Awareness of HIV status and barriers to accessing testing services among the Youth in Asutifi North District, Ghana, 2020

Dawuda Jawarah Adamu[1], Atsu Dodor[2], Samuel Malogae Badiekang[2], Bernard Aanoume Ziem[2], Abdul Gafaru Mohammed[3], Samuel Bortier Borlabi[2], Blaise Kuubabongnaa Bagyilko[4], Samuel Dapaa[3], Kofi Agyabeng[5], Gyesi Razak Issahaku[6], Joshua Billy[2], Samuel Boakye-Boateng[7]

[1]Goakro Effah Senior High School, Ghana Education Service, Offuman, Ghana, [2]Ahafo Regional Health Directorate, Ghana Health Service, Hwidiem, Ghana, [3]Ghana Field Epidemiology and Laboratory Training Programme, Accra, Ghana, [4]Wa East District Health Directorate, Ghana Health Service, Funsi, Ghana, [5]Department of Biostatistics, School of Public Health, University of Ghana, Accra, Ghana, [6]Tamale Teaching Hospital, Ministry of Health, Tamale, Ghana, [7]Upper East Regional Health Directorate, Ghana Health Service, Bolgatanga, Ghana

KEYWORDS: HIV, Youth, Awareness, Barriers, Status, Testing, Strategies, Access, Stigma, Ghana

&CORRESPONDING AUTHOR
Samuel Malogae Badiekang, Ghana Health Service, Ghana

malogaesamuel@gmail.com

RECEIVED
09/12/2023

ACCEPTED
09/12/2023

PUBLISHED
18/12/2024

LINK

https://www.afenet-journal.net//content/article/7/56/full/

ABSTRACT

Introduction: The burden of HIV/AIDS among the youth has remained high at 12% in 2020. The levels of awareness of HIV status and barriers to testing services uptake among the youth are not fully determined. We studied HIV status awareness and barriers to HIV testing among the youth in Asutifi North district, Ghana. **Methods:** A cross-sectional study was conducted among 396 youths aged 15-24 years selected through a multistage sampling technique from Jan-Feb 2020. We used a structured questionnaire to gather data on HIV status awareness, testing services, and barriers to testing services uptake. The level of awareness of HIV status was estimated, and factors associated with the uptake of testing services were examined using multiple logistic regression at a 95% confidence interval. **Results:** The mean age of youth was 19.9±2.5 years. Awareness of HIV status among the youth was 25.5% (101/396), HIV testing uptake was found to be 25.7% (46/179) among females. Health workers' attitude was 100.0% (93/93); fear, stigma, and discrimination, 70.5% (279/396) were the main barriers to HIV testing services uptake. Having intentions for an HIV test (AOR= 1.80; 95% CI= 1.06 -3.05) was associated with higher odds of knowing one's HIV status. **Conclusion:** We found low HIV status awareness among the youth which could be attributed to stigma and discrimination and poor healthcare worker attitude. Ghana Health Service and partners should adopt innovative strategies to improve the youth's HIV status awareness and testing uptake.

© Dawuda Jawarah Adamu et al Journal of Interventional Epidemiology and Public Health [Internet]. This is an Open Access article distributed under the terms of the Creative Commons Attribution International 4.0 License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

CITATION
Dawuda Jawarah Adamu et al. Awareness of HIV Status and Barriers to Accessing Testing Services among the Youth in Asutifi North District, Ghana, 2020. Journal of Interventional Epidemiology and Public Health. 2024 Dec 18;7(4):11.
DOI:
https://www.doi.org/10.37432/jieph.2024.7.4.147

Introduction

Human Immuno-deficiency Virus (HIV) prevention, diagnosis, and treatment are still challenging despite several interventions. Globally, 39 million people were living with HIV and 630,000 died from HIV-related causes in 2022 [1]. Sub-Saharan Africa remained the most affected region, with 25.6 million people living with HIV (PLHIV), accounting for almost 60% of the global new HIV infections [2]. It is estimated that 5/100,000 HIV-related deaths are associated with youth (15-24 years) in Africa which outnumbers the global burden by five times. In Ghana, the estimated adult national HIV prevalence in 2021 was 1.7% however, this was higher (2.5%) among the youth [3]. In 2022, there were an estimated 354,927 PLHIV with 40,497 new infections in Ghana. Of these, 16,629 were young people (15-24 years), representing 5% of the PLHIV. The number of new HIV infections shows that the youth are more affected with about 14% (5,613) of the total new infections [4]. From the 2020 HIV Sentinel Survey (HSS), Ahafo recorded a higher HIV prevalence (3.5%), compared to the national average (2.0%). HIV prevalence in the Asutifi North District was 1.84% in 2019 [5].

Achieving the 95-95-95 targets is one of the key strategies to end the AIDS epidemic by 2030, which means that 95% of people living with HIV know their status, 95% of those diagnosed receive antiretroviral therapy, and 95% of those on treatment have viral suppression [6,7]. There are still significant gaps and challenges in reaching these targets [7], especially among young people [8], who are at higher risk of acquiring HIV and face multiple barriers to accessing HIV testing and treatment services [9]. In Ghana, only 28.3% of young people aged 15-24 years had ever tested for HIV, and only 16.7% knew their current HIV status in 2019 [10].

Stigma and discrimination continue to play a significant role in deterring youth from seeking HIV testing services [11]. Negative attitudes and behaviors towards individuals living with HIV can create an environment of fear and shame, discouraging youth from getting tested and knowing their HIV status [12]. The influence of healthcare worker behavior cannot be overlooked either, as it can either foster a supportive environment or contribute to reluctance in seeking testing [13,14]. An improved HIV test utilization by the youth requires enhancing the caliber and availability of health services designed for adolescents, which provide all-encompassing, personalized care, and intersectionality. This involves educating healthcare providers about the unique requirements of young individuals, guaranteeing sufficient resources and facilities, and creating systems for referrals and continued support [14,15].

Many young people are at risk of getting infected with HIV, without timely testing and treatment, the number of adolescents living with HIV will increase dramatically in the future[16] and they will lose their chance to live longer and healthier lives [16]. HIV testing plays a vital role as an initial step for both prevention and treatment [17]. However, numerous young individuals are unaware of their status or encounter obstacles in obtaining healthcare services. Enhancing the adolescent-friendliness of public health facilities is an approach employed to promote testing, alongside helping survivors of sexual violence who have an increased susceptibility to HIV infection [14]. Nearly, 30% of new HIV infections were among the youth in 2020[18], this shows the urgent need to scale up HIV testing and treatment among adolescents and young adults, as well as to educate them about how to prevent HIV transmission [12]. Understanding HIV status awareness and barriers to testing amongst the youth is vital to adopting effective strategies alongside the facility-based strategies to improve testing rates for the achievement of the 95-95-95 targets by the year 2030.

This study assessed awareness of the youth on their HIV status, HIV testing uptake, and barriers to HIV testing uptake.

Methods

Study Setting

Asutifi North District is one of the six administrative districts in the Ahafo Region with an annual and youth population of 16,670 and 76,678 respectively for the year 2023. The district shares boundaries with Sunyani Municipality to the north, Tano North District to the northeast, Dormaa Municipality and Dormaa East to the northwest, and Asutifi South District to the south and East.

The district has four (4) sub-districts with 14 health facilities including one government hospital, two health Centres, five Community-Based Health

Planning and Services (CHPS) compounds, one private maternity home, three private clinics, and two private hospitals. The district has two adolescents´ health corners and two facilities with built Prevention of Mother to Child Transmission (PMTCT) centres. There are two Antiretroviral Therapy Centres in the district. Agriculture and related work is the major occupation in the district. The district is also rich in gold deposit. This is attested by gold mining activities in two sub-districts namely Kenyasi and Gyedu subdistricts.

Study design

We used a cross-sectional design to assess HIV awareness and barriers to testing among the youth (15-24 years) in Kenyasi sub-district of Asutifi North District. Data for this study was collected from January to February, 2020. Study sites and respondents were selected through a multi-stage sampling technique. A structured questionnaire was used to gather data on HIV status awareness, testing uptake, and barriers to HIV testing uptake. Chi-squares and binary logistic regression were conducted in STATA 18.5 to measure association between HIV testing uptake, HIV status awareness, and the other study variables. Findings were reported in frequencies, percentages, crude and adjusted odds ratios at 95% confidence intervals, and p-values of less than 0.05 were reported as significant.

Study Population and Eligibility Criteria

The study included individuals who were within the age range of 15 to 24 years and residing in Kenyasi sub-district of Asutifi North from January to February 2020. Eligible respondents who were extremely ill and those absent at the time of interview were excluded from the study.

Sample Size Estimation

The 2019 estimated youth population of 11,761 at 95% confidence level of 95%, margin of error is 0.05 were used to estimate the sample size using Taro Yamane Formula [19]. A 5% was added to account for non-response.

$$n = \frac{N}{1+Ne^2}$$

$$\frac{11,761}{1+11,761(0.05^2)} = 387$$

where n = sample size, N = Population Size, e = margin of error

Non-response estimates = $387 \times \frac{5}{100} = 407$

Study Variables

The main outcome variable was youth awareness of their HIV status measured by asking the youth if they knew their HIV status. The predictor variables were barriers to testing, access, and healthcare worker attitudes.

Sampling Process

To ensure a fair and representative sample, the following steps were taken to select respondents: Step 1: From a list of four sub-districts, one (1) sub-district (Kenyasi) was chosen at random. Step 2: From a list of grouped communities with similar characteristics, eight communities were randomly selected. Step 3: In each of the selected communities, schools, churches, mosques, and markets were alternately chosen at random until the required number of respondents for each community was reached. Step 4: With the assistance of leaders from schools, churches, and mosques, individuals aged 15-24 years were identified and randomly selected for a scheduled interview. Household listing was conducted in the selected communities, and eligible respondents were recruited and interviewed.

Data Source and Collection

Data were collected through face-to-face interviews using a structured questionnaire. The questionnaires were designed in google forms and hosted on Google Drive. Trained interviewers visited the selected households, schools, markets, mosques, and churches to explain the purpose of the study.

Quality Control and Biases

The questionnaire was pretested in Asutifi South district with similar population characteristics before

the main data collection. The pretest identified potential issues in wording, flow, and clarity, which were subsequently addressed to enhance the validity of the instrument.

Data Analysis and Data Management

Data were exported from Google Drive in an Excel file, cleaned, and imported into STATA 14.1 for analysis. Frequencies and percentages were computed for socio-demographics, awareness of HIV status, and barriers to HIV testing. Binary Logistic Regression was performed to establish relationships between awareness of HIV status and the socio-demographic variables, awareness of HIV testing and counselling, knowledge of where HIV testing services are provided, and barriers to taking an HIV test. A p-value of less than 0.05 at 95% Confidence Interval (CI) was considered significant at both crude and adjusted levels.

Data Availability

The data used to perform the analysis and generate the tables are available from the corresponding author upon reasonable request.

Ethical Considerations

Ethical approval was obtained from the Ghana Health Service Ethics Review Committee (GHS-ERC Number: GHS-ERC028/11/19). Informed consent was obtained from respondents and parental assent obtained for minors. Responses were anonymized and data confidentiality was assured. Permissions were obtained from teachers, and the Ghana Education Service Directorate at the District Level. Data were stored in a google drive accessible to only the investigators.

Results

Socio-Demographic Characteristics of the Respondents

Youth marital status was 11.6% (46/396), 67.9% (269/396) of the respondents had attained secondary level education and 0.25% had primary education. Also, 59.9% (237/396) were Christians and 2.0% were traditionalists (Table 1).

Relationship between Youth Awareness of their HIV Status and Study Variables

Table 2 displays the chi-square test of relationships between youth awareness of their HIV status and the other study variables. Among the youth, 25.5% (101/396) were aware of their HIV status; 45.6% (46/101) of youth who were aware of their HIV status were within the age categories of 21-24 years. We found 75.3% (76/101) of the youth who were single were aware of their HIV status. HIV status awareness at the bivariable level had a statistically significant relationship with these variables: marital status (p=<0.001), knowledge about HTC (p<0.001), knowing about HIV testing place (p=0.036), and having HIV test intentions (p<0.001). Among youth who aware of their HIV status 95.1% (96/101) were students, and 50.5% (50/101) did not know about the place where HIV testing took place and 98.0% (99/101) had intentions of taking an HIV test (Table 2).

Barriers to HIV Testing among the Youth

All (396/396) of the youth interviewed either agreed or strongly agreed that healthcare workers´ attitudes were barriers to getting an HIV test. Fear, stigma, and discrimination were cited by 70.5% (279/396) of the youth as a barrier to taking an HIV test. All the youth who responded agreed that healthcare worker attitudes and behaviours were barriers to taking an HIV test; 81.3% (322/396) strongly agreed and 18.7% (74/396) agreed. 80.8% (320/396) of the youth reported indicated that the place where HIV tests were conducted was convenient (Table 3).

Relationship between Awareness of HIV Status, Socio-demographic and Other Study Variables

Table 4 is a binary logistic regression conducted at the crude and adjusted level to measure the strength of associations between the independent variables and the youth´s awareness of their HIV status. At the adjusted level only youth with intentions of taking an HIV test and those who did not have knowledge about HIV Testing and Counselling (HTC) were significantly associated with awareness of their HIV status. Youth who did not know about HIV testing and counselling had 4.68 times higher odds of being aware of their HIV status than those who were aware of HIV testing and counselling (AOR= 4.68; 95% CI= 2.47, 8.86, p= <0.001). Youth with intentions

of taking an HIV test had 1.80 times higher odds of being aware of their HIV status compared to youth without intentions of taking an HIV (AOR= 1.80; 95% CI= 1.06 -3.05, p= 0.030) (Table 4).

Discussion

This study revealed that only a quarter of the youth were aware of their HIV status. A recent study confirmed our findings in Ghana which reported low (26.4%) proportions of youth 15-24 years being aware of their HIV status [20]. Evidence from other studies suggests that a little over one-tenth of youth have tested and known their HIV status. The low awareness of HIV status finding is consistent with a previous study which studied youth 10-19 years [14]. Low awareness of HIV status among the youth highlights challenges in accessing testing services by the youth studied, which is a major obstacle to achieving the first 95 of the 95-95-95 global goals set to be achieved by the year 2030. Achieving 95% awareness of HIV status among the youth requires multifaceted approaches; like community-based and Home-based HIV testing approaches found to be effective for some hard-to-reach groups like men will complement the facility-based approaches [21]. Further studies to examine youth willingness to take up community-level HIV testing strategies such as self-test and peer-to-peer testing can support the existing health facility-level testing approaches to increase youth awareness of their HIV status.

Married youth reported higher proportions of HIV status awareness compared to unmarried youth, this may be partly due to the mandatory prevention of mother-to-child transmission (PMTCT) services that are provided in healthcare facilities. Our findings are consistent with a study by Asare et al. (2020) in Ghana which reported low (45.5%) HIV status awareness, [22] which can affect the 95-95-95 goals. This low HIV status awareness suggests the ineffectiveness of the facility-based approaches alone[23], which can lead to increased HIV transmission, late diagnosis and treatment, and low quality of life among HIV-positive youth. Strengthening youth-friendly health services, school health services, and targeted education for organized youth groups would improve testing uptake. Further research to understand the youth perspectives on the nature of health services that would enhance their uptake of HIV testing services will be vital to the development of policies and planning of HIV intervention programmes for the youth [24,25].

We found stigma and discrimination as important barriers to HIV testing among the youth. Suboptimal knowledge of HIV status among the youth has effects like delayed diagnosis and treatment, increased community transmission and spread, and missed opportunities for prevention. Fear, stigma, and discrimination were perceived by over 70% of the youth as barriers to testing uptake which can increase the risk of HIV transmission and progression to AIDS by reducing the uptake of preventive measures, testing, treatment adherence, and viral suppression. It can also fuel violence, marginalization, and human rights violations against people living with or at risk of HIV, especially key populations such as young people, LGBTI, and commercial sex workers [26,27]. This can be worse in a mining district like Asutifi North. These findings are consistent with a systematic review by Karver et al. (2022) on documented negative effect of stigma and discrimination on HIV testing uptake [28].

Our results also highlighted the importance of healthcare worker behavior at the health facility as a key factor in preventing HIV testing among the youth. This suggests an adolescent reproductive health corners and youth-friendly clinic services of adapting intersectionality for promoting youth uptake of HIV testing in the Asutifi North district. This was reflected in the results when all respondents indicated that healthcare worker attitude at the HIV testing centre is a barrier to taking an HIV test. Without immediate reorientation and training of the healthcare worker to provide youth-friendly HIV testing and counselling services, healthcare workers´ attitudes will continue to serve as barriers to the uptake of HIV testing. Consistent with this finding is a study that reviewed literature and summarized the main challenges that healthcare workers face when providing HIV services to young people in Sub-Saharan Africa. Challenges such as lack of youth-friendly infrastructure, legal clarity, training, and caregiver support were identified as challenges with healthcare workers providing HIV testing services for young people [29].

Strangely youth who were not aware of HIV testing and counselling services were much aware of their HIV status than those who were unaware of HIV

testing and counselling services. Their HIV status awareness can be attributable to Know Your Status (KYS) campaigns that sometimes take place with the support of some Non-governmental Organizations in the Asutifi North District. Increasing public sensitization about HIV, providing them with alternative testing strategies, and showing them where to get tested will improve HIV testing rates. Married youth were also found to be more aware of their HIV status than the youth who were not married. Youth who were within the age of 18-24 years were much aware of their HIV status compared to the other age groupings. Studies in both Uganda and Kenya confirm youth awareness of HIV testing services, and marital status, have significant relationship with HIV status awareness among the youth [30,31]. Since health facility-based approaches are less preferred by youth due to perceived barriers [23,24].

The major strength of this study is unravelling youth intentions of taking an HIV test as an important variable that influence youth awareness of their HIV status compared to youth who reported no intentions of taking an HIV test. Similar findings were reported by Kidman et al. 2020 [26] revealing more than 50% of youth having intentions of taking an HIV test once test is made available. Adopting multiple HIV testing strategies will health the health system take advantage of translating the high HIV test intentions among the youth into high testing and increased HIV status awareness among the youth. Blending HIV testing approaches like; peer and community-led HIV testing strategies (Self-test Approaches, partner notification services, workplace HIV testing services) and facility-based testing (PMTCT, PITC) will increase HIV testing rates and increased HIV awareness among the youth in the Asutifi North district.

It is important to interpret these findings with care since they are limited to self-reported data from the youth, which may be subject to recall and social desirability bias. Perspectives and experiences of the healthcare workers who provided HIV testing and counselling services, which may be important for understanding the quality, accessibility, and effectiveness of the HIV testing services were not assessed in this study. This study did not also measure when the youth last tested for HIV hence their recent exposure risk is unknown, the study only measured the proportion of youth who are aware of their HIV status. To address these biases, questionnaires were pretested during the design phase and reworded to avoid leading, judgmental, or ambiguous terms that might trigger social desirability bias.

Future studies using longitudinal study designs may be needed to assess changes in attitudes and behaviors related to HIV testing and to better understand the factors that influence these changes to guide interventions that will improve HIV status awareness and testing uptake among the youth.

Conclusion

This study found low awareness of HIV status among the youth in the Asutifi North District, intention to take an HIV test is an essential variable for the awareness of HIV status among the youth. Healthcare worker attitudes and behaviors at healthcare facilities was a major barrier to HIV testing. The findings emphasize the need to adopt both peer-community-led and facility-based HIV testing approaches to increase testing rates and awareness of HIV status among the youth. The National AIDS Commission in collaboration with the Ghana Health Service and other implementing partners should adopt more inclusive approaches such as Peer-Community-led HIV testing strategies to provide supportive environments, and intersectionality to move closer towards achieving the 95-95-95 goals and empowering a proactive youth generation in managing their sexual health.

What is known about this topic

- Nationally 2.5% of the youth in Ghana are living with HIV
- HIV prevalence rate in Ahafo region (3.5%) was higher than the national average
- Youth are more vulnerable to new HIV infections

What this study adds

- Low (23.5%) awareness of HIV status among the youth in Ahafo region

- Poor attitude of the healthcare workers as reported by the youth served as a major barrier to uptake of HIV testing services
- Innovative strategies such as community-based HIV testing strategies can improve HIV status awareness and testing among the youth

Competing interests

The authors declare no competing interests.

Funding

This study was fully funded by the principal investigator.

Authors' contributions

ADJ and SMB conceptualized and designed the study. SKB, BAZ and SBB provided technical inputs and administrative support during the field data collection. ADJ, KA and SMB collected and analyzed the data. ADJ, KA and SMB interpreted the results. SMB, GRI, JB, SKB and BKB wrote the initial draft of the manuscript with input from all authors. MAG provided critical feedback and revisions. All authors read and approved the final manuscript.

Acknowledgments

Sincere gratitude goes to Dr. Vitalis Bawontuo for supervising this work, his guidance, feedback, and encouragement throughout the project. His expertise and insights were instrumental in shaping our research question, methodology, and analysis. We also thank the School of Public of the Catholic University of Ghana, Sunyani for their constructive comments and suggestions on our draft project. We appreciate the professional editing services provided by AFENET, which helped us improve the clarity and readability of our manuscript.

Tables

Table 1: Socio-Demographic Characteristics of the Youth (N=396)
Table 2: Bivariate Analysis between Independent Variables and Youth Awareness of their HIV Status
Table 3: Barriers to HIV Testing (N=396)
Table 4: Relationship between Youth Awareness of their HIV Status and Independent Variables

References

1. World Health Organization. **HIV and AIDS** [Internet]. Geneva (Switzerland): World Health Organization; 2024 Jul 22 [cited 2024 Dec 4].

2. World Health Organization. **Key facts HIV** [Internet]. Geneva (Switzerland): World Health Organization; 2022 Jul 26 [cited 2024 Dec 4]. [7 p.]. Download key-facts-hiv-2021-26july2022.pdf.

3. UNAIDS. **Ghana** [Internet]. Geneva (Switzerland): UNAIDS; c2024. Country factsheets: Ghana 2023: HIV and AIDS estimates; [cited 2024 Dec 5]; [about 12 screens].

4. Ghana´s National Estimates Team. **2019 National HIV Estimates and Projections** [Internet]. Accra (Ghana): Ghana AIDS Commission; [2020?] [cited 2023 Oct 3]. 41 Slides.

5. Ghana AIDS Commission. **Ghana´s HIV Fact Sheet 2019** [Internet]. Accra (Ghana): Ghana AIDS Commission; [2020?] [cited 2023 Aug 4]. 6 p.

6. Frescura L, Godfrey-Faussett P, Feizzadeh AA, El-Sadr W, Syarif O, Ghys PD, on and behalf of the 2025 testing treatment target Working Group. **Achieving the 95 95 95 targets for all: A pathway to ending AIDS**. Ambrose Z, editor. PLoS ONE [Internet]. 2022 Aug 4 [cited 2024 Dec 5];17(8):e0272405. **https://doi.org/10.1371/journal.pone.0272405 PubMed | Google Scholar**

7. WHO Africa. **Africa cuts HIV infections, deaths but key targets still elusive** [Internet]. Brazaville (CG): WHO Africa; 2021 Dec 7 [cited 2023 Sep 10].

8. Jung MS, Dlamini NS, Cui X, Cha K.Prevalence of HIV testing and associated factors among young adolescents in Eswatini: a secondary data analysis . BMC Pediatr [Internet]. 2022 Nov 14 [cited 2024 Dec 5];22(1):659. https://doi.org/10.1186/s12887-022-03698-0 PubMed | Google Scholar

9. UN Youth. Young People and HIV [Internet]. Geneva (Switzerland): UN Youth; [2013] [cited 2023 Aug 23]. 5 p. This Fact Sheet was prepared jointly by the United Nations Population Fund (UNFPA) and the Joint United Nations Programme on HIV/AIDS Secretariat (UNAIDS).

10. Ya Asare B, Y Yeboaa H, Dwumfour-Asare B.Acceptance and utilization of HIV testing among the youth: a cross-sectional study in Techiman, Ghana . Afr H Sci [Internet]. 2020 Apr 20 [cited 2024 Dec 5];20(1):142-9. https://doi.org/10.4314/ahs.v20i1.19 Download pdf to view full text. PubMed | Google Scholar

11. Kontomanolis EN, Michalopoulos S, Gkasdaris G, Fasoulakis Z. The social stigma of HIV-AIDS: society´s role. HIV AIDS (Auckl) [Internet]. 2017 May 10 [cited 2024 Dec 5]; 2017:111-8. https://doi.org/10.2147/HIV.S129992 Download pdf to view full text. PubMed | Google Scholar

12. Sonko I, Chung MH, Hou WH, Chen WT, Chang PC.Predictors of HIV testing among youth aged 15-24 years in The Gambia. Ortega JA, editor. PLoS ONE [Internet]. 2022 Feb 18 [cited 2024 Dec 5];17(2):e0263720. https://doi.org/10.1371/journal.pone.0263720 PubMed | Google Scholar

13. Schwarcz S, Richards TA, Frank H, Wenzel C, Chin Hsu L, Chin CSJ, Murphy J, Dilley J.Identifying barriers to HIV testing: personal and contextual factors associated with late HIV testing . AIDS Care [Internet]. 2011 Mar 18 [cited 2024 Dec 5];23(7):892-900. https://doi.org/10.1080/09540121.2010.534436 Purchase or subscription required to view full text. Google Scholar

14. Kidman R, Waidler J, Palermo T, On Behalf of the Tanzania Adolescent Cash Plus Evaluation Team, Palermo T, Groppo V, Kajula L, De Hoop J, Prencipe L, Nkolo JWJC, Mitti R, Munanka B, Luchemba P, Lukongo TM, Mulokozi A, Gilbert U, Van Ufford PQ, Le Kirkegaard R, Eetaama F.Uptake of HIV testing among adolescents and associated adolescent-friendly services . BMC Health Serv Res [Internet]. 2020 Sep 17 [cited 2024 Dec 5];20(1):881. https://doi.org/10.1186/s12913-020-05731-3 PubMed | Google Scholar

15. Greenwood GL, Wilson A, Bansal GP, Barnhart C, Barr E, Berzon R, Boyce CA, Elwood W, Gamble-George J, Glenshaw M, Henry R, Iida H, Jenkins RA, Lee S, Malekzadeh A, Morris K, Perrin P, Rice E, Sufian M, Weatherspoon D, Whitaker M, Williams M, Zwerski S, Gaist P. HIV-related stigma research as a priority at the national institutes of health. AIDS Behav [Internet]. 2021 Apr 22 [cited 2024 Dec 5];26(S1):5-26. https://doi.org/10.1007/s10461-021-03260-6 PubMed | Google Scholar

16. UNICEF. Adolescent HIV prevention [Internet]. c2024[Last updated 2024 Jul; cited 2024 Dec 5]; [about 8 screens].

17. World Health Organization. Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach [Internet]. Geneva (Switzerland): WHO; 2021 Jul 16 [cited 2023 Aug 24]. 548 p. Download 9789240031593-eng.pdf.

18. CitiNewsroom.com: Over 5,000 15-24 year olds infected with HIV in Ghana in 2020. Citi Newsroom [Internet]. 2021 Sep 27 [cited 2023 Aug 23].

19. Adam AM. Sample size determination in survey research . JSRR [Internet]. 2020 Jun 25 [cited 2024 Dec 5];26 (5):90-7. https://doi.org/10.9734/jsrr/2020/v26i530263 Download sciencedomain,+Adam2652020JSRR58400.pdf.

20. Appau R, Aboagye RG, Nyahe M, Khuzwayo N, Tarkang EE. **Predictive ability of the health belief model in HIV testing and counselling uptake among youth aged 15-24 in La-Nkwantanang-Madina Municipality, Ghana** . BMC Public Health [Internet]. 2024 Jul 9 [cited 2024 Dec 6];24(1):1825. **https://doi.org/10.1186/s12889-024-19362-4 PubMed** | **Google Scholar**

21. Hensen B, Taoka S, Lewis JJ, Weiss HA, Hargreaves J. **Systematic review of strategies to increase men´s HIV-testing in sub-Saharan Africa** . AIDS [Internet]. 2014 Sep 10 [cited 2024 Dec 6];28(14):2133-45. **https://doi.org/10.1097/qad.0000000000000395 PubMed** | **Google Scholar**

22. Ya Asare B, Y Yeboaa H, Dwumfour-Asare B.**Acceptance and utilization of HIV testing among the youth: a cross-sectional study in Techiman, Ghana** . Afr H Sci [Internet]. 2020 Apr 20 [cited 2024 Dec 6];20(1):142-9. **https://doi.org/10.4314/ahs.v20i1.19** Download ajol-file-journals_45_articles_195294_submission_proof_195294-529-493583-1-10-20200428.pdf. **PubMed** | **Google Scholar**

23. Sundararajan R, Ponticiello M, Nansera D, Jeremiah K, Muyindike W.**Interventions to increase HIV testing uptake in global settings** . Curr HIV/AIDS Rep [Internet]. 2022 Apr 20 [cited 2024 Dec 6];19(3):184-93. **https://doi.org/10.1007/s11904-022-00602-4 PubMed** | **Google Scholar**

24. Koenig LJ, Hoyer D, Purcell DW, Zaza S, Mermin J. **Young people and HIV: a call to action**. Am J Public Health [Internet]. 2016 Feb 17 [cited 2024 Dec 6];106(3):402-5. **https://doi.org/10.2105/ajph.2015.302979** Subscription or purchase required to view full text. **PubMed** | **Google Scholar**

25. Kidman R, Violari A. **Growing up positive: adolescent HIV disclosure to sexual partners and others**. AIDS Care [Internet]. 2020 Mar 3 [cited 2024 Dec 6];32(12):1565-72. **https://doi.org/10.1080/09540121.2020.1736260** Subscription or purchase required to view full text. **PubMed** | **Google Scholar**

26. Stuber J, Meyer I, Link B. **Stigma, prejudice, discrimination and health**. Social Science & Medicine [Internet]. 2008 Apr 25 [cited 2024 Dec 6];67(3):351-7. **https://doi.org/10.1016/j.socscimed.2008.03.023 PubMed** | **Google Scholar**

27. Stangl AL, Earnshaw VA, Logie CH, Van Brakel W, C. Simbayi L, Barré I, Dovidio JF.**The Health Stigma and Discrimination Framework: a global, crosscutting framework to inform research, intervention development, and policy on health-related stigmas**. BMC Med [Internet]. 2019 Feb 15 [cited 2024 Dec 6];17(1):31. **https://doi.org/10.1186/s12916-019-1271-3 PubMed** | **Google Scholar**

28. Karver TS, Atkins K, Fonner VA, Rodriguez-Diaz CE, Sweat MD, Taggart T, Yeh PT, Kennedy CE, Kerrigan D.**HIV-related intersectional stigma and discrimination measurement: state of the science** . Am J Public Health [Internet]. 2022 Jun 28 [cited 2024 Dec 6];112(S4):S420-32. **https://doi.org/10.2105/ajph.2021.306639 PubMed** | **Google Scholar**

29. Mutambo C, Hlongwana K. **Healthcare workers´ perspectives on the barriers to providing HIV services to children in sub-saharan africa**. AIDS Research and Treatment [Internet]. 2019 Mar 3 [cited 2024 Dec 6];2019(1):8056382. **https://doi.org/10.1155/2019/8056382 PubMed** | **Google Scholar**

30. Benyumiza D, Amongin JF, Ochaba I, Adupa M, Abuch N, Banula CB, Udho S.**Factors associated with utilization of HIV testing services among adolescents aged 10-19 years in lira district, northern uganda: a cross-sectional study** . Maciejczyk M, editor. BioMed Research International [Internet]. 2021 Aug 12 [cited 2024 Dec 6];2021(1):9568148. **https://doi.org/10.1155/2021/9568148 PubMed** | **Google Scholar**

31. Cheruiyot C, Magu D, Mburugu P, Sagwe D.**Uptake and utilization of institutional voluntary HIV testing and counseling services among students aged 18-24 in Kenya´s public Universities** . Afr H Sci [Internet]. 2019 Dec [cited 2024 Dec 6];19(4):3190-9. **https://doi.org/10.4314/ahs.v19i4.42** Download ajol-file-journals_45_articles_192304_submission_proof_192304-529-487549-1-10-20200117.pdf. **PubMed** | **Google Scholar**

Table 1: Socio-Demographic Characteristics of the Youth (N=396)		
Variable	**Freq.**	**Percent (%)**
Sex Youth		
Male	217	54.8
Female	179	45.2
Age Group of Youth		
15-17 years	61	15.4
18-20 years	186	47.0
21-24 years	149	37.6
Religion of Youth		
1. Christians	237	59.9
2. Protestant	8	2.0
3. Muslim	151	38.1
Youth Marital Status		
Single	350	88.4
Married	46	11.6
Youth Education Status		
Tertiary Education	126	31.8
Secondary Education	269	67.9
Primary Education	1	0.3
Youth Occupation		
Student	386	97.5
Professional	10	2.5
Aware of HIV Status		
Yes	101	25.5
No	295	74.5

Table 2: Bivariate Analysis between Independent Variables and Youth Awareness of their HIV Status			
	Youth Aware of their HIV Status (N= 396)		
Variable	**No** **Freq (%)**	**Yes** **Freq (%)**	**χ2 (p-value)**
Age Group			5.093 (0.078**)**
15-17 years	51 (17.3)	10 (9.9)	
18-20 years	141 (47.8)	45 (44.5)	
21-24 years	103 (34.9)	46 (45.6)	
Mean±SD	19.86±2.51		
Sex			0.006 (0.936)
Male	162 (54.9)	55 (54.5)	
Female	133 (45.1)	46 (45.5)	
Religion			4.096 (0.129)
Traditionalist	6 (2.0)	2 (2.0)	
Christian	185 (62.7)	52 (51.5)	
Muslim	104 (35.2)	47 (46.5)	
Marital Status			22.788 (<0.001)
Single	274 (92.9)	76 (75.2)	
Married	21 (7.1)	25 (24.8)	
Education Status			1.746 (0.453)
Tertiary Education	89 (30.2)	37 (36.6)	
Secondary Education	205 (69.5)	64 (63.4)	
Primary Education	1 (0.3)	0 (0.0)	
Occupation			3.240 (0.072)
Student	290 (98.3)	96 (95.0)	
Professional	5 (1.7)	5 (5.0)	
Know about HTC			51.083 (<0.001)
Yes	43 (14.6)	50 (49.5)	
No	252 (85.4)	51 (50.5)	
Knows Testing Place			4.400 (0.036)
No	184 (62.4)	51 (50.5)	
Yes	111 (37.6)	50 (49.5)	
HIV Test Intentions			360.495 (<0.001)
No	290 (98.3)	2 (2.0)	
Yes	5 (1.7)	99 (98.0)	

Table 3: Barriers to HIV Testing (N=396)		
Variable	**Freq.**	**Percent (%)**
Awareness of Place HIV Test is Conducted		
No	235	59.34
Yes	161	40.66
Mentioned Barriers to HIV Test		
Fear Stigma & Discrimination	279	70.45
Fear of +ve Results	77	19.44
Partner & Self Trust	6	1.52
Confidentiality Issues	34	8.59
Healthcare Worker Attitudes are Barriers to HIV Testing		
Strongly Agree	322	81.31
Agree	74	18.69
HIV Testing Place is Convenient		
No	76	19.19
Yes	320	80.81

5						
	Youth Aware of their HIV Status (N=396)					
Variable	**Yes Freq (%)**	**No Freq (%)**	**COR (95% CI)**	**p-value**	**AOR (95% CI)**	**p-value**
Age Group						
15-17 years	10 (9.90)	51 (17.29)	1		1	
18-20 years	45 (44.55)	141 (47.80)	0.61 (0.29, 1.31)	0.207	0.80 (0.36, 1.78)	0.588
21-24 years	46 (45.54)	103 (34.92)	0.44 (0.20, 0.94)	0.034	0.85 (0.36, 2.01)	0.710
Sex						
Female	46 (45.54)	133 (45.08)	1		1	
Male	55 (54.46)	162 (54.92)	1.02 (0.65, 1.60)	0.936	0.93 (0.56, 1.56)	0.793
Religion						
Traditionalists	2 (1.98)	6 (2.03)	1		1	
Christian	52 (51.49)	185 (62.71)	1.19 (0.23, 6.05)	0.838	0.72 (0.16, 3.29)	0.671
Muslim	47 (46.53)	104 (35.25)	0.74 (0.14, 3.79)	0.716	0.51 (0.11, 2.30)	0.377
Marital Status						
Single	76 (75.25)	274 (92.88)	1		1	
Married	25 (24.75)	21 (7.12)	0.23 (0.12, 0.44)	<0.001	0.81 (0.34, 1.94)	0.641
Education Status						
Tertiary Education	37 (36.63)	89 (30.17)	1		1	
Secondary Education	64 (63.37)	205 (69.49)	1.33 (0.83, 2.14)	0.237	1.13 (0.64, 1.99)	0.641
Primary Education	0 (0.00)	1 (0.34)	-		-	
Occupation						
Professional	5 (4.95)	5 (1.69)	1		1	
Student	96 (95.05)	290 (98.31)	3.02 (0.86, 10.66)	0.086	1.85 (0.46, 7.41)	0.384
Knows about HTC						
Yes	50 (49.50)	43 (14.58)	1		1	
No	51 (50.50)	252 (85.42)	5.75 (3.46, 9.54)	<0.001	4.68 (2.47, 8.86)	<0.001
Knows HIV Testing Place						
Yes	50 (49.50)	111 (37.63)	1		1	
No	51 (50.50)	184 (62.37)	1.63 (1.03, 2.56)	0.037	0.95 (0.55, 1.64)	0.862
HIV Test Intentions						
No	67 (66.34)	149 (50.51)	1		1	
Yes	34 (33.66)	146 (49.49)	1.93 (1.20, 3.09)	0.006	1.80 (1.06, 3.05)	0.030
Barriers to HIV Testing						
Fear of +ve Results	2 (1.98)	4 (1.36)	1		1	
Fear Stigma & Discrimination	73 (72.28)	206 (69.83)	0.52 (0.09, 3.12)	0.479	0.42 (0.07, 2.50)	0.340
Partner & Self Trust	16 (15.84)	61 (20.68)	0.74 (0.40, 1.36)	0.335	0.89 (0.45, 1.73)	0.723
Confidentiality Issue	10 (9.90)	24 (8.14)	0.63 (0.25, 1.58)	0.324	0.74 (0.25, 2.19)	0.592
Healthcare workers are Barriers HIV Testing						
Agree	19 (18.81)	55 (18.64)	1		1	
Strongly Agree	82 (81.19)	240 (81.36)	1.01 (0.57, 1.80)	0.97	0.88 (0.44, 1.74)	0.708
Test Place is Convenient						
Yes	76 (75.25)	244 (82.71)	1		1	
No	25 (24.75)	51 (17.29)	0.64 (0.37, 1.09)	0.102	0.68 (0.37, 1.26)	0.221