International Journal of Arts and Humanities: ISSN-2360-7998, Vol. 9(3): pp, 031-040, March, 2021.

Full Length Research

Students' Attitude on HIV Self-Testing; The case of Ardhi University, Tanzania

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Accepted 3rd March, 2021.

Worldwide HIV testing services (HTS) has been transformed from heath-centred services to community-based services including self-testing of HIV/AIDS with the aim of increasing people's access to HIV testing services. The Tanzania parliament has passed a bill that intent to legally allow the use of HIV Self-Testing method among her people. However, the attitudes and awareness of University students on this new health practice is not known. This study attempted to fill the void by focusing on awareness and attitude of university students on HIV self-testing. The study was conducted at Ardhi University, Tanzania and adopted a cross-sectional research design, 300 respondents were involved. Data were collected using structured questionnaire and Focus Group discussion. Descriptive statistics and Mann-Whitney U test model were used to analyze data. The findings indicate that respondents are not fully aware of HIVST. Also students have varied perceptions regarding HIVST. Majority of the respondents had positive thinking on the use of self-testing on HIV testing. The paper concludes that HIVST is particularly appropriate for reaching people at high risk of HIV who are unable to access or have difficulty accessing existing services, including; serodiscordant couples and partners, adolescents and young people, key populations and other vulnerable groups. It is recommended that for HIVST to be successful in Tanzania, the government, NGOs and any other interested stakeholders in HIV/AIDs should focus on nurturing positive attitudes and disseminating knowledge on HIVST.

Keywords: University students, Attitude, HIV Self-testing

1.0 INTRODUCTION

Globally, HIV testing services (HTS) is a critical entry point to HIV care, treatment and prevention services. Over the past decade, the global scale-up of HIV testing services (HTS) has been substantial. The HIV testing services (HTS) scaled up from hospital or health centres based to community-based outreach in specific areas such as bars or workplaces, door-to-door home-based testing, index client testing and HIV self-testing with the aim of bringing HIV testing services near to people (UNAIDS, 2011). Despite of having in place

community based HIV testing services (HTS) yet, people are not testing for example, in 2005 it was estimated that only 10% of people with HIV in Africa are aware of their HIV status and that, globally, only 12% of people who wanted to test for HIV were able to (WHO, 2016a). Moreover in 2015 it was estimated that 55% of all people with HIV in Africa and 60% of people with HIV globally knew their status and that more than 600 million people received HTS in 122 low- and middle-income countries in the years 2010–2014. People's knowledge of their own, and their partner's, HIV status is essential to the success of the global HIV response (WHO, 2015: UN, 2016).

The overarching goals of HIV testing services (HTS) are to deliver a diagnosis and effectively facilitate access to and uptake of HIV prevention, treatment and care, including antiretroviral therapy (ART), voluntary medical male circumcision, services for prevention of mother-to-child transmission, male and female condoms and lubricants, contraception, harm reduction services for people who inject drugs, pre-exposure prophylaxis and post-exposure prophylaxis (TACAIDS *et al.,* 2013). Several studies have revealed that HIV testing has induced high-impact interventions that have the potential to reduce HIV transmission and HIV-related morbidity and mortality (Gray *et al.,* 2013; Marley *et al*. 2014; Guy *et al.,* 2015; UN, 2016; WHO, 2016).

Tanzania like other African countries the HIV prevalence among adults is high with growth rate of 5 percent per year, the regional HIV prevalence ranging from 0.5 percent (Zanzibar) to 11.4 percent (Njombe) (TACAIDS *et al.,* 2013; URT, 2018). Tanzania's goal is to reach HIV epidemic control by 2020, with 90 percent of people living with the disease aware of their HIV status, 90 percent of those testing positive are placed on continuous HIV treatment, and 90 percent of those on treatment reaching viral suppression (URT, 2018; UN, 2016). Also, Tanzania has a very young population in which one third of the country's population is aged 10-24 years old, which is most sexually active (NBS and ICF, 2011; Mkumbo, 2013). The young population is at high risk of getting HIV compared to other population groups for example the statistics revealed that in year, 2016, 4.7% of adolescents of 10-19 years old were living with HIV in Tanzania (URT, 2018). University students are part of young population who engage in risky sexual behaviour such as not using condoms and having multiple sexual partners which impose significant challenges in the country's HIV response (EALP, 2010; Mkumbo, 2013). Comprehensive knowledge about HIV among university students is also low, less than half of them have adequate knowledge (EALP, 2010; Mkumbo, 2013). Moreover, the proportion of University students accessing HIV testing services has been low, with age group (15–24 years) being less likely to test than age group of 25 years old and above, indicating that many are at high risk for infection are unaware of their HIV status (Mkumbo, 2013).

Several studies (Cox, 2004; Adam and Mutungi, 2007; EALP, 2010; Mkumbo, 2013) on HIV/AIDS and university students reveals that lack of awareness of one's HIV status triggers HIV transmission and leads to treatment delays. Therefore, it is critical that we improve testing uptake and reduce the number of undiagnosed cases of HIV (NBS and ICF, 2011). To do this, we must expand delivery options that have the potential to overcome current barriers to HIV testing, including stigma, discrimination, and breach of confidentiality. HIV self-testing (HIVST) is one such option that may increase both HIV testing uptake and frequency, as well as improve early diagnosis, all of which are linked to decreased HIV-related morbidity, mortality, and transmission (EALP, 2010; Richwood *et al*., 2019).

HIV self-testing enables individuals to test themselves for HIV in private. By providing an opportunity for people to test themselves discreetly and conveniently, HIV self-testing may provide an opportunity for people who are not currently reached by existing HIV testing and counseling (HTC) services with information about their HIV status (UNAIDS, 2011). HIVST is an approach that has the potential to improve coverage while also identifying people with undiagnosed HIV infection (WHO, 2016b). HIV self-testing (HIVST) in this study means a process by which a person or individual knows their HIV status by performing an HIV test themselves and interprets the result in private. This is generally conducted using rapid test kits, such as finger stick tests (blood test) or mouth swab tests (oral-fluid test).

Tanzania has ratified to United Nations (UN) 90–90–90 global HIV targets and World Health Organization (WHO) guidelines of 2015 which aim to achieve diagnosing 90% of all people with HIV and consolidated guidelines on HIV self-testing services (URT, 2018). The guideline highlighted the potential of HIV self-testing (HIVST) to increase HTS access, especially among men, key populations and young people (WHO, 2016a). Adhering to WHO guideline, in late 2017 and early 2018, discussions related to the registration, import, and distribution of HIVST commodities began to receive increased attention from Tanzania's Parliament. This positive momentum for HIVST resulted to the creation of an updated HIV Act that includes reference to HIV self-testing permissions (Farhan and White, 2019). The Act was tabled by the government of Tanzania in Parliamentary sessions in June, 2019 and it was accepted and passed by the parliament. The enactment of HIV self-testing Act in Tanzania is expected to rapidly

increase uptake of HIV testing services, especially for youth populations with low access and those at higher risk, given the core strength of HIV Self-testing as easy access and insurance of privacy. However, there are numerous unanswered questions especially about youth's attitudes and awareness behind this new phenomenon of HIV self-testing. Therefore the study will attempt to answer those questions.

The evidences from the literature on attitudes and awareness of university students in Tanzania about HIV self-testing are scanty. The experience from other developed countries regarding youth's perceptions towards self-testing around the globe is known since they are already practicing HIV self-testing for example, in the United States of America, three studies reported high willingness to use HIVST kits among high-risk young people (Catania *et al.,* 2015*;* Brown *et al.,* 2016; WHO, 2016b). One of these studies suggested the key motivations to self-test for HIV were ease of access, no need for a clinic visit, quick results, and the fact that HIVST kits could be used in non-monogamous relationships (Brown *et al.,* 2016). Moreover, the study noted that young people lacked information about the window period (Brown *et al.,* 2016; Farhan and White, 2019). Another experiences among young black Americans also indicated HIVST is preferable to facility-based HTS because it provides privacy and increases convenience, whilst reducing stigma and normalizing HTS (WHO, 2016a; Catania *et al.,* 2015). However, young people expressed concerns about accessing confirmatory testing, coping with a reactive self-test result, and whether people with a low socio-economic status would be able to understand the instruction materials provided (Catania *et al.,* 2015; WHO, 2016a). Similar preferences were reported among young people in France, especially if HIVST were available free of charge or came with the option of having assistance (Greacen *et al.,* 2016). Given the experiences from other countries where HIV self-testing is in practice and the gap of knowledge in attitudes of youth on this new practice of HIV self-testing in Tanzania. This study had the intention of bridging gap by studying the attitudes of university students on HIV self-testing.

2.0 METHODOLOGY

The study was conducted at Ardhi University which is located in Dar es Salaam, Tanzania. Ardhi University is a public higher learning institution which offers undergraduate and post graduate programmes in land related disciplines and social sciences. Ardhi University was selected purposely, the reason being that, there are few studies on HIV/AIDs and university students conducted at the university compared to other big public universities like University of Dar es Salaam, university of Dodoma and Sokoine university of Agriculture. Also, University students were selected because they are sexually active and elite youth group who have higher chance of adopting new phenomena than any other youth group (Mkumbo, 2013).

The study adopted a cross-sectional research design, in which data were collected only once. The sampling unit was undergraduate students from all undergraduate courses offered at the university. The study involved 300 students based on Matata *et al*. (2010) who argued that 80-120 persons are adequate for most socio-economic studies in sub-Saharan Africa. A total of 15 students were selected randomly at each degree programme, the reason being every student to have an equal chance to participate in the study. The selection of participants was done at two levels. At the first level, lists of all students were obtained from the Heads of departments. At the second level, names of students were randomly drawn from the list of registered students using the Table of Random Numbers. Quantitative and qualitative data were collected using structured questionnaire and Focus Group Discussion. Focus Group Discussion was held with students and university health workers. Data were processed by using SPSS Version 20 and Microsoft excel. Descriptive statistical analyses were used to compute the student's awareness and attitudes on HIV/ AIDS self-testing using a three point likert type scale with options agree (3), uncertain (2) and disagree (1). Items which used to measure attitudes were subjected to Reliability analysis in SPSS. Reliability analysis was done so as to assess internal consistence between items in a scale. The students' attitude on HIV-self testing had acceptable internal consistency with a Cronbach's alpha coefficient 0.820. Mann Whitney u test was used to compare student's attitudes on HIV/ AIDS self-testing and their characteristics. The reasons for using Mann Whitney U test was that, all the responses from both groups are independent of each other and all responses were measured in ordinal scale.

3.0 RESULTS AND DISCUSSION

3.1 Socio-Demographic Characteristics of Respondents

Findings of the socio-demographic characteristics of respondents are presented in table I.

Table I: Socio- Demographic Characteristics of respondents in percentage (n = 300)

Characteristics	Categories	Frequency	Percent
Degree program	BA. Economics (BAE)	15	5.0
	B.A Community and Development (CDS)	15	5.0
	BSc. Urban and Regional Planning (URP)	15	5.0
	BSc. Regional and Development Planning (RDP)	15	5.0
	BSc. Housing and Infrastructure Planning (HIP)	15	5.0
	BSc. Environmental Engineering (EE)	15	5.0
	BSc. Environmental Science and Management (ESM)	15	5.0
	BSc. Science in Municipal and Industrial Services (MISE)	15	5.0
	BSc. Architecture (Bsc.Arch)	15	5.0
	BSc. Science in Interior Design (BSc.ID)	15	5.0
	BSc. Landscape Architecture (BSc. LA)	15	5.0
	BSc. in Geomatics (BSc. Gm)	15	5.0
	BSc in Geoinformatics (BSc.Gi)	15	5.0
	BSc. Information System Management (BSc. ISM)	15	5.0
	BSc. Building Economics (BSc. BE)	15	5.0
	BSc. Civili Engeering (BSc. CE)	15	5.0
	BSc. Land Management and Valuation (BSc. LMV)	15	5.0
	BSc. Real Estate (Finance and Investment) (BSc.REFI)	15	5.0
	BSc. Prpoerty and Falities Management (BSc. PFA)	15	5.0
	BSc. Accouniting and Finance (BSc. AF)	15	5.0
Entry qualification	Direct entry	275	91.7
	Equivalent entry	25	8.3
Age (years)	19 – 24	263	87.7
	25-30	36	12
	31+	1	0.3
Sex	Male	143	47.7
	Female	157	52.3
Marital status	Single	262	87.3
	Married	18	6.0
	Divorced	1	.3
	Separated	3	1.0
	Cohabiting	16	5.3

The respondents for this study were obtained from all 20 (twenty) undergraduate degree programs offered at Ardhi University. This implies that information obtained and used in this study was inclusive and diverse. Majority of respondents were aged between 19-24 years old while few were above 25 years old. This implies that majority of undergraduate students are still adolescents and sexually active of which, their proportion of accessing HIV testing services in Tanzania has been low (Mkumbo, 2013). In this regard this is a group of youth that are at high risk of getting HIV/AIDs and it was the right population to getting their opinion for this study. Also, results in Table I indicate that the number of females and males involved in the study were almost equal with female exceeding in number slightly by 4.6%. This was good as the study was able to draw opinion from both male and female students. Furthermore results in Table I indicate that, 87.3% of respondents were single. This implies that majority of undergraduate students were not yet engaged in marriage relationships. According to the findings in Table I, 91.7% of them are direct entry students, meaning that they joined university direct from form six secondary education levels. This means they have been at school all the time and it could be not easy for them to engage in marriage relationships. The findings are similar with

several studies (EALP, 2010; Mkumbo, 2013; Brown *et al.,* 2016; Marley, 2016) on sexual behavior among university students which highlighted most of university about 65%-70% are single however they highly engage in sexual behaviors.

3.2 Awareness on HIV Self-testing

The findings of the results on awareness HIV self-testing are presented in Table II. The results show, that majority of respondents about 64% have heard about HIV self-testing. This implies that respondents knew about the existence of self-testing. The majority of respondents (56.7%) heard about self-testing from mass media including Social networks, Television, Radio, Internet and Newspapers. This implies that, most of university students use mass media as the source of information, this is explained by the fact that we are on information age and university student are prime adopters. The fact that university students being early adopters in new innovations including those related sexual matters have been revealed in sundry literatures (Adam and Mutungi, 2007; EALP, 2010; Mkumbo, 2013) the reasons being, university students are visionary, imaginative, creative and inspired individuals who are willing to take risk, initiative and time to try something new. Also, the findings revealed that, majority of respondents (58.5%) heard about self-testing in the year, 2019, this attributed by the fact that self-testing was introduced in Tanzania and highly discussed in the year 2019. However, 58.5% respondents who heard about self-testing only 19.3% of respondents were able to identify tools and chemicals used for self-testing, this might be explained by fact that self-testing is a new phenomenon in the country. Moreover, during focus group discussion with students, most of them who got the information in 2019 argued that they heard from the Minister for Health, Community development, gender, Elderly and Children of Tanzania, explaining the matter on Television. Some argued that they heard the discussion about self-testing that was taking place on the Parliament of Tanzania in 2019. This implies that, university students are informed about discussions taking place in parliament and mass media which is a good practice this may be attributed by the fact that university students are venturesness and have close relationship with things that are happening outside their social system.

The findings also revealed that 89% of respondents who have identified tools and chemicals don't know how to use them. This implies that majority of respondents don't have knowledge on using self-testing tools and chemicals, in this case health experts should divot their efforts on educating people on the use of the tools and chemicals for self-testing. Having little knowledge on the use of chemicals and tools can be due to the fact that the self-testing is new practice and majority have not yet adopted it as only 6.3% of respondents had tested for HIV using self-testing method. Findings from key informant interview also revealed the same, "*Most of our students did not prefer self-testing since is a new phenomenon in Tanzania and it is not legally allowed, we hope that after being legalized a number of university will opt for HIVST as method testing as it guarantees confidentiality"-Clinical Officer Ardhi University-Dispensary*. The problem of using self-testing illegally may lead to unfaithful supplies of tools and chemicals to supply the low quality materials and therefore harm the users. This is also in line with several studies which state that many countries report HIVST is increasingly available informally through private pharmacies and the Internet (Williams *et al.,* 2016; Liu *et al.,* 2015; Bustamante *et al.* 2016; Tan, 2016). It is likely that much of this informal and unregulated sale may include the use of products of unknown quality, safety and performance (UN, 2016; WHO, 2016a).

The findings of the study also revealed that majority of respondents (78.7%) are willing to test HIV using self-testing method. This implies that many youths will be motivated to undergo HIV testing with this new method. In a focus group discussion, Health workers argued that HIVST maintains privacy and therefore reduces stigma for those who will be found HIV positive. This is in line with the study by Ritchwood *et al.*, (2019) who reported that HIVST would enable youths to have more control over disclosing their status to others due to the increased confidentiality that the test would afford them.

Table II: Awareness on Self-testing of HIV (n = 300)

Characteristics	Categories	Frequency	Percentage
Heard about HIV self-testing	Yes	192	64.0
	No	108	36.0
Source of information	Peers	34	17.5
	Mass media	110	56.7
	Family members	20	10.3
	Learning	21	10.8
	Hospital, laboratory and pharmacy	7	3.6
	Family, mass media and pears	2	1.0
Tools and chemicals you know	Identified	58	19.3
	Failed to identify	242	80.7
	Workshops and seminars	1	9.5
Tested using self –testing	Yes	19	6.3
	No	281	93.7
Willing to test using self-testing	Yes	236	78.7
	No	64	21.3
Reasons for not using self-testing	Don't know to use the tools	19	29.2
	No confidence in self-testing	18	27.7
	I cannot afford the cost	10	15.4
	Fear of results	18	27.7
Attending health centres after self-testing and found HIV positive	Yes	280	93.3
	No	20	6.7
Reasons for not attending health care	No trust in results of self testing	5	25.0
	Disease has no cure	4	20.0
	Not willing	9	45.0
	I want to spread HIV	2	10.0

Moreover, the findings revealed that ignorance on the use of the tools, no confidence in self-testing and fear of results are prime factors hindering the use self-testing. Similar findings were reported by Ritchwood *et al.,* (2019) that despite the overall positive views about self-testing participants were troubled by the fact that test results could be invalid and return false positive or negative results. These participants believed that it would then be difficult to trust the results of HIVST. Ritchwood *et al.* (2019) adds that, participants had the perception that traditional HIV testing in clinic settings gives patients access to immediate and often concurrent HIV counseling. There were also concerns about the potential costs of a HIVST, as some participants worried about youths' ability to purchase HIVST kits given the high rates of unemployment amongst youths. Acceptability and willingness to use HIVST is generally high among key populations despite some reported concerns about the potential lack of support, possible social harm, the level of accuracy of test results, and the related costs which could hinder access (WHO, 2016b). This implies that before embarking in this new practice mass campaigns should be done to address issues raised and make people more comfortable with the method.

Furthermore the study investigated the likelihood of the respondents to attend health centres if they were found HIV positive by using HIVST. The findings show that majority of respondents (93.3%) were likely to seek for further support on health centers if found HIV positive. This implies that there will be less risky with the use of self-testing method since after visiting health centers counseling will be provided and therefore reduce bad outcome. However "no trust on self-testing results" increases the likelihood of people who found HIV positive through HIVST not attending health centres, this shows lack of awareness and knowledge on HIV. This implies that awareness creation is necessary for people to be well informed on what should happen after testing and found HIV positive. This is supported by WHO (2016a) that clear messages are needed to ensure that users understand that a reactive test result must be

confirmed through further HIV testing by a trained tester. Additionally, messaging on what to do after a reactive self-test result is crucial, including where to go to access stigma-free HTS, HIV prevention, treatment and care and other support services.

3.3 Attitudes on HIVST

Table III shows responses on self-testing of HIV/ AIDS, the results reveals that respondents' agreed on 4 statements out of 10 that were used to test respondent's attitudes on HIV self-testing where majority of the respondents' about 80.3% agreed with the statement self-testing guarantee privacy. This can be explained by the fact that individual wants to know their HIV status by performing an HIV test themselves and interprets the result in private. Also, lack of trust among health workers influences self-testing, as reported by 73.7% of the respondents. This implies that health worker did not take patients' privacy seriously. This also, suggests poor quality of normal HIV testing services in the study area. Evidences from literature shows that the quality of HIV testing services is explained by several factors including staffs that are trustworthy, therefore lack of trust in health workers influences individuals not opt for health centred HIV-testing, which endangers responses against HIV prevention. The result is comparable with (Ritchwood *et al.,* 2016; Ritchwood *et al.,* 2019) who reports that lack of trust among health workers in South Africa influences youths to go for self-testing. Furthermore results of the findings show that majority of respondents about 71.0% agreed with the statement that people are motivated to test using self-testing than normal testing, this is attributed by the fact that self-testing is convenient and insurance of privacy. The findings are less similar with several studies on Youth and HIV (Catania *et al.,* 2015; Greecan *et al,* 2016; Brown *et al.,* 2016) who found most youths are not motivated to test HIV due to lack of trust in health workers.

Table III: Students attitudes on Self-testing of HIV/AIDS in percentage (n=300)

Statement	Agree	Uncertain	Disagree
Self-testing of HIV is better than the normal testing	49.7	14.7	35.7
Self-testing will help to reduce HIV/AIDS transmission	45.7	14.3	40.0
People are motivated to test using self-testing than normal testing	71.0	10.0	19.0
People will to attend clinics found HIV positive after self-testing	41.7	25.0	33.3
Lack of trust among health workers influences self-testing	73.7	9.0	17.3
Lack of counseling prohibit youths opt self-testing HIV	57.7	14.7	27.7
Self-testing will cause many deaths	31.3	16.3	52.3
Self-testing will cause conflicts	29.3	15.0	55.7
Self-testing guarantee privacy	80.3	6.3	13.3
Knowhow behind self-testing prohibit youths opt for it	43.0	29.3	27.7

3.4 Privacy in self-testing

Table IV presents attitude of respondents on privacy in self-testing based on their demographic characteristics. The result of the Man Whitney U Test show that there is significant difference in attitudes on privacy of self-testing among respondents, whereby type of program and entry qualification were statistically significant 0.005 and 0.032 respectively at ($P < 0.05$) while others (sex, marital status, age and place of living) were not statistically significant ($P > 0.05$). This means that attitude on self-testing privacy differs by type of programs and entry qualification, the difference is that student of Arts programs (BA. Economics and BA. Community and Development Studies) and equivalent entry qualification views self-testing guarantees privacy more than their counterparts. The finding implies that the students in Arts programs and with equivalent qualifications are likely rely on self-testing of HIV compared to their fellow students from Science programs and with direct entry. This may be explained by the fact that usually privacy increases with age as equivalent student are more aged than direct student.

Table IV: Respondents responses on self-testing privacy by demographic characteristics (n=300)

Variable	N	U	W	Z	P
Male	143				
Female	157	10623.5	23026.5	-1.159	0.246
Below 21 years old	182				
Above 21 years old	118	10441.0	27094.0	-0.585	0.559
Arts programs	30				
Science programs	270	3446.0	3911.0	-1.936	0.050*
Single	162				
Married	38	4788.5	5529.5	-0.548	0.584
Direct entry	275				
Equivalent entry	25	2822.0	40772.0	-2.142	0.032*
In campus	92				
Off campus	208	9419.0	13697.5	-0.310	0.757

**Single includes never married, separated and divorced*
**Married includes who are marriage and cohabitating*

4.0 CONCLUSIONS AND RECOMMENDATIONS

The findings show that University students had incomplete information about HIVST especially on identifying and use of tools and chemicals used for HIVST. Also university students had varied perceptions regarding HIVST, where majority of the respondents had positive thinking on the use of this new means of HIV testing, a behavior that has to be maintained and nurtured by all stakeholders in health sector. HIVST is particularly appropriate for reaching people at high risk of HIV who are unable to access or have difficulty accessing existing services, including; serodiscordant couples and partners, adolescents and young people, key populations and other vulnerable groups. To maximize the benefits of HIVST, it is important to not only consider the quality-assured product but also the components of a successful programme, including service delivery approaches, ways to facilitate linkage to care, and monitoring and reporting systems. Programmes that have all these components will be more successful when developed in collaboration with the Ministry of Health and other relevant governmental and Non-Government agencies, such as community-based organizations, networks of people living with HIV, key population groups and communities affected by HIV, as well as researchers. To make all these possible, the study recommends that, the government, NGOs and any other stakeholder in health sector should opt for a Community based approach to HIV self-testing. This is an approach that involves distributing HIV self-testing kits to community members through volunteers or community health workers. This approach involves some supervision from a community health worker or volunteers before and/or after individuals tests themselves for HIV in private. Pretest support may include a demonstration of how to use the test and interpret the result, as well as information on where and how to seek additional support, further testing and services for HIV prevention, care and treatment. Post-test support may provide an opportunity for community members to disclose their result, and it also may include face to face counseling, peer support and referrals for additional services for HIV prevention, treatment and care. Lastly but not least mass campaigns should be done to address issues raised by students about the validity of HIVST, lack of emotional support when testing alone, and the cost of HIVST kits.

ACKNOWLEDGEMENTS

We would like to thank our study participants for their time and input. We would also like to thank Ardhi University for having conducive working environment that enabled us to perform this study.

REFERENCES

Adam, M. B., and Mutungi, M., 2007. Sexual risk behaviour among Kenyan University students. Journal of the Arizona-Nevada Academy of Science, 39(2), p. 91–98.

Brown, W. Carballo-Dieguez, A., John, R.M, and Schnall, R., 2016. 3rd edition, Information, motivation, and behavioral skills of high-risk young adults to use the HIV self-test. AIDS Behaviour.

Bustamante, M.J., Konda, K.A., Davey, J. D., Leon, S.R., Calvo, G.M and Salvatierra, J., 2016. HIV self-testing in Peru: questionable availability, high acceptability but potential low linkage to care among men who have sex with men and transgender women. Int J STD AIDS.

Catania J.A., Dolcini. M.M., Harper, G.W., Orellana, E.R., Tyler, D.H, Timmons, A., 2015. Self-implemented HIV testing: perspectives on improving dissemination among urban African American youths. Journal Public Health, 105(8), p.449-462.

Cox, L., Reid, G., Arscott, R., and Thomas, J., 2004. Knowledge, Atitudes and sexual practices of medical students towards HIV/AIDS. Caribbean Quarterly, 50(6), p.28–38.

East African Lake Victoria Project (EALP), 2010. East African Community (EAC) HIV Serobehavioural study in Six universities in Tanzania. Retrieved from *http://ihi.eprints.org/1322/1/HIV*_and_AIDS_BASELINE_STUDY_REPORT-TANZANIA_UNIVERSITIES.pdf_Dec_2019.pdf

Farhan, Y. and White, J., 2019. *Assessing the Potential for Community Level HIV Self-testing in Tanzania.* Rockville, MD: Sustaining Health Outcomes through the Private Sector Plus Project, Abt Associates Inc.

Gray, R, Prestage G., Down, I., Ghaus, M., Hoare, A., Bradley, J., 2013. Increased HIV testing will modestly reduce HIV incidence among gay men in NSW and would be acceptable if HIV testing becomes convenient. PloS One, 8(2), p.554-569.

Greacen, T., Kersaudy-Rahib, D., Le Gall, M., Lydie, N., Ghosn, J. and Champenois, K., 2016. Comparing the information and support needs of different population groups in preparation for 2015 government approval for HIV self-testing in France. PLoS One, 211(3), p.552-567.

Guy, R.J., Prestage, G.P., Grulich, A., Holt, M., Conway, D.P., Jamil, M.S., 2015. Potential public health benefits of HIV testing occurring at home in Australia, 202(10), p.529-31.

Joint United Nations Programme on HIV/AIDS (UNAIDS). 2011. Global HIV/AIDs Report,2010: Annex 2-country progress indicators and data 2004 to 2010. Geneva.

Liu F, Han L, Tang W, Huang S, Yang L, Zheng, H., 2015. Availability and quality of online HIV self-test kits in China and the United States. Top Antivir Med, 23(7), p.506-517.

Marley, G., Kang, D., Wilson, E.C., Huang, T., Qian, Y., Li, X,. 2014. Introducing rapid oral-fluid HIV testing among high risk populations in Shandong, China: Feasibility and challenges. BMC Public Health, 14(5), p.410-422.

Matata, P. Z., Ajay, O. C., Oduol, P. A. and Agumya, A., 2010. Socio-economic factors influencing adoption ofimproved fallow practices among smallholder farmers in western Tanzania. African Journal of Agricultural Research, 5(8), p. 818 –823

Mkumbo, K., 2013. Assessment of HIV/AIDS Knowledge, Attitudes and Behaviours among among Students in Higher Education in Tanzania, *Global Public Health*, 8 (10), p.1168-1179

National Bureau of Statistics (NBS) and ICF Macro., 2011. Tanzania Demographic Health Survey. Dar es Salaam

Ritchwood, T.D., Selin, A., and Pettifor, A. 2016. HIV self-testing: South African young adults' recommendations for ease of use, test kit contents, accessibility, and supportive resources. BMC Public Health, 19**(**12), p.3 - 15.

Ritchwood, T.D., Selin, A., Pettifor, A., Sheri, A.L., Gilmore, H., Kimaru, L., Hove, J., Wagner, R., Twine, R., and Kahn, K., 2019. HIV self-testing: South African young adults' recommendations for ease of use, test kit contents, accessibility, and supportive resources. BMC Public Health [*https://doi.org/10.1186/s12889-019-6402-4*]

Tan R., 2016. Self-test kit still a prickly issue Malaysia. Available from: (*http:// www.thestar.com.my/news/nation/2016/03/07/selftest-kit-still-a-prickly-issue-pharmacy-hiv-equipment-is-questionable/)* accessed on 10th December, 2019.

Tanzania Commission for AIDS (TACAIDS), Zanzibar AIDS Commission (ZAC), National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF International., 2013. Tanzania HIV/AIDS and Malaria Indicator Survey 2011–2012. Dar es Salaam

United Nations (UN)., 2016. Invest in HIV prevention: Quarter for prevention. Geneva: Joint United Nations Programme on HIV/AIDS (2015 - 2016). Retrieved from *(http://www.unaids.org/sites/default/files/media_asset/JC2791_invest-in-HIV-prevention_en.pdf*, accessed 16 December, 2019).

United Republic of Tanzania (URT)., 2018. National Accelerated Action Plan on HIV Testing Services. Ministry of Health, Community Development, Gender, Elderly and Children. Dar es Salaam

Williams, O., Dean, J., Harting, K, Bath, K., Gilks, C.,

2016. Implications of the on-line market for regulation and uptake of HIV self-testing in Australia. AIDS Care,1(6), p. 23-34.

World Health Organization (WHO)., 2016. Consolidated guidelines on HIV testing services. Geneva in 2015 (*http://www.who.int/hiv/pub/guidelines/hiv-testing-services/en/,* accessed 01st November, 2019).

World Health Organization (WHO)., 2016. Consolidated guidelines on the use of antiretroviral therapy: a public health approach. Geneva: (*http://www.who.int/hiv/pub/arv/arv-2016/en/*, accessed 15th November, 2019).

World Health Organization (WHO)., 2015. Factsheet to the WHO consolidated guidelines on HIV testing services. Geneva: (*http://www.who.int/hiv/topics/vct/fact_sheet/en/,* accessed 5th August 2019).