

Can we self-test? Understanding the factors associated with the awareness and utilization of HIV self-testing kits among women in Ghana

Martin Wiredu Agyekum, Frank Kyei-Arthur, Isaac Yeboah, Marijanatu Abdulai, Grace Frempong Afrifa-Anane, Sylvester Kyei-Gyamfi

Extended abstract

Introduction

Knowledge of HIV status is the first and most essential step in the HIV care and treatment cascade (Kamble et al., 2023; Sanga et al., 2019; Ankrah & Dako-Gyeke, 2021). Evidence shows that more than half of the new HIV infections are caused by persons who are not aware of their HIV status (Ssekankya et al., 2021; Dzinamarira et al., 2020). Globally, several programmes have been developed to help improve HIV testing and reduce the spread of the HIV pandemic. For instance, the Joint United Nations Programme on HIV/AIDS (UNAIDS) 95–95-95 targets aim to ensure that 95% of people living with HIV know their status, 95% of all those who are diagnosed with HIV infection receive sustained antiretroviral drugs and 95% of all people receiving antiretroviral therapy to have viral suppression by 2025 (Obiezu-Umeh et al., 2021). HIV testing is therefore essential for achieving “the first 95” by 2025 and contributing to the achievement of Sustainable Development Goal 3, specifically Target 3.3, which aims at the elimination of HIV/AIDS.

Several factors inducing stigma and privacy at health facilities limit the uptake of HIV self-testing (HIVST) (Johnson et al., 2017; Mason et al., 2022). Hence, to bridge the gap in HIV testing to ensure a continuum of care and the timely initiation of Antiretroviral Treatment (ART), the World Health Organisation recommended HIV self-testing as an additional approach to HIV self-testing service (HIVST) in 2016 (WHO, 2016; Kamble et al., 2023; Sanga et al., 2019). The self-testing allows people to collect their blood samples, conduct the test and interpret the results independently (Obiezu-Umeh et al., 2021) and is considered convenient, reliable, safe, and ensures privacy (Dzinamarira et al., 2020)

In Ghana, HIV self-testing was incorporated into HIV care and prevention in 2022. Despite closing the HIV testing gap by adopting HIVST, awareness of the existence of the service is very critical to its usage. Multilevel factors such as personal, interpersonal, and structural could influence the understanding and self-testing of HIV. In sub-Saharan Africa (SSA), there are several studies on HIV care and prevention. However, few of such studies focused on HIVST. For instance, in Ghana,

Nagai et al.'s (2021) study examined the feasibility of HIVST, while Abubakari et al.'s (2021) study focused on intervention on HIVST among men who have sex with men. To the best of our knowledge, no study has used nationally representative data to examine the factors associated with the awareness and use of HIV self-test kits in Ghana. This study employs a socio-ecological framework to explore the factors associated with awareness and use of HIVST among women in Ghana. The study findings will guide policymakers on which factors to target when promoting the uptake of HIVST and help to achieve the Sustainable Development Goal 3.3 which aim at ending HIV pandemic in 2030.

Methods

We used the seventh round of the nationally representative Ghana Demographic and Health Survey (GHDS). The 2022 GDHS used a two-stage cluster sampling procedure to select respondents. The dependent variables, awareness of HIVST and use of HIVST, were binary. Awareness of HIVST kits was measured by whether women had ever heard of HIVST, while use of HIVST was measured by whether women had ever used HIVST kits. This study was restricted to women who have ever had sex, and the sample was 12,143.

Furthermore, among women who have ever had sex, we focused on those who were aware of HIVST and yielded a 2280 sample size. The independent variables were age, ecological zones, place of residence, educational level, religion, wealth quintile, marital status, National Health Insurance (NHIS) status, distance to a health facility, listening to the radio, watching television, reading newspaper, use condom during last sex, number of sexual partners in the previous 12 months and heard of antiretrovirals (ARVs). A binary logistic regression model was used to examine the factors associated with awareness and use of HIVST kits. Variables are considered statistically significant at a 95% confidence interval (p -value < 0.05).

Results

The prevalence of awareness of HIVST was 18.8 percent, and 15.5 percent had tested for HIV themselves. Women aged 20-24 years [aOR = 1.68; 95% CI=1.26-2.23], 25-29 years [aOR = 1.58; 95% CI = 1.17-2.14], 30-34 years [aOR = 1.51; 95% CI = 1.10-2.07], 35-39 years [aOR = 1.61; 95% CI = 1.18-2.21], with primary [aOR = 1.42; 95% CI = 1.09-1.86], secondary [aOR = 2.04; 95% CI = 1.62-2.57], higher education [aOR = 7.42; 95% CI = 5.65-9.75], and heard of ARVs [aOR = 2.41; 95% CI = 1.99-2.92] were more likely to be aware of HIVST kit while women who

resides in middle zone [aOR =0.78; 95% CI = 0.63-0.97], coastal zone [aOR=0.77; 95% CI = 0.61-0.97], married [aOR=0.78; 95% CI = 0.64-0.95], living with partner [aOR=0.63; 95% CI = 0.50-0.79], formerly married [aOR=0.74; 95% CI = 0.57-0.97], and had less than one hour distance to a health facility [aOR=0.58; 95% CI = 0.37-0.90] were less likely to be aware of HIVST kit. In addition, women aged 35-39 years [aOR=3.20; 95% CI = 1.11-9.25] and those with higher education [aOR=5.90; 95% CI = 2.49-11.24] were more likely to self-test for HIV while those who live in the coastal zone [aOR=0.41; 95% CI = 0.22-0.76] and do not have valid NHIS card [aOR=0.55; 95% CI = 0.33-0.89] were less likely to use HIVST kit.

Factors associated with awareness and use of HIV self-test kit

	Awareness of HIV self-test kit		Use of HIV self-test kit	
	Odds Ratio (95% CI)	P>t	Odds Ratio (95% CI)	P>t
Age				
15-19 (RC)				
20-24	1.68 [1.26-2.23]	0.000	2.10 [0.77-5.77]	0.149
25-29	1.58 [1.17-2.14]	0.003	2.52 [0.94-6.77]	0.067
30-34	1.51 [1.10-2.07]	0.010	2.82 [0.99-8.04]	0.052
35-39	1.61 [1.18-2.21]	0.003	3.20 [1.11-9.25]	0.032
40-44	1.26 [0.88-1.80]	0.207	1.92 [0.61-6.01]	0.264
45-49	1.13 [0.77-1.64]	0.537	2.06 [0.62-6.80]	0.237
Ecological zones				
Northern (RC)				
Middle	0.78 [0.63-0.97]	0.028	0.68 [0.38-1.20]	0.179
Coastal	0.77 [0.61-0.97]	0.026	0.41 [0.22-0.76]	0.005
Marital status				
Never married (RC)				
Married	0.78 [0.64-0.95]	0.012	0.95 [0.62-1.44]	0.809
Living with partner	0.63 [0.50-0.79]	0.000	0.89 [0.53-1.48]	0.644
Formerly married	0.74 [0.57-0.97]	0.027	0.75 [0.35-1.59]	0.451
Educational level				
No education (RC)				
Primary	1.42 [1.09-1.86]	0.010	0.64 [0.23-1.74]	0.377
Secondary	2.04 [1.62-2.57]	0.000	0.98 [0.48-2.00]	0.965
Higher	7.42 [5.65-9.75]	0.000	5.29 [2.49-11.24]	0.000
NHIS status				
Valid (RC)				
Not valid	0.94 [0.82-1.09]	0.411	0.55 [0.33-0.89]	0.015
Distance to a health facility				
2 hours or more (RC)				
Within 1 hour	0.68 [0.45-1.03]	0.070	1.17 [0.21-6.44]	0.860
less than 1 hour	0.58 [0.37-0.90]	0.017	1.97 [0.43-9.17]	0.384
Less than 30 minutes	0.65 [0.41-1.03]	0.065	1.83 [0.40-8.35]	0.434
Number of sexual partners in the last 12 months				

1 (RC)				
2	0.93 [0.65-1.35]	0.716	1.17 [0.46-3.00]	0.746
Heard of ARVs				
No (RC)				
Yes	2.41 [1.99-2.92]	0.000	1.42	0.239

Note: Place of residence, religion, economic status, reading newspaper, listening to radio, watching television and using condom during last sex were not significant. These variables are not in the table above.

Conclusion: This study demonstrated that individual (e.g., age, education, and marital status) and structural level (e.g., ecological zone and distance to a health facility) factors influence the awareness and use of HIVST kits in Ghana. Policymakers should target these factors when designing interventions to promote awareness and uptake of HIVST kits.

Reference

Abubakari, G. M. R., Turner, D., Ni, Z., Conserve, D. F., Dada, D., Otchere, A., Amanfoh, Y., Boakye, F., Torpey, K. & Nelson, L. E. (2021). Community-based interventions as opportunities to increase HIV self-testing and linkage to care among men who have sex with men—lessons from Ghana, West Africa. *Frontiers in Public Health*, 9, 660256.

Ankrah, A. K., & Dako-Gyeke, P. (2021). Factors influencing the delivery and uptake of early infant diagnosis of HIV services in Greater Accra, Ghana: A qualitative study. *PLoS ONE*, 16(2), e0246876.

Dzinamarira, T., Muvunyi, C. M., Kamanzi, C., & Mashamba-Thompson, T. P. (2020). HIV self-testing in Rwanda: awareness and acceptability among male clinic attendees in Kigali, Rwanda: A cross-sectional survey. *Heliyon*, 6(3).

Johnson, C. C., Kennedy, C., Fonner, V., Siegfried, N., Figueroa, C., Dalal, S., Sands, A. & Baggaley, R. (2017). Examining the effects of HIV self-testing compared to standard HIV testing services: a systematic review and meta-analysis. *Journal of the International AIDS Society*, 20(1), 21594.

Mason, S., Ezechi, O. C., Obiezu-Umeh, C., Nwaozuru, U., BeLue, R., Airhihenbuwa, C., Gbaja-Biamila, T., Oladele, D., Musa, A. Z., Modi, K. & Iwelunmor, J. (2022). Understanding factors that promote uptake of HIV self-testing among young people in Nigeria: Framing youth narratives using the PEN-3 cultural model. *Plos ONE*, 17(6), e0268945.

Nagai, H., Tagoe, H., Tun, W., Adiiibokah, E., Ankomah, A., Rahman, Y. A. A., Addo, S. A., Atuahene, S. K., Essandoh, E. & Kowalski, M. (2021). Perspectives of policymakers on the introduction and Scale-Up of HIV Self-Testing and Implication for National HIV Programming in Ghana. *Frontiers in Public Health*, 9, 694836.

Obiezu-Umeh, C., Gbajabiamila, T., Ezechi, O., Nwaozuru, U., Ong, J. J., Idigbe, I., Oladele, D., Musa, A.Z., Uzoaru, F., Airhihenbuwa, C. & Iwelunmor, J. (2021). Young people's preferences for HIV self-testing services in Nigeria: a qualitative analysis. *BMC Public Health*, 21, 1-9.

Kamble, S., Gawde, N., Goel, N., Thorwat, M., Nikhare, K., Bembalkar, S., Kamble, S., Brahme, R., Pawar, S., Sahoo, R. & Gangakhedkar, R. (2023). Access, timeliness and retention for HIV testing under early infant diagnosis (EID) program, India. *Scientific Reports*, 13(1), 5638.

Sanga, E. S., Mukumbang, F. C., Mushi, A. K., Lerebo, W., & Zarowsky, C. (2019). Understanding factors influencing linkage to HIV care in a rural setting, Mbeya, Tanzania: qualitative findings of a mixed methods study. *BMC Public Health*, 19(1), 1-15.

Ssekankya, V., Githaiga, S. K., Aleko, T., Munguciada, E. F., Nabakka, V. P., Kyalisiima, J. J., Ndyabakira, A. & Migisha, R. (2021). Factors Influencing Utilization of HIV Testing Services among Boda-Boda Riders in Kabarole District, Southwestern Uganda: A Cross-Sectional Study. *BioMed Research International*, 2021, 1-8.

World Health Organization (WHO). (2016). WHO recommends HIV self-testing. Geneva: WHO. <https://apps.who.int/iris/handle/10665/251549>