felt they were at no risk/low risk of being infected with HIV. About 89.8% of those

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who had heard of HIV test could locate at least one testing centre. Radio/television was the most frequent (68.4%) source of information. Only 27.7% of the respondents had ever tested for HIV of which 99.4% of them had received their test results. The annual HIV testing rates among the sampled men was 7.7%. Reasons given by respondents for use or non-use of testing and counseling services span socio-cultural and health service-related reasons, and personal beliefs. Educational and employment statuses of respondents were found to be associated with the utilization of HIV testing and counseling services (P < 0.001).

Conclusion: Utilization of HIV testing and counseling services by men in Bolgatanga Municipality is low. Low perception of HIV risk, fear of stigma, and false positive results were the key reasons for not being tested.

1. INTRODUCTION

Despite the increase in access to antiretroviral therapy (ART), HIV transmission continues to spread worldwide [1]. In 2010 about 34 million people were living with HIV worldwide; about 68% of them residing in sub-Saharan Africa [2]. In Ghana, HIV was first identified in March 1986. Since then various measures have been put in place to control the spread of the infection [3,4].

In 2006, the Centers for Disease Control and Prevention (CDC) issued recommendations for routine HIV testing in all health-care settings with HIV prevalence of 0.1% or greater for all persons aged 13 to 64 years, regardless of risk [5]. This is because HIV testing and counselling has been shown to be an effective strategy in facilitating behaviour change for HIV prevention. It provides an opportunity for health promotion thereby preventing HIV negatives individuals from contracting the infection and controlling the progression of the infection in those already infected by providing early health care and psychosocial support [6,7]. Research has shown that providing testing and counseling to a couple together is an effective intervention for reducing the spread of HIV as compared to counseling the female partner alone [8,9] because most new HIV infections in Africa are acquired from heterosexual partners [8,10]. HIV testing is also important in the fight against HIV-related stigma and discrimination [11].

Despite these, the use of HIV testing and counselling globally is very low [12,13]. A systematic review conducted by Bateganya and colleagues show that only 10% of HIV infected persons know their HIV serostatus [14]. However, a Ugandan study on voluntary counseling and testing (VCT) reported the prevalence of HIV testing among men as 23.3% [15]. The 2008 Ghana Demographic and Health Survey (GDHS) reported that 70% of women and

75% of men aged 15 – 49 years knew where to locate a testing centre, however, only 16.9% and 12.7% of women and men respectively had ever tested and received the results of the test and 6.8% of women and 4.1% of men had tested and received the results in the last 12 months [16].

A study on VCT among men in the University of Ghana revealed that only 19% of the respondents had ever tested for HIV [17]. Other studies also reported lower HIV testing rate of 17% and 11% among men [18,19]. However, a related study with participants comprising both males and females reported HIV testing prevalence of 44% [7]. A study among adolescents in Zambia indicated that 28% of the respondents plan to test for HIV within the next 12 months; most of them indicated that they wanted to know their status or to "free their mind" [20]. Alemayehu however, reported that among Ethiopian University students, HIV testing is not popular, and is done mostly when they are planning for marriage or to travel abroad [21]

Studies that have explored the awareness of HTC services and use of such services have reported mixed findings. Sherr and colleagues in their study among a rural Zimbabwean cohort showed that knowledge positively influences the uptake of HIV testing [22]. On the contrary, Illiyasu et al. [23] reported that in a study on VCT, although more than half (55%) of the respondents knew of a test that identifies individuals with HIV, only 26% knew where they could have the test. A study in Shanghai, China, revealed that 80% of the participants knew HIV infection was diagnosed through a blood test and 46.5% had ever heard of VCT, however, only 3.5% felt they could be infected with HIV now or in the future [24].

Aside awareness, a variety of factors influence the use of HIV testing and counselling services. For example, a study in Zimbabwe revealed that

knowledge and education positively influence HIV testing [22]. Similar studies have shown that higher education is associated with HIV testing and counseling use and increased likelihood of HIV testing [7,25]. Other studies have reported that age and other demographics influence one's likelihood to test for HIV [15,17]. HIV-related stigma is cited as the most important barrier to HIV testing by a number of studies [15,26]. Barriers to HIV testing cited in other studies include lack of privacy, fear of a breach of confidentiality, long distance to testing centers, and long waiting time as some of the reasons why they have not tested for HIV [12,27].

According to the 2010 Sentinel Survey Report, the HIV prevalence rate for Bolgatanga increased sharply from 2.6% in 2009 to 3.8% in 2010 resulting in Bolgatanga Municipality moving from 24th position on the National Chart in 2009 to 4th position in 2010, and from 17th to 3rd position on the National Urban Sites Chart [28]. Though the situation has improved over the last two years, the HIV prevalence rate in Bolgatanga municipality for 2011 according to the 2011 HIV Sentinel Survey Report is 2.2% which is still higher than the median prevalence rate in the region (1.5%) as well as the national median HIV prevalence rate of 2.1% [29]. It has been reported that men in Ghana tend to have more multiple sexual partners compared to women 11.4% and 1.1% respectively [16]. Meanwhile, majority of men still express their unwillingness to test for HIV [15]. In a setting where men are decision makers with regard to health seeking practices by household members, men's utilization of HIV testing is very crucial. Therefore, understanding factors that impede or encourage men to test for HIV is important in developing effective intervention programmes aimed at scaling-up and promoting HIV testing and counseling among men. This study therefore sought to determine the use of HIV testing and counseling services and the reasons for non-use of the services among men in the Bolgatanga Municipality, Ghana.

2. MATERIALS AND METHODS

2.1 Research Design, Setting, Populations and Summary of Field Procedures

A descriptive population-based cross-sectional survey design employing quantitative method for data collection was used for this study. The study was conducted in Bolgatanga Municipality. The Bolgatanga Municipal Assembly with its capital - Bolgatanga - is located at the center of the Upper East Region. Bolgatanga is also the capital town of the Upper East Region. The Municipality has a population of 131,550 [30]. The Municipality has one (1) Regional Hospital, six (6) Health Centers, seven (7) Clinics, eight (8) Community-based Health Planning and Services (CHPS) Compounds, one (1) Private Hospital and one (1) Private Clinic. The Regional Hospital also serves as a referral hospital for the whole region. The Doctor/Patient ratio is 1:30,534 whilst the Nurse/Patient ratio is 1:734.

The population for this study consisted of men in the Bolgatanga municipality. According to the 2010 Population and Housing Census (PHC), the total number of males in the Bolgatanga municipal who are 18 years and older is 33,597 [30]. Therefore the study population consisted of 33,597 men.

A sample size of 610 men was used for the study. Data from the 2008 GDHS indicates that 12.7% of men in Ghana have tested for HIV [16]. That for Bolgatanga municipality is unknown. Hence, this figure was used to calculate the sample size using the formula $n = Z^2 P (1-P)/D^2$ which yielded a sample size of 170. Giving the objective and nature of the study (population-based cross-sectional survey), a sample size of 170 would be inadequate. Fifty per cent (50%) was therefore used as the proportion of men in Bolgatanga municipality who have undergone HIV testing in order to get a larger sample size that will be representative of the population. Also, the sample size calculation was based on a desired level of confidence at 95% (standard value of 1.96) and acceptable margin of error at 5% (standard value of 0.05). Consequently, a sample size of 380 was obtained but was further multiplied by the design effect of 1.5 (i.e. 384 × 1.5 = 576) since the sampling was not going to be simple random sampling. This was further increased by 5% to account for contingencies such as recording errors and non-response to certain questions (i.e. 0.05 × 576= 28.8) therefore yielding a final sample size of 607 (i.e.576 + 29= 607). However, this figure was rounded up to 610.

A modified World Health Organization (WHO) cluster sampling technique was used to select the sample for this study. This method was chosen to reduce selection bias and to ensure that the sample actually reflects the true

characteristic of the entire population under study.

First, four (4) principal communities were selected out of the nine (9) principal communities in the municipality. Bolgatanga, which is the capital, formed part of the four principal communities. Simple random sampling was used to select the additional three (Gambibigo-Azuabisi, Sherigu Dorungu-Agobgabisi and Yarigabisi) out of the remaining eight (8) principal communities. Houses were then randomly selected within each of the four selected communities. This was done by first of all determining the boundaries of those selected communities. Names of strategic landmarks in the community such as a school, market, church, mosque and community centre were then written down by the researcher and the lottery method used to decide the start point of the sampling process. After determining the start point, the researcher then span a pen and followed the direction of the pen. All the houses along that direction formed part of the sample. Upon reaching the boundary of the community the researcher returned to the start point and repeated the process by spinning the pen and following the direction of the pen. A household each was further randomly selected from houses with two or more households with eligible participants. This was done by first of all obtaining the names of all households in that house from the head of the house or any elderly person in the house. The names were then written on pieces of paper which were then folded, mixed together in a container and the researcher picked one folded paper at random. The household contained in the paper formed part of the sample. The balloting was done right in that particular house where the names of the households were collected. For the purpose of this study a household is defined as a person or a group of persons, related or unrelated, who live together in the same house or compound, share the same housekeeping arrangements, and eat together as a unit [16].

The last stage involved selecting one respondent each within households with two or more eligible respondents. The names of the eligible respondents were written on pieces of paper, folded, mixed in container and the researcher picked one folded paper at random. The person whose name was picked participated in the study. Seven people declined to participate in the study and were replaced by repeating the process and selecting a different respondent. For those persons whose names were picked but were not immediately present, the researcher/research assistant noted the house on the questionnaire and went back later to that household to interview him. This sampling technique was repeated severally until about 152 men were obtained from each of the four communities to form the total sample size of 610 men.

Data for the study was solely primary data and was collected through researcher administered questionnaire. Data was collected from 4th – 24th June, 2013. The questionnaire was mainly administered in the local dialect (Gurune) to ensure that the respondents understand the questions very well and to ensure adequate responses. A total of five (5) research assistants who had nursing background and had ever participated in a similar exercise in the district were recruited and trained to assist the researcher in collecting the data. Criteria for selection of the research assistants included the ability to understand and speak the local dialect of the study setting fluently as well as read and write in English language. The research assistant had to hail from the area or should have stayed in the area for a period of six months or more and be conversant with the local traditional practices. To ensure confidentiality, the questionnaires were administered to the respondents in private, away from family members and friends. Also, the questionnaires were identified by unique identity numbers and were kept in a secured box of which only the researcher had access to.

Data was processed and analyzed using SPSS 16.0 version. After the data collection two trained data entry clerks separately entered the survey data into SPSS 16.0 version. The two datasets were validated prior to analysis. Appropriate measures of centrality (median age) were computed. Associations between the outcome variable and each of the explanatory variables were assessed using bivariate Chi squares test. A p-value less than 0.05 was taken to be statistically significant.

3. RESULTS

3.1 Socio-demographic Characteristics of Respondents

Table 1 shows data on demographic characteristics of respondents. Overall, 610 men participated in this study. The mean age of the

respondents was 31.6 years with a median age of 29.0 years. Almost half of the respondents 258 (42.3%) ranged between the ages of 18 and 27 while only 53 (8.7%) of the respondents ranged from 48 to 59 years. A higher proportion of the respondents 171(28%) had no formal education. Of the 610 respondents, 284 (46.6%) were Christians while atheist formed the minority 31(5.1%). Approximately, half of the respondents, 332 (54.4%) were married.

Tables 1. Socio-demographic characteristics of respondents (N=610)

Demographic characteristic	n (%)
Age	
18 – 27	258 (42.3)
28 – 37	199 (32.6)
38 – 47	100 (16.4)
48-59	53 (8.7)
Level of education	
No formal education	171 (28.0)
Primary School	100 (16.4)
JHS/Middle School	128 (21.0)
SHS/Secondary school	156 (25.6)
Tertiary	55 (9.0)
Religion	
Atheist	31 (5.1)
Christianity	284 (46.6)
Muslim	92 (15.1)
Traditional	203 (33.3)
Marital status	
Never married	259 (42.5)
Married	332 (54.4)
Divorced	8 (1.3)
Widowed/Separated	4 (0.7)
Cohabiting	7 (1.1)
Type of marriage	
Monogamous	295 (88.9)
Polygamous	37 (11.1)
Employment status	
Unemployed	128 (21.0)
Farmer	124 (20.3)
Salary worker	61 (10.0)
Self-employed	187 (30.7)
Student	110 (18.0)

3.2 Awareness and Perception of Men Regarding HIV Testing and Counselling

Out of a total of 610 respondents, 606 (99.3%) were aware prior to the day of the interview that there is a test that can diagnose someone infected with HIV. Only four (4) people (0.7%) indicated they were not aware of such a test. Majority of the respondents, 497 (81.5%) were

aware that discordance of HIV test results can exist between couples. Of the 606 respondents who were aware of HIV testing and counselling, majority 414 (68.3%) heard the information through the radio/television, followed by friends 346 (57.1%) and health worker/educator 285 (47.0%). A vast majority 554 (89.8%) mentioned the hospital as where a testing centre can be found, 289 (47.7%) of them mentioned the clinic/health centre while 16 (2.6%) said they did not know where a testing centre is located; some respondents gave multiple responses.

Regarding the benefits of HIV testing and counselling, majority 386 (63.6%) said testing and counselling will help prevent spread of HIV, 254 (41.6%) said it will facilitate early treatment while 71(11.6%) of the respondents said they did not know of any benefits of HIV testing and counseling. Some of the respondents gave more than one response.

Regarding the perceived importance of testing 296 (48.5%) of the 610 respondents believed that HIV testing is very important, while 20 (3.3) said HIV testing and counselling is not important; 272(44.6%) respondents said couple testing is very important while only 45 (7.5%) felt couple testing is not important. About 39.2% of the respondents felt they are at low risk of being infected with HIV, 149 (24.4%) felt they are at no risk at all while 222 (36.4%) felt they are at high risk of being infected with HIV.

3.3 Use of HIV Testing and Counseling Services/Likelihood to use HIV Testing and Counseling Services

As shown in Table 2, only 169 (27.7%) men have ever used HIV testing and counselling services in the municipality out of 610 respondents. Of this number, almost all of them 168 (99.4%) knew their test results; 133 (78.7%) fully used the service (meaning they were taken through the entire process of testing, counseling, and receiving test results). Out of the 610 men, only 47 (7.7%) tested within the last 12 months prior to the study of which all of them knew their results. Majority 94 (55.6%of the 169 respondents who have ever tested for HIV did so at the hospital.

3.4 Reasons for Use or Non-use of HIV Testing and Counseling Services

Table 3 indicates that more than half, 97 (57.4%) of the respondents who had ever undergone HIV

testing wanted to know their HIV status, 35 (20.7%) went to donate blood, while 13 (7.7%) were encouraged by a friend. Similarly, more than half, 426 (57.6%) of the men who had never been tested but were likely to test and those who had ever tested indicated they would prefer/would have preferred to test in the hospital. The clinic/health centre was the second most preferred place 87 (20.4%).

afraid of stigma and discrimination by their relatives and friends and 106 (24.3%) mentioned fear of being positive. Some respondents gave multiple responses.

Table 2. Proportion of respondents ever tested and likelihood to use HIV testing & counselling services

Variables	n (%)
Ever tested	
Yes	169 (27.7)
No	441 (72.3)
Steps followed	
Testing and counseling	1 (0.6)
Testing and receiving results	35 920.7)
Testing, counseling, and receiving results	133 (78.7)
Tested within last 12 months	
Yes	47 (7.7)
No	122 (72.2)
Steps followed	
Testing and receiving results	11 (23.4)
Testing, counseling, and receiving results	36 (76.6)
Place last tested	
Hospital	94 (55.6)
Clinic/health centre	37 (21.9)
Private laboratory	7 (4.1)
Others	31 (18.3)
Likelihood of testing if ever tested	
Not likely	26 (15.4)
Somewhat likely	17 (10.1)
Likely	68 (40.2)
Very likely	58 (34.3)
Likelihood of testing if never tested	
Not likely	183 (41.5)
Somewhat likely	94 921.3)
Likely	135 (30.6)
Very likely	29 (6.6)

Socio-cultural reasons and some personal beliefs mentioned by respondents for non-use of HIV testing and counseling services are reported in Table 3. The results show that a greater proportion 182 (41.6%) of them felt they were not likely to have HIV, 153 (35.0%) said they were

Table 3. Reasons for use or non-use of HIV testing and counselling services (N=610)

Variable	n (%)
Reasons for testing	
To know my HIV status	97 (57.4)
Requirement for employment	3 (1.8)
Requirement for marriage/new relationship	8 (4.7)
To donate blood	35 (20.7)
Illness/doctor's request	5 (3.0)
Encouraged by a friend	13 (7.7)
Distrust of sexual partner	6 (3.6)
Illness/death of a sexual partner	2 (1.2)
*Socio-cultural reasons/ personal beliefs for not testing	
It is against my tradition	1 (0.2)
I am not likely to have HIV	182 (42.0)
If tested positive , I can't be cured anyway	21 (4.8)
Fear of being positive	106 (24.5)
Fear of stigma from friends/ relatives	153 (35.3)
Fear of disclosure of test results	33 (7.6)
Fear of rejection by partner	32 (7.4)
Fear f falling ill early	31 (7.2)
Fear of dying early	34 (7.9)
Fear of loss of job	4 (0.9)
Fear of loss of housing	8 (1.8)
HIV is a curse from God	2 (0.5)
Busy work schedule	41 (9.5)
No special reason	12 (2.8)
*Health service-related reasons for not testing	
Cost of the service is high	87 (19.9)
Long queues	111 (25.4)
Fear of stigma/negative response from providers	58 (13.3)
Lack of privacy/Confidentiality	57 (13.0)
Fear of false positive results	114 (26.1)
Distance to facility is far	14 (3.2)
No special reason	73 (16.7)
Preferred place for testing and counseling	
Hospital	246 (57.6)
Clinic/health centre	87 (20.4)
Private laboratory	28 (6.6)
Home	35 (8.2)
Workplace	5 (1.2)
Community centre	26 (6.1)

(*) Multiple responses were allowed

Regarding health service-related reasons, 114 (26.1%) mentioned fear of false positive results, 111(25.4%) cited long queues at the testing centres, and 87 (19.9%) cited high cost of the service as the reasons why they have not undergone HIV testing (Table 3).

Tables 4 and 5 respectively show the proportion of respondents who have ever used and/or likely to use HIV testing and counseling services. Findings revealed that age, marital status and religion had no statistical association with men's use of testing and counseling services or likelihood of testing within the next 12 months. However, level of education was associated with testing ($P < .001$) or likelihood of testing for HIV ($P = .01$) (Tables 4 and 5). It can be reported from Table 4, that more salaried workers (15.4%) have ever tested for HIV as against 7.9% of salaried workers who had never tested for HIV ($P < .001$). Respondents who had any form of employment were more likely to get tested for HIV ($P = .002$; Table 5. Thus, one's employment status is likely to affect his decision to get tested for HIV.

4. DISCUSSION

4.1 Awareness and Perceptions of Men Regarding HIV Testing and Counseling

Findings from the study revealed that a vast majority of the respondents were aware of a test that can identify a person infected with HIV. This is comparable to findings from other studies [15,16,23,24] that reported that majority of the respondents knew of a test that can diagnose HIV. This suggests that there is high awareness of HIV testing and counseling among men and this may be due to the intense educational campaigns on HIV testing and counseling in the municipality by Ghana Health Service (GHS) and other stakeholders. In this study majority of the respondents were able to mention at least one testing centre in the municipality. This is consistent with findings from a study which indicated that most of the respondents knew of at least a testing centre [15]. This implies that education on HIV testing and counseling has gone down well to the grassroots. On the contrary, this finding does not compare favorably with those of a study that indicated that only few of the respondents knew where they could have HIV test [23].

Finding from this study showed that most of the respondents felt testing and counseling is very important. This supports a couple of studies [15] which have indicated that most men felt HIV testing was important. Most of the respondents believed that there could be discordant HIV test results among couples. This disagrees with a previous study [15] which indicated that over half of the respondents did not believe that there could be discordant HIV test results. This could be that HIV testing and counseling awareness has increased over the years. Additionally, some respondents may have guessed the answer.

Further statistical analysis of the findings indicated that high awareness was significantly associated with utilization of testing and the likelihood of testing. This lends support to other studies [22] with similar findings. This implies that one way of increasing HIV testing and counseling use is to create awareness. Majority of the respondents in this study felt they were at no risk or low risk of being infected with HIV. This evidence supports previous studies [15,17,24,] which reported similar findings.

4.2 Use of HIV Testing and Counseling Services by Men

Findings from this study show that the overall proportion of respondents who have ever tested for HIV is 27.7%. This disagrees with a number of studies [14,17-19] done in the past which reported much lower percentages. This may be due to the implementation of some policies such as "Know your status" campaign in the municipality by GHS in an effort to increase utilization of HIV testing and counseling services. This finding is however lower than findings from other studies [7]. However, the difference in magnitude may be due to the differences in characteristics of the groups of participants of the studies. This study also revealed that 7.7% of the respondents tested and received the test results within the 12 months preceding the study. This disagrees with findings from the 2008 Demographic and Health Survey [16] which indicated that 4.1% of men had tested and received their test results 12 months prior to the survey [16]. However, it may be as a result of the

Table 4. Associations between socio-demographic characteristics and use of HIV counselling and testing services

Characteristics	Ever undergone HIV testing and counseling		P-value
	Yes (n=169) n (%)	No (n=441) n (%)	
Age			
18-27	67 (39.6)	191 (43.3)	.43
28-37	61 (36.1)	138 (31.3)	
38-47	30 (17.8)	70 (15.9)	
48-59	11 (6.5)	42 (9.5)	
Education			
None	34 (20.1)	137 (31.1)	< .001*
Primary	25 (14.8)	75 (17.0)	
JHS	33 (19.5)	95 (21.5)	
SHS	51 (30.2)	105 (23.8)	
Tertiary	26 (15.4)	29 (6.6)	
Marital status			
Single	81 (47.9)	178 (40.4)	.19
Married	84 (49.7)	255 (57.8)	
Separated	4 (2.4)	8 (1.8)	
Religion			
Atheist	7 (4.1)	24 (5.4)	.19
Christianity	90 (53.3)	194 (44.0)	
Muslim	25 (14.8)	67 (15.2)	
Traditional	47 (27.8)	156 (35.4)	
Employment			
Unemployed	28 (16.6)	100 (22.7)	< .001*
Farmer	19 (11.2)	105 (23.8)	
Salaried worker	26 (15.4)	35 (7.9)	
Self-employed	59 (34.9)	128 (29.0)	
Student	37 (21.9)	73 (16.6)	

*JHS- Junior High school/ Middle school; SHS- Senior High school; *significant at P < .05*

increased awareness of HIV testing and counseling among the general population. With regards to reasons for use or non-use of testing and counseling services by men, findings from this study showed that majority of those who tested for HIV wanted to know their HIV status. Others tested because they were to donate blood, were encouraged by a friend, distrusted their sexual partners or due to sickness/partner's sickness. This evidence supports findings from a study [20] which reported that most participants indicated they wanted to test to know their HIV status. It is however inconsistent with findings from a study in northern Ethiopia [21] that indicated that people will not accept HIV testing unless they are to travel abroad or planning to get married. This finding suggests that there is no unified reason why people test for HIV.

It was revealed from this study that majority of those who had never tested for HIV felt they were not likely to have HIV. Other reasons mentioned for non-use of the service included fear of stigma and discrimination from friends and relatives, fear of being positive, fear of falling ill or dying early, fear of loss of job or housing, and busy work schedule. These findings support previous studies [18,] with similar findings. These findings suggest that there are diverse reasons for refusal to take HIV test. Low risk perception was revealed from this study as the most important barrier to testing and counseling. This contradicts others studies [26] which reported stigma as the most important barrier to testing and counseling use. This may be an indication that HIV – related stigma is gradually reducing because people in the municipality personally know people living with HIV who are on treatment and appear to look very well.

Findings from this study also showed that fear of false positive results, long queues at the testing centres, high cost of the service, and lack of privacy and confidentiality are some health-related reasons for non-use of testing and counseling services by men. These findings

Table 5. Associations between socio-demographic characteristics and likelihood to test

Characteristics	Likelihood to request for HIV testing and counseling services				*P*-value
	NLIK (n=209) n (%)	SLIK (n=111) n (%)	LIK (n=203) n (%)	VLIK (n=87) n (%)	
Age					
18-27	79 (37.8)	47 (42.3)	100 (49.3)	32 (36.8)	.08
28-37	66 (31.6)	33 (29.7)	66 (32.5)	34 (39.1)	
38-47	38 (18.2)	19 (17.1)	27 (13.3)	16 (18.4)	
48-59	26 (12.4)	12 (10.8)	10 (4.9)	5 (5.7)	
Education					
None	76 (36.4)	30 (27.0)	53 (26.1)	12 (13.8)	.01*
Primary	30 (14.4)	25 (22.5)	36 (17.7)	9 (10.3)	
JHS	39 (18.7)	22 (19.8)	45 (22.2)	22 (25.3)	
SHS	50 (23.9)	25 (22.5)	48 (23.6)	33 (37.9)	
Tertiary	14 (6.7)	9 (8.1)	21 (10.3)	11 (12.6)	
Marital status					
Single	78 (37.3)	47 (42.3)	91 (44.8)	43 (49.4)	.54
Married	127 (60.8)	62 (55.9)	107 (52.7)	43 (49.4)	
Separated	4 (1.9)	2 (1.8)	5 (2.5)	1 (1.1)	
Religion					
Atheist	14 (6.7)	8 (7.2)	6 (3.0)	3 (3.4)	.15
Christianity	84 (40.2)	51 (45.9)	99 (48.8)	50 (57.5)	
Muslim	31 (14.8)	20 (18.0)	29 (14.3)	12 (13.8)	
Traditional	80 (38.3)	32 (28.8)	69 (34.0)	22 (25.3)	
Employment					
Unemployed	50 (23.9)	29 (26.1)	29 (26.1)	34 (16.7)	.002*
Farmer	53 (25.4)	22 (19.8)	22 (19.8)	36 (17.7)	
Salary worker	22 (10.5)	7 (6.3)	7 (6.3)	17 (8.4)	
Self-employed	54 (25.8)	39 (35.1)	39 (35.1)	74 (36.5)	
Student	30 (14.4)	14 (12.6)	14 (12.6)	42 (20.7)	

*NLIK- Not likely; SLIK- Somewhat likely; LIK- likely; VLIK- Very likely; JHS- Junior High school/ Middle school; SHS- Senior High school; *significant at p < .05*

appear to be consistent with most past studies [12,15,27] which reported similar findings. However, some of these reasons could be based on perception. These findings suggest the need to dispel the perceptions of long queues, high cost of service and false positive results as well as the need to adopt some new strategies such as door –to-to rapid blood testing for HIV.

4.4 Associations between Socio-demographic Attributes and Use of HIV Testing and Counseling Services

Review of literature showed that education is associated with the testing [7,22] and one's likelihood of testing [25]. In this study educational level was significantly associated with use of HIV testing and counseling services and the likelihood of testing within the next 12 months. These findings are in concordance with findings of the previous studies. This may be due to the fact that people with higher education may have more understanding of the benefits of testing, thereby suggesting the need for improved access to education. Previous studies have reported an association between age and HIV testing and the likelihood to test for HIV. For example, a couple of studies [18] reported that older men are more likely to test while other studies [15,17,25] indicated that older men are less likely to test for HIV. Findings from this study indicate that age is not associated with testing or the likelihood of testing; and therefore does not support any of the studies. Employment status was found in this study to be significantly associated with testing and the likelihood of testing. This is in line with findings from a study which reported an association between occupation and HIV testing [15]. One possible explanation is that people who are employed are likely to have more income to afford transportation and cost of the service.

4.5 Study Limitations

This study is not devoid of limitations. The study is community-based and solely relied on self-report by the respondents. This may have led to reporting bias because of the possibility of reporting behaviors that are socially desirable. In addition, recall bias may have occurred especially with regard to HIV testing history. Secondly, household size may theoretically have biased the sampling strategy towards younger men because most households usually have more young men than elderly men. Another limitation is the fact that the study did not involve providers of the service.

5. CONCLUSION

The study established that the awareness of men regarding HIV testing and counselling is very high; however, most men have low risk perception regarding HIV. Almost all those who had heard about HIV test could locate at least one testing centre in the municipality and most of the respondents were able to mention one benefit of HIV testing and counselling. Radio/television was the most frequent source of information.

Secondly, the study established that a low proportion of men in the Bolgatanga municipality had ever tested for HIV. However, almost all of those who had ever tested for HIV had received their test results.

The study identified socio-demographic characteristics, socio-cultural reasons/personal beliefs, and health service-related reasons as barriers to the use of HIV testing and counseling services among men. The two most frequent reasons given by the respondents for testing were "To know my HIV status" and "To donate blood". On the contrary, the most frequent reason cited by respondents for non-use of the service was that they felt they are not likely to have HIV. Education and employment statuses were found to be significantly associated with testing and the likelihood to test for HIV.

CONSENT

Written informed consent was obtained from respondents before conducting this study.

ETHICAL APPROVAL

The study received ethical approval (ID NO: GHS-ERC: 39/03/13) from the Ethical Review Committee of Ghana Health Service, Research and Development Division, Accra.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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