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Original Article

Disparities Between HIV Awareness and Willingness to Test among Men in Dormaa East: A Cross-Sectional Analysis

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Abstract

Introduction: This study investigated the correlation between HIV awareness and willingness to test among men in the Dormaa East District.

Methods: A community-based cross-sectional survey was carried out from January to March 2025, involving 410 men aged 15 years and above. Descriptive statistics, chi-square tests and multivariate logistic regression were employed in the analysis of the data.

Results: A total of 83.3% of participants were aware of HIV testing programs, while 75.3% expressed willingness to undergo testing. However, higher levels of awareness were associated with a reduced reported willingness to undergo testing ($P<0.001$). In the adjusted model, awareness of HIV testing services remained a significant predictor of testing willingness (AOR = 1.82; 95% CI: 1.03–5.28). Educational attainment was also significantly associated with willingness, as men who completed senior high school were less likely to report willingness to test compared to those with primary education (AOR = 0.39; 95% CI: 0.14–0.90).

Conclusion: Despite a high level of awareness of HIV testing services among men in Dormaa East, this awareness does not translate into increased willingness to undergo testing, highlighting a paradox of high awareness coupled with low willingness. Targeted interventions addressing psychosocial and contextual barriers, particularly among more educated men, are necessary to translate awareness into actual utilization of HIV testing services.

Keywords: HIV testing, Counseling, Knowledge, Men

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Introduction

The participation of men in HIV testing programs in Ghana and much of sub-Saharan Africa continues to be markedly low, despite ongoing national and regional investments to enhance access to and utilization of HIV testing.[1] National surveillance reports and program statistics regularly demonstrate that males are less inclined than women to undergo HIV testing and are more prone to commence treatment at advanced stages of infection.[2] This trend results in delayed diagnosis, suboptimal treatment outcomes, and ongoing community transmission.

Despite global recommendations advocating for the incorporation of HIV self-testing into prevention frameworks, the implementation of these policies has been inconsistent, resulting in ongoing disparities in service utilization.[3] This policy-practice gap highlights the necessity of this current study. The gender disparity in HIV testing uptake in Ghana hampers progress toward national and global objectives for early diagnosis and treatment, especially in rural areas like the Dormaa East District, where healthcare system resources and educational opportunities are relatively scarce.

Most existing studies have concentrated on barriers and facilitators contributing to HIV texting among males. [4-8] Thus, a significant vacuum exists in the research about the relationship between awareness of HIV testing services and an increased readiness to undergo testing. This study investigated the correlation between awareness of HIV testing services and the desire to undergo HIV testing among men in the Dormaa East District of Ghana. The study also evaluated certain socio-demographic characteristics linked to the willingness to undergo HIV testing. The hypothesis posited that men aware of HIV testing services would exhibit increased willingness to undergo testing; however, the study also explicitly examined the potential for a paradoxical trend wherein heightened awareness does not equate to greater readiness to test.

The study is innovative because it offers localized yet transferable insights that broaden comprehension of the intricate factors that influence men's HIV testing behaviors by integrating socio-behavioral and educational determinants with robust statistical analysis. Thus, this background highlights the need to examine the association between HIV awareness and the willingness of males in Dormaa East District to access testing services.

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The conceptual framework posits that HIV awareness is a crucial determinant affecting persons' readiness to undergo HIV testing. Awareness is defined as a multifaceted construct that includes knowledge of HIV transmission, prevention, and the advantages of testing, along with persons' perceived vulnerability to HIV and the perceived severity of the disease. The direct correlation between HIV awareness and the propensity to undergo testing suggests that enhanced and precise awareness elevates the probability of individuals consenting to or pursuing HIV testing. Individuals who comprehend the transmission and prevention of HIV, acknowledge the advantages of testing, and consider themselves at risk while viewing the disease as severe are more inclined to consent to HIV testing. This elucidates why mere awareness may be inadequate to motivate testing behavior and highlights the necessity to tackle perceived obstacles while augmenting perceived advantages and self-efficacy, as seen in Figure 1 above.

Methods

Study Area

Dormaa East is situated between 7°.08' and 7°.25' north latitude and 2°.35' and 2°.48' west longitude is show in Figure 2 below. The District, which has Wamfie as its capital, has a total land area of 456 square kilometers.

Study design

A community-based cross-sectional study design was employed. The study was conducted over a two-month period, from January to February 2025. Data was systematically collected from male aged 15 years and above.

Sample size and Sampling technique

The estimated male population in the district was 33,336 (PHC, 2021). Using the Taro Yamane (1973) formula at a 95% confidence level and 5% margin of error, 410 men were sampled. A multi-stage sampling technique

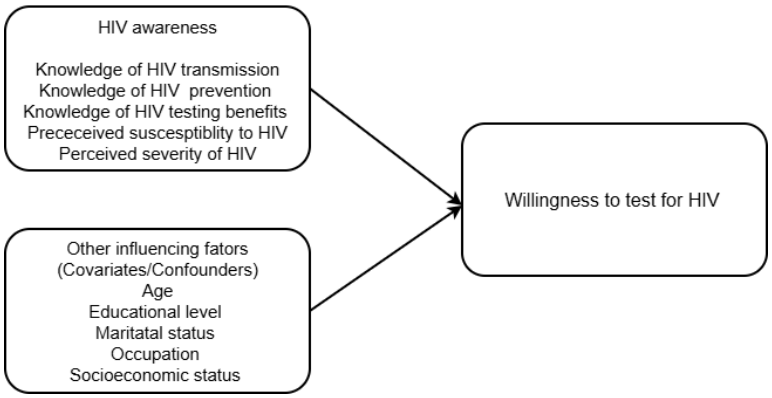

Figure 1. Conceptual framework

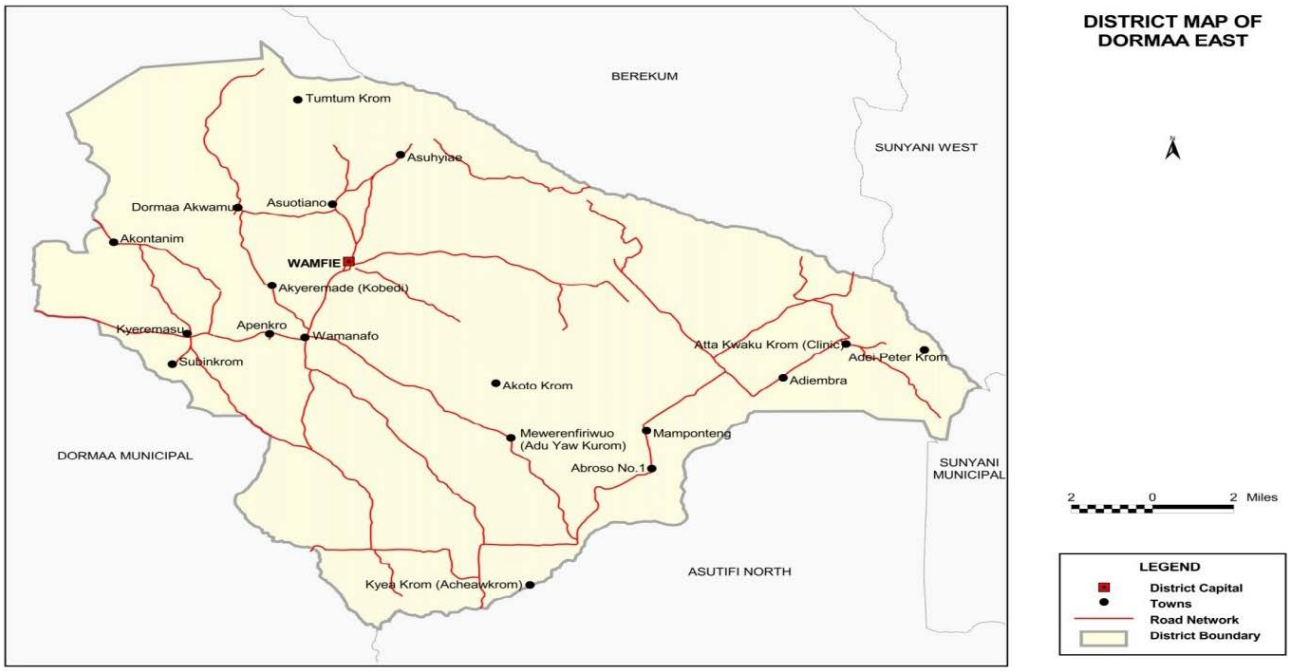

Figure 2. Map of the study site: Dormaa East District-Wamfie, Source: (PHC, 2021)

was employed to selected respondents for the study. The towns selected from each sub-district include: Kyeremasu, Dormaa Akwamu, Wamanafo, and Wamfie. All eligible male residents in selected households who consented were included.

Data collection tools

Data was collected using an interviewer-administered questionnaire. Six trained research assistants conducted the interviews. A three-day training session covered study procedures, questionnaire content, and interviewing techniques. A pre-test was conducted to ensure appropriateness and clarity of the instrument.

Selection Criteria

Eligible participants included males aged 15 years and above who were permanent residents of the selected communities within the Dormaa East District. Individuals were excluded if they were seriously ill, unable to communicate effectively during the time of data collection, or were visitors or temporary residents in the selected households.

Data analysis

Descriptive analysis was performed to summarize the characteristics of the study participants. Continuous variables were examined for normality using the Shapiro–Wilk test and visual inspection of histograms and Q-Q plots. Bivariate analysis was conducted to assess the association between independent variables and the dependent variable.The Chi-square (χ^2) test of independence was employed for categorical variables, while the Fisher's exact test was used where expected cell counts were less than five. Binary logistic regression was used to identify independent predictors of willingness to participate in HTC services.

Ethical Consideration

Ethical approval for this study was obtained from the Kwame Nkrumah University of Science and Technology Ethics Committee.

Results

Table 1 denotes a bivariate analysis with chi-square tests conducted to examine associations between awareness and key socio-demographic and behavioral variables. No statistically significant associations were found between awareness and place of residence ($\chi^2 = 3.61$, $P = 0.306$), age group ($\chi^2 = 3.61$, $P = 0.461$), marital status ($\chi^2 = 0.71$, $P = 0.872$), number of sexual partners in the last 12 months ($\chi^2 = 0.78$, $P = 0.855$), educational status ($\chi^2 = 1.86$, $P = 0.601$), or employment status ($\chi^2 = 1.67$, $P = 0.643$). These results suggest that awareness of HIV testing services is relatively uniform across different demographic groups in the study population.

Among the variables assessed, condom usage frequency showed the strongest association with awareness, though it did not reach statistical significance ($\chi^2 = 6.67$, $P = 0.083$).

Table 1. Demographic factors that contribute to Willingness to take HIV testing in District

Variables	Willingness to take HIV testing			
	No [n = 67]	Yes [n = 343]	Total [N = 410]	X^2 (*P*-value)
Place of Resident				3.6147 (0.306)
Wamfie	29 (15.4)	159 (84.6)	188 (45.9)	
Wamanafo	16 (13.3)	104 (86.7)	120 (29.3)	
Dormaa Akwamu	11 (25.0)	33 (785.0)	44 (10.7)	
Kyeremasu	11 (19.0)	47 (81.0)	58 (14.2)	
Age of respondents				3.6097 (0.461)
15-25	53 (18.5)	234 (81.5)	287 (70.0)	
26-35	10 (12.2)	72 (87.8)	82 (20.0)	
36-45	2 (10.0)	18 (90.0)	20 (4.9)	
46-55	2 (11.8)	15 (88.2)	17 (4.2)	
55 +	0 (0.0)	4 (100.0)	4 (0.9)	
Marital Status				0.7061 (0.872)
Married	11 (13.8)	69 (86.3)	80 (19.5)	
Single	52 (16.9)	255 (83.1)	307 (74.8)	
Co-habiting	3 (20.0)	12 (80.0)	15 (3.7)	
Divorced	1 (12.5)	7 (87.5)	8 (2.0)	
Number of sexual partners in the last 12 months				0.7755 (0.855)
None	42 (17.3)	199 (82.6)	241 (58.8)	
One	15 (16.1)	78 (83.9)	93 (22.7)	
Two	4 (13.3)	26 (86.7)	30 (7.3)	
More than two	6 (13.0)	40 (87.0)	46 (11.2)	
Educational Status				1.8637 (0.601)
Primary	11 (19.0)	47 (81.0)	58 (14.1)	
Junior High School	8 (13.8)	50 (86.2)	58 (14.1)	
Senior High School	10 (12.4)	71 (87.7)	81 (19.8)	
Tertiary	38 (17.8)	175 (82.2)	213 (52.0)	
Employment Status				1.6714 (0.643)
Unemployed	48 (17.8)	221 (82.2)	269 (65.6)	
Employed	9 (15.8)	48 (84.2)	57 (13.9)	
Self-Employed	8 (11.8)	60 (88.2)	68 (16.6)	
Apprentice	2 (12.5)	14 (87.5)	16 (3.9)	
Condom usage frequency				6.668 (0.083)
Never	23 (21.5)	84 (78.5)	107 (26.1)	
Few times	6 (8.5)	65 (91.6)	71 (17.3)	
Most times	15 (20.6)	58 (79.5)	73 (17.8)	
Always	23 (14.5)	136 (85.5)	159 (38.8)	

Source: Filed Survey, 2025

Respondents who reported using condoms "a few times" exhibited the highest awareness (91.6%), while those who "never" used condoms had the lowest awareness (78.5%).

Proportion of men who are aware and willing to test for HIV

Figure 3 shows the proportion of men who are aware of HIV testing services in their community and those who are willing to take up an HIV test. The charts reveal that 83.3% of respondents are aware of HIV testing services, while 16.7% are not. Likewise, willingness to test for HIV

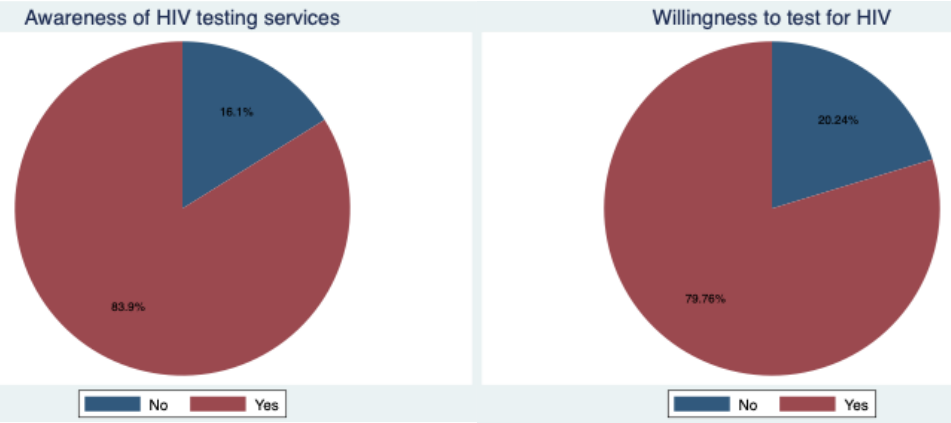

Figure 3 Proportion of men awareness of HTC services and willigness to test for HIV

had 75.3% of respondents are willing to undergo HIV testing, whereas 24.7% are not across the Dormaa East District.

Table 2 presents the results of a survey on the relationship between awareness of HIV and willingness to participate in HIV Testing and Counseling (HTC) among males. The findings indicate that awareness of HTC services, knowledge that HIV testing is free, awareness of the accessibility of HIV testing sites, awareness of HIV self-testing services, and having conducted HIV self-testing are all significantly related to the willingness to take an HIV test. For instance, 77.9% (127 out of 163) of respondents who were aware of HTC services were willing to take the test, compared to 87.4% (216 out of 247) of those who were not aware.

Again, respondents who were aware of HTC services (Chi-square = 6.5308, $P = 0.011$), knew that HIV testing is free (Chi-square = 5.341, $P < 0.001$), and were aware of the accessibility of HIV testing sites (Chi-square = 4.291, $P < 0.001$) were more likely to be willing to take an HIV test. Additionally, respondents who were aware of HIV self-testing services (Chi-square = 6.531, $P < 0.001$) and had conducted HIV self-testing (Chi-square = 15.431, $P < 0.001$) were also more likely to be willing to take an HIV test, with 72.5% (111 out of 153) of those who had self-tested being willing to take the test.

Figure 4 shows relationship between awareness of HIV testing and willingness to test is complex. The data suggests that individuals who are willing to test for HIV may not necessarily have higher awareness scores. In fact, the findings indicate that those who are willing to test might have slightly lower awareness scores compared to those who are not willing to test.

Table 2. Relationship between Awareness of HIV and Willingness to Participate in HIV Testing and Counseling (HTC) among males

Variable	Willingness to take HIV test		X^2 (Sig)
	Yes [n = 163]	No [n = 247]	
Are you aware of the availability of HIV testing services in this community?			
Yes	154 (39.6)	234 (60.4.7)	0.013 (0.538)
No	9 (42.9)	13 (57.1)	
Are you aware of HTC services in your community?			
Yes	127 (48.3)	136 (51.7)	6.5308 (0.011)
No	36 (24.5)	111 (75.5)	
Are you aware that, HIV testing is free in your community?			
Yes	127 (37.2)	214 (62.8)	5.341 (0.015)
No	36 (52.2)	33 (47.8)	
Are you aware that, HIV testing site in your community is accessible?			
Yes	117 (37.0%)	199 (63.0)	4.291 (0.026)
No	46 (48.9%)	48 (51.1)	
Are you aware of HIV Self-testing services?			
Yes	127 (37.0%)	216 (63.0)	6.531 (0.008)
No	36 (53.7%)	31 (46.3)	
Have you ever conducted HIV self-testing?			
Yes	42 (27.5)	111 (72.5)	15.431 (<0.001)
No	121 (47.1)	136 (52.9)	

Abbreviations: X2; Chi square, Sig; Significant
Note: Sig values < 0.5 are significant and sig values >, = 0.5 are insignificant

Source: Field Survey, 2025

Difference of score on awareness and willingness to test

As seen in Table 3, analysis comprised 410 individuals, of whom 163 expressed a willingness to participate in testing, whereas 247 did not. The average score for men willing to test was 69.57 (SD = 26.61), but the average for men refusing to test was 78.87 (SD = 22.99). The overall mean for all participants was 75.17 (SD = 24.88). The mean difference between the groups was 9.30, with a 95% confidence interval of 4.44 to 14.15, indicating a statistically significant disparity between the two groups. The t-test results corroborated that the difference was remarkable (t = 3.76, df = 408, $P > 0.001$), indicating that men reluctant to undergo HIV testing had markedly higher scores on the assessed outcome compared to those ready to test.

Analysis of the multivariate logistic regression revealed that age, marital status, place of residence, number of sexual partners, employment status, geographical location and the number of sexual partners were not significantly associated with men's willingness to test for HIV. Educational status, however, demonstrated a notable influence. Compared to men with primary education, those with junior high school (AOR = 0.488;

Table 3. Two-sampled t-test comparing means of men who expressed willingness to test for HIV

Group	Obs	Mean	Std. err.	Std. dev	[95% conf. interval]	
Yes	163	69.57055	2.083884	26.60525	65.45547	73.68563
No	247	78.8664	1.463166	22.99546	75.98447	81.74833
Combined	410	75.17073	1.228884	24.883	72.75501	77.58645
diff		9.295845	2.471628		4.437129	14.15456
Mean Diff < 1			**Mean Diff. = 0**		**Mean Diff. > 1**	
diff = mean (No) – mean (Yes) H0: diff = 0 Ha diff < 0 Pr(T < t) = 0.9999			Ha diff ! = 0 Pr(|T| > |t| = 0.0002)		t = 3.7610 Degree of freedom = 408 Ha diff > 0 Pr(T > t) = 0.0001	

Source: Field Survey, 2025

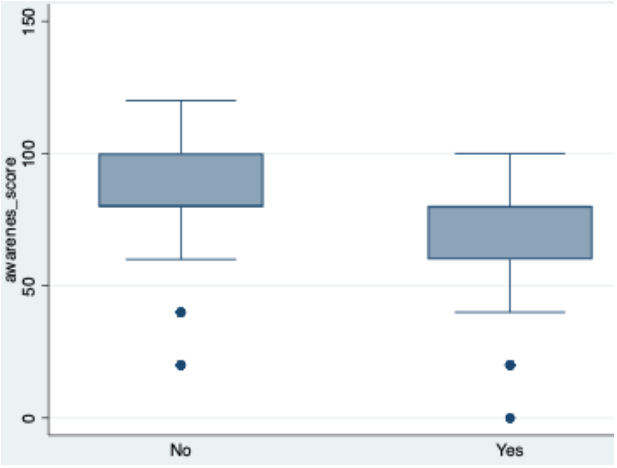

Figure 4. Difference in score on awareness and willingness to test for HIV

95% CI: 0.161–1.478) and senior high school education (AOR = 0.393; 95% CI: 0.141–0.901) were less likely to express willingness to test for HIV. A crucial and statistically significant finding was observed regarding HIV awareness. Individuals who acknowledged awareness of HIV had a markedly higher likelihood of being informed about HIV testing compared to those who lacked such awareness (AOR = 1.821; 95% CI: 1.029–5.278; $P < 0.05$).

In general, the majority of socio-demographic factors (age, marital status, domicile, number of sexual partners, and employment position) did not independently forecast awareness among men inclined to get HIV testing. The model comprised 410 respondents, yielding a pseudo R-squared of 0.245, indicating that the factors account for approximately 24.5% of the variance in awareness. Nevertheless, the comprehensive model likelihood ratio test (Prob > $\chi^2 = 0.290$) suggests that the model lacked statistical robustness, necessitating cautious interpretation of the findings.as seen in Table 4.

Discussion

The results demonstrate that awareness of HIV tests services within the study group is high. Nonetheless, despite this considerable findings, a significant percentage of males remained reluctant to undergo testing. This indicates that an HIV test service are notably accessible in the district and that fundamental informational dissemination has predominantly been accomplished. The disparity between awareness and genuine willingness could be attributed to a significant weakness of information-centric strategies for promoting HIV testing, indicating that elements beyond mere knowledge critically influence testing behavior. This findings is in line with Ndin et al., in Cameroon. [9]

Bivariate and multivariate results consistently indicate that the majority of socio-demographic characteristics, including age, marital status, domicile, total number of sex partners, and employment status, were not substantially correlated with the desire to undergo HIV testing. This implies the reluctance to undergo testing is not confined to particular demographic or geographic segments within the district. The results corroborates with a study by Mbuzeleni Hlongwa et al in sub-Saharan Africa, that reveled that despite widespread awareness of HIV, men's participation in testing is low due to psychosocial and structural obstacles, including stigma. [10]

A significant inverse correlation between educational attainment and propensity to undergo testing. In comparison to individuals possessing only primary education, persons with junior high school and particularly senior high school education exhibited a markedly lower propensity to express a readiness to undergo HIV testing. This discovery challenges the prevalent belief that higher education invariably results in improved health-seeking behavior. Moreover, elevated educational achievement may correlate with heightened concerns regarding social reputation, employment opportunities, or stability in marriage, thereby deterring voluntary testing.

Men who have performed HIV self-testing were willingness to undergo testing, suggesting that personal experience via testing diminishes psychological hurdles and ambiguity. This discovery underscores the promise of self-testing as a gateway to regular HIV testing programs. This finding agrees with the results from Witzel et al [11] that shows that HIV self-testing enhances future testing rates. In several cases, males who acknowledged the existence of specific services did not consistently exhibit a greater willingness to undergo testing compared to those who were uninformed. This signifies that just awareness is inadequate to ensure behavioral adoption. This pattern strongly indicates the presence of a threshold impact of consciousness.

Despite the frequency of condom use not attaining

Table 4. Multivariate logistics regression of awareness of men who expressed willingness to test for HIV

Variables	Robust SE	COR	Robust SE	AOR [95% CI]
Age of respondent	0.014	0.983 (0.957-1.011)	.017	0.976 (0.943-1.009)
Marital Status				
Married (Ref)	.	.	.	.
Single	0.356	1.171 (0.645-2.124)	.363	0.944 (0.444-2.008)
Cohabiting	0.813	1.161 (0.295-4.576)	.584	0.764 (0.171-3.415)
Divorced	2.242	2.032 (0.234-17.668)	1.61	1.637 (0.238-11.254)
Place of Residence				
Wamfia (Ref)	.	.	.	.
Wamanafo	0.199	0.711 (0.410-1.233)	.186	0.629 (0.352-1.124)
Dormaa Akwamu	0.385	0.921 (0.406-2.088)	.406	0.959 (0.418-2.201)
Kyeremasu	0.628	1.480 (0.645-3.398)	.725	1.766 (0.790-3.947)
Number of sex partners				
None (Ref)	.	.	.	.
One	0.179	0.624 (0.356-1.096)	.211	0.668 (0.359-1.241)
Two	0.594	1.148 (0.416-3.166)	.819	1.518 (0.527-4.372)
More than two	0.461	1.091 (0.476-2.501)	.534	1.185 (0.490-2.868)
Educational Status				
Primary School (Ref)	.	.	.	.
Junior High School	0.307	0.613 (0.230-1.636)	.276	.488 (0.161-1.478)
Senior High School	0.224	0.488 (0.198-1.203)	.206	0.393 (0.14-0.901)*
Tertiary Education	0.264	0.633 (0.279-1.434)	.266	0.538 (0.204-1.417)
Employment Status				
Unemployed (Ref)	.	.	.	.
Employed	0.185	0.564 (0.296-1.073)	.226	0.547 (0.244-1.229)
Self-Employed	0.396	1.118 (0.559-2.238)	.578	1.379 (0.606-3.136)
Apprentice	1.296	1.677 (0.369-7.624)	1.082	1.437 (0.329-6.282)
Awareness of HIV				
No (Ref)	.	.	.	.
Yes	0.751	1.515 (0.573-4.004)	1.901	1.821 (1.029-5.278)*
Mean dependent var	0.798		SD dependent var	0.402
Pseudo r-squared	0.245		Number of obs	410
Chi-square	19.701		Prob>chi2	0.290
Akaike crit. (AIC)	430.621		Bayesian crit. (BIC)	502.912
** $P<.01$, and * $P<.05$				

Source: Field Survey, 2025

statistical significance, it had the most robust correlation with awareness in the bivariate analysis. Men who indicated occasional condom use exhibited the highest levels of awareness, whereas those who never utilized condoms shown the lowest levels. This results could be that men who practice protective sexual behaviors may also have greater exposure to HIV-related knowledge and prevention messaging.

In the multivariate model, general awareness of HIV was identified as a statistically significant predictor, indicating that men who were cognizant of HIV were more inclined to exhibit awareness regarding testing and to report greater engagement with HIV-related information. Nonetheless, the model's overall explanatory power was limited, explaining roughly one-quarter of the variance.

The findings collectively indicate that the correlation between awareness and the propensity to undergo HIV testing is intricate and non-linear. Although awareness of services, accessible testing, and self-testing options enhances access and understanding, elevated awareness may concurrently heighten anxiety of societal repercussions and perceived personal risk. Consequently, HIV testing initiatives that predominantly depend on communication of information are improbable to yield ideal outcomes. The data suggest that men's understanding in the district has progressed to a point where informational hurdles are diminished, whereas psychosocial barriers, including fear and shame, have emerged as the primary obstacles to HIV testing uptake.

Conclusion

In conclusion, despite a relatively high awareness of HIV and HIV testing services among men, our study illustrates that awareness alone is unable to foster a robust willingness to undergo testing. The results demonstrate that access to testing information, and prior awareness of HIV greatly affect men's willingness to undergo testing. Consequently, initiatives designed to enhance HIV testing rates among men must transcend information-centric methods and integrate stigma-reduction tactics, specialized counselling, community support, and male-friendly services for testing to effectively close the divide between awareness and testing behavior.

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Authors' Contribution

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Wriiting -Original Draft: Kanboyori Arimiyaw Iddrisu, Sabina Ampon-Wireko, Enock W Weikem, Patience Nawaane.
Wrtting -Review & Editing: Samuel Yaw Opoku, Isaac Yaw, Patience Nawaane.

Competing Interests

The authors declare that they have no conflicts of interests.

Ethical Approval

An ethical approval for this study was obtained from the Kwame Nkrumah University of Science and Technology Ethics Committee with reference number CHRPE/AP /053/25. All procedures performed in this study were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Consent was implied upon survey completion, ensuring anonymity, data protection, and privacy.

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