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Knowledge and Utilization of Voluntary Counselling and Testing Services for HIV by Older Adults (50 Years and Over) In Botswana

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Abstract

The study explored the knowledge and use of Voluntary Counselling and Testing (VCT) services by a stratified random sample of 609 older adults from four purposively selected districts in Botswana. Only 76.8% of the older adults had taken an HIV test and 51.6% of this number actually requested the test (client initiated). More than 20% have engaged in a sexual relationship with a person whose HIV status they did not know. While 91% of older adults indicated that everyone should undergo HIV test and 96.2% know where to get the HIV test but less than 16% of them know that people who have unprotected sex, people who think they have sex with HIV infected persons and people who have direct dealings with needles and tattoos should be tested. The identified main barriers to taking HIV test were not feeling at risk of HIV infection (76.8%), fear of testing positive because of the reactions of partner(s) (10.9%), and fear of testing positive because others will judge / treat them badly (8%) were. The study shows that being educated, older than 59 years, married, female, coming from a rural location and having a negative HIV status increase the likelihood of intention to use VCT services. The study recommends that education, which targets the needs of older adults, about HIV and AIDS and VCT needs to be improved in order to enhance the uptake of VCT services, an essential step for the initiation of treatment. In addition, home-based, door-to-door HIV testing, which will increase the number of older adults to be tested, and create opportunities for increased knowledge of HIV transmission, prevention and care through provision of correct information to older adults in their homes should be instituted.

Keywords: VCT; Older adults; HIV test; Knowledge; Intention

Introduction

VCT in HIV prevention and care

Voluntary Counselling and Testing (VCT) plays a pivotal role in HIV prevention, treatment and care, early diagnosis of HIV infection as well as timely therapeutic or prophylactic interventions [1]. HIV testing and counselling has further been shown to promote risk reduction in certain groups, behaviour change and reduced transmission. It assists HIV-positive individuals in accessing intervention and support services, including management of other infectious diseases; education about living with HIV and avoiding infection of others; assisting uninfected individuals in assessing their personal risk and adopting risk reduction behaviours as well as strengthening prevention efforts, particularly at the community-level [2-4]. Factors positively related to HIV testing in Republic of South Africa include older age, greater education, greater HIV knowledge, higher risk perception, and knowing someone with HIV [5-7]. The actual uptake in most of sub-Saharan Africa remains quite low, despite the utility of VCT [3]. It is estimated that only about 45% of people living with HIV in sub-Saharan Africa know their status [8]

The overall low uptake of VCT may be associated with the lack of resources to implement plans fully for rolling out test sites and the intense stigma associated with HIV that deters people toward HIV testing. Moreover, the high cost and sustainability of such services, doubts about their effectiveness in reducing psychological stress and in bringing about behaviour change, doubts about the level of demand for the services, and potential undesirable consequences resulting from positive results, especially when follow-up services are unavailable, has affected implementation of prevention [9,10]. They have, however, not played a major role in prevention programs in developing countries. UNAIDS [8] proposes that by 2020, 90% of all people living with HIV will know their HIV status; by 2020, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy and by 2020, 90% of all people receiving antiretroviral therapy will have viral suppression. Yet, very little is known about the demand for, or impact of VCT among older adults in Botswana. The majority of participants in a survey in five districts in Botswana believed that routine testing would decrease barriers to testing (89%) and increase access to antiretroviral treatment (93%) and would also decrease HIV related stigma (60%) and violence toward women (55%) [11]. Community members associated many positive benefits with home-based, door-to-door HIV testing [12] .As access to antiretroviral therapy (ART) becomes more widely available for the treatment of HIV infection, expanding access to and use of VCT is critically important. 'Client-initiated' VCT, where individuals proactively seek HIV testing, remains the primary VCT model in many sub-Saharan African countries. Its availability is, however, constrained by a shortage of skilled service providers and weak health infrastructure. Barriers to uptake of client-initiated VCT include personal perceptions of risk, negative perceptions of health services or of HIV testing services, and fear of stigma and discrimination [13,14].

VCT among Older Adults (50 years and over)

The older adults (50 years and over) represent a 12.8% (258, 905)

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of the Botswana population [15]. Many adults over age 50 are sexually active and consider sex an important part of life, yet there are no programmes specifically targeting them [16-19]. They often consider themselves not only at low risk for HIV infection, but generally lack up-to-date information about disease prevention and transmission. Clinicians also underestimate the risk of HIV among older patients or sometimes attribute common HIV symptoms to the normal aging process experiences [20-22]. Many of the people at this age range acquired HIV infection before age 50 and some after age 50 and this has major implications for prevention (e.g., primary vs. secondary; self vs. partners) and treatment (e.g. duration, adherence, response, co-morbidities and drug toxicity).

Literature on older adults' use of voluntary testing and counselling services, and barriers to the use of the services is sparse. For instance, studies in developing countries [23,24] emphasize the social and economic impact of HIV infection – mainly its effect on older grandparents in their role as caretakers of children orphaned as a result of parental HIV infection and have ignored the prevalence of HIV infection in older people and its impact on their lives [25]. However, a study by [26] in Nnewi, Nigeria, on older adults (50 years and over) shows that uptake of HCT among males and females 50 years and above is low and concluded that offering HCT routinely is feasible and may increase linkage to HIV care and treatment for many individuals with HIV infections. The paper recommends that Routine HCT should be an integral component of any expansion in HIV prevention, care and treatment services in Africa and other settings where the prevalence of HIV is high. House to house HIV testing will improve uptake of testing among older population in developing countries. Negin et al. [19] reveals that people aged 50 years and older have lower levels of HIV-related knowledge and awareness than those aged 25–49. Older adults were less likely to have been tested for HIV and women aged 50 and older showed particularly low levels of awareness. Maa et al. [27], in their study in two different counties of Guizhou province, China, found out that the levels of HIV/AIDS knowledge and acceptability of VCT among the adults in both counties were low, and although 459 participants (43.5%) expressed an intent to use the VCT services, only 193 (16.5%) actually visited the VCT facilities, and only 42 (3.7%) actually took an HIV test within 2 months after the interview. The study further recommends that education about HIV/AIDS and VCT needs to be improved, and levels of stigma and discrimination reduced, in order to enhance the uptake of VCT services, an essential step for the initiation of treatment.

Morin et al. [28] identified the motivation to test for HIV as desire to know one's serostatus, illness with opportunistic infections-STI, tuberculosis, unexplained weight loss, or witnessed the death of a spouse, child or a close friend. The perceived behavioural risks included people describing themselves as being at risk for HIV infection, suspicion or knowledge that their husbands or male partners had other sexual partners, or sexual behaviour under alcoholic influence putting one at risk. The identified barriers to taking the test included: prohibitive cost of testing for HIV, cost of transportation to testing sites, fear of testing positive, fear of contracting HIV and stress or worry associated with testing for HIV. Lack of proper knowledge of HIV, inconvenient hours or location, not trusting that result of test will be accurate and being embarrassed seen walking in and out of a testing centre were other barriers.

Botswana situation

Botswana has an estimated HIV prevalence rate of 19.03% and prevalence of 2.92% among the population aged 18 months and above [29]. This figure is slightly higher than the 2008 prevalence of 17.6% and an incidence rate of 2.9%. The epidemic has a gender bias with females having recorded a higher HIV prevalence of 19.2% compared to their male counterparts (14.1%) in 2012 [29]. The prevalence rate for older adults (50 years and over) is 26.3% for those aged 50-54; 22.8% for those aged 55-59; 20.9% for 60-64 and 10.4% for those aged 65 and over. The gender differentials show that the females have lower prevalence rate than males (31.8%, males and 22.8%, females for age 50-54; 33.5%, males and 16.2%, females for age 55-59 years). For older age groups, the prevalence rate is higher for females than males. The report indicates that there are estimated 287,611 older adults (50 years and over) [29]. Of those in the age group who tested for HIV and declared their results, 23.7% were HIV positive (25.5% of males, 21.5% of females) and this number is likely to increase because of new entrants into this cohort as a result of use of antiretroviral therapy (ART). The HIV prevalence for the older adults is high and comparable to those of the age groups 30-34 (33.9%), 35-39 (43.7%) and 40-44 (41.8%), yet there are no interventions specifically targeting the older adults while every intervention to curb the prevalence and incidence of HIV targets only those in the population below 50 years of age.

Origin of VCT in Botswana

The Government of Botswana and the Centres for Disease Control and Prevention (CDC), in 2000, set up, as a high priority, the provision of voluntary counselling and testing (VCT) outside the health care system and the first freestanding VCT facilities, termed *Tebelopele*, or "*look into the future*," opened in April of the same year. There are 16 *Tebelopele* centres that provide free anonymous HIV rapid testing for the public with results obtained the same day. An aggressive social marketing campaign encouraged the people of Botswana to obtain their test for HIV at *Tebelopele* [2]. To increase access to HIV testing and counselling and maximize prevention and treatment opportunities, two approaches are employed, namely, Routine HIV Testing (RHT) which is provider-initiated HIV testing and counselling, and Voluntary Counselling and Testing (VCT) which is client-initiated HIV testing and counselling. RHT was implemented in Health facilities so that HIV positive patients could be identified early and those needing treatment could access it promptly [30]. Mandatory HIV testing has not been considered as effective for public health interventions or ethical in Botswana because it denies individuals the choice and violates principles such as the right to health and privacy. It is, however, only recommended in special circumstances such as rape, where it becomes necessary to ascertain if any infection has occurred in the culprit [30]. The 2012 Botswana AIDS Impact Survey [28] shows that 70.2% of those surveyed (n = 746041) had tested for HIV and 14.2% (n =105888) of those tested, belong to age group 50-64 years.

It is evident that although Botswana has made tremendous stride in the establishment of voluntary counselling and testing (VCT) centres and there's been a steady rise in those being tested for HIV, but very little is known about the knowledge, demand for or use of voluntary HIV counselling and testing among older adults in Botswana.

The present paper will bridge this gap by exploring the older adults' knowledge about VCT, utilization of VCT, knowledge about source of VCT, intention to use and barriers, and compare the acceptance of VCT among older adults (male and female).

Conceptual Framework

In order to answer the objectives of the work, the theory of planned behaviour [31,32], is appealed to. The theory provides a framework

for systematically investigating the determinants of behaviour (in this study use of VCT by the older adults). The theory hypothesises that behaviour is determined by the individual's intention to perform, or not to perform the behaviour. Intention, in turn, is determined by three factors: (i) attitude, the individual's positive or negative evaluation of performing the behaviour; (ii) the subjective norm, that is, the individual's perception of social pressures to perform or not to perform the behaviour; and (iii) perceived control, that is, the individual's perception of how easy or difficult performance of the behaviour is likely to be. These three factors, referred to as the global measures, are assumed jointly to influence behavioural intentions. The global measures are, in turn, determined by the beliefs underlying the behaviour. Attitude is determined by the individual's beliefs about the outcomes of performing the behaviour [31,32]. Although it is recognised that factors external to the model, for example personality, social circumstances and demographic characteristics, may also influence behavioural intentions, it is argued that these factors will only affect intention indirectly, through their influence on the global and belief measures, and that the model provides a sufficient explanation of intentions. Nevertheless, the theory of planned behaviour does allow for the inclusion of additional variables, providing that these variables contribute significantly to the explanation of intentions [31].

In the context of this study, the behaviour being studied is testing for HIV which is influenced by whether the older adults want to be tested or not (intention). The answer to the question, "what do I gain or lose by testing or not testing?" influences both the intention and attitude to get tested of HIV. Attitudes toward performing behaviour reflect favourable or unfavourable evaluation of the particular behaviour. Attitude toward the behaviour– in this case, uptake of VCT – is determined by individuals" beliefs about the outcome of performing the behaviour (behavioural beliefs; belief that VCT uptake is associated with certain attributes) weighed by the extent to which these outcomes are valued (belief outcomes; value attached to VCT uptake) [33].

Subjective norms refer to the perceived social pressure to perform the behaviour. They are governed by perceptions of whether significant others think that one should perform the behaviour (normative beliefs; belief about whether each referent approves or disproves of VCT) and one's motivation to comply with the wishes of significant others (motivation to comply; motivation to do what each referent thinks is right). With regard to norms, individuals differ in the weight they place on subjective norms as influencers; these also vary across behaviours [31]. In other words, some older adults may give importance to their attitude about the behaviour when deciding to engage in behaviour, while other older adults may give more importance to what they think others think they should do.

Perceived behavioural control reflects the perceived ease or difficulty associated with behaviour performance and with behavioural intention, and unlike attitudes or subjective norms, is seen to directly predict behavioural achievement. This construct of the theory is intended to account for situations where an individual has less than complete control over the behaviour and includes two components: Are resources available? (Access to the time, money and other resources required to engage in behaviour). There must be self-confidence in his/her ability to perform behaviour [33].

The study will explore the knowledge of testing for HIV and source of the knowledge, the use of VCT and the impact of the some socio-economic factors (age, education, employment status, marital status, HIV status, and location) on the intention to take and use the VCT services.

Materials and Methods

The study was cross-sectional and covered four purposively selected health districts, two urban (Gaborone and Selebi Phikwe) and two rural (Kgatleng and Serowe) because of their high HIV prevalence rates, having large hospitals and multiple clinics and to enable comparison between rural and urban areas. The stratified random sampling method was used where the strata were the selected health districts. The Survey Systems [34], a sample size calculator, was used to determine the minimum statistically adequate sample size at 95% confidence level, with an error margin of 4%, as 599. To allow for potential drop-outs, a 10% oversample was added, yielding a total of 699. G*Power 3.1.5 confirms that this sample size will provide adequate statistical power for subgroup and total sample analyses. The returned questionnaires at the end of the study were 609 (giving a response rate of 91%).

Data collection

The study used respondent-driven sampling (RDS) [35,36] to recruit older adults in each study district. RDS is a relatively new method for data collection and statistical inference with "hidden" populations. RDS is an effective way to sample most-at-risk populations in HIV biological and behavioural surveys [37]. In RDS, investigators recruit a small number of participants ("seeds") who participate in the study and invite a small number of people (usually less than or equal to three) from their network to enrol. Each subsequent participant then recruits from their network until the target number is reached. All participants received a dual incentive (for participation and for each person they recruit in the form of fruits, pencils, pens or small leaflets containing information on HIV and AIDS), producing referral chains that broaden from the seeds. Seeds were recruited based on their networks of older adult acquaintances who were willing to be interviewed about HIV and AIDS, likelihood of referring three of them to the study, diversity of backgrounds, self-reported sero-status (infected or not), and availability. Health Educators, Village Development Committees (VDC) and Home-Based Care Coordinators familiar with the population selected seeds.

Research assistants received a two-day training (didactic and role-play) on administering informed consent and the questionnaire. The research assistants were graduates from the Social Sciences and Business who are experienced in survey administration. They were males and females. The females interviewed the female participants while the males interviewed the male older adults [18].

Questionnaire administration

The researchers conducted in-person interviews with older adults. Ama and Ngome [18] used this method effectively in a study with older women and HCPs. This questionnaire was administered in-person at a time and place of the respondent's choosing. Interviewers explained the study purpose, reviewed the informed consent document, determine their level of understanding (competency) and response to questions they had before starting the interview. Persons deemed not competent to provide consent were thanked for their time, provided a brochure and/or verbal information on HIV/AIDS prevention and excused from participation. In some cases where the respondent did not have time for direct interview, the questionnaire was dropped and picked up at an agreed time. Where the researchers could not recover the questionnaire after 3 visits with reminders, it was counted as lost.

Ethical review

The study was approved by the Institutional Review Boards of the University of Botswana, and the Botswana Ministry of Health Research

and Ethics. Research Boards at the different districts also approved the study before data were collected.

Limitations

The study recognizes the inherent taboo in younger people discussing issues of sex with older adults. However, the result of the study by [18] showed that older women were very comfortable discussing their sexual disposition with our graduate and undergraduate females. The same applied to older men being interviewed by younger males

Results

Characteristics of older adults

The study shows that 60.9% of the 609 older adults were females and 39.1% were males. The majority of the older adults (56.5%) was between ages 50 and 59 years; 27.3% were between 60 and 69 years, 9.7% between 70 and 79 years, 5.9% between 80 and 89 years and 0.7% were 90 years and over. The married were 41.5% of the older adults while 14.4% were single (never married), and the rest were cohabiting (13.8%), divorced (8.4%), separated (8.5%) and widowed (13.3%). A little over half of the respondents (53.5%) had secondary education qualification and above while 9.5% had no educational qualification; 55.3% were employed and 51.1% lived in the City/Town (Table 1). Nineteen percent (19%) of them (n = 116) were HIV positive, 40.6% were negative, 18.9% refused to declare their HIV status, and 21.5% did not know their HIV status (Table not shown).

Sexual characteristics of the older adults

The sexual characteristics of the older adults were assessed using a five-item questions in which the older adults were to respond 1 = Yes and 2 = No. The responses were crossed tabulated with age as shown in Table 2. The table shows that between 98% and 100% of the older adults have ever had sexual intercourse. Only 73% of the older adults aged 50-59 ; 62.5% of those aged 60-69 years, 23.7% of those aged 70-79 years and 17.5% of those aged 80 years and above had sexual intercourse in the past 12 months before the study. Intergenerational sex was more predominant among the 70-79 years old (35.7% have had sex with person 10 years younger than them), followed by those 60-69 years old (25.5%) and the 50-59 years old (18.9%). Only 0.7% and 0.8% of those aged 50-59 years and 60-69 years, respectively, have in the past 12 months engaged in a sexual relationship with a person whose HIV status was different from their own. Also 27.7% of those aged 50-59 years and 22% of those aged 60-69 years have engaged in a sexual relationship with a person whose HIV status they did not know. These results go to confirm that older adults are sexually active and do engage in risky sexual behaviours that make them vulnerable to HIV infection.

Knowledge of VCT

The older adults' knowledge of VCT was tested by six-item variables, "Who should be tested?" Do you know where to go to get an HIV test? Have you ever been tested to see if you have the HIV virus? Have you heard of the Voluntary Counselling and Testing Services (VCTS)? "Have you participated in the counselling program?" "If yes, did you find it helpful?" Their responses were coded 1 = Yes and 2= No. The results are summarized in Table 3. The table reveals that 91% of the older adults believe that everybody should be tested of HIV (95% of males and 85% of females; 93% aged 50-59 years, 90% aged 60-69 and 84% aged 70-79 years). Surprisingly, only 12.6% (15.6% of males, 10.7% of females) of the older adults agree that those who have had unprotected sex should be tested while 12.6% (16% of males and 10.4% of females) think that those who have had sex with HIV infected persons should be tested and 12.1% (15.6% of males and 9.9% of females) consider that those who have direct dealing with needles, like tattoos and piercing should be tested. An overwhelming percentage of the older adults (96.2%) (97.9% of males and 95.1% of females) know where to get the HIV test, yet only 76.8% have been tested for HIV (82.4% of males, 73.3% of females; 77.3% of age 50-59, 77.1% aged 60-69 and 76.1% aged 70-79 years) and only 19.2% have participated in the counselling program.

The results do not show any gender differences in the responses. Thus, although more females (84.1%; n =371) than males (82.8%; n= 238) have heard about VCT and more females (84.1%) than males (75.6%) have participated in the VCT programme, a test of the difference in the proportion of the males and females responses shows that there is no significant difference between the two.($p > 0.05$). Of those who had participated in the VCT programme (55 males and 60 females), more males (78.2%) than females (70%) found the programme very helpful.

Source of HIV tests

The older adults who had been tested for HIV were asked where they had the test. The results, which are displayed in Table 4, show that a greater percentage of them (56.7%) took the test at the District hospitals (59.3% of males, 54.8% of females). The other prominent outlet was the Government health centres (23.6%), Voluntary Counselling and Testing (VCT) Centres (7.7%) and private clinics (6%).

Characteristics of older adults		Number	%
Sex	Male	238	39.1
	Female	371	60.9
	Total	**609**	**100**
Age	50-59	344	56.5
	60-69	166	27.3
	70-79	59	9.7
	80-89	36	5.9
	90 and above	4	0.7
	Total	**609**	**100**
Marital Status	Single (never married)	88	14.4
	Married	253	41.5
	Cohabiting	84	13.8
	Divorced	51	8.4
	Separated	52	8.5
	Widowed	81	13.3
	Total	**609**	**100**
Highest educational qualification	Never attended school	58	9.5
	Less than primary school	112	18.4
	Primary school completed	113	18.6
	Secondary school completed	186	30.5
	High school (or equivalent) completed	66	10.8
	College or University completed	43	7.1
	Post-graduate degree completed	31	5.1
	Total	**609**	**100**
Employment Status	Employed (self-employed, public or private sector)	337	55.3
	Unemployed and seeking employment	62	10.2
	Unemployed and not seeking employment	210	34.5
	Total	**609**	**100**
Type of residence	City/Town	311	51.1
	Rural	298	48.9
	Total	**609**	**100**

Table 1: Socio-demographic characteristics of older adults.

Sexual characteristics of the older adults		Age of respondents							
		50-59		60-69		70-79		80 and above	
		Number	%	Number	%	Number	%	Number	%
Have ever had sexual intercourse	Yes	331	98.2	160	98.8	59	100	40	100
	No	6	1.8	2	1.2	0	0	0	0
Have you had sexual intercourse in the past 12 months	Yes	243	73	100	62.5	14	23.7	7	17.5
	No	90	27	60	37.5	45	76.3	33	82.5
Has any of your partners been more than 10 years younger than you	Yes	47	18.9	26	25.5	5	35.7	1	14.3
	No	202	81.1	76	74.5	9	64.3	6	85.7
In the past 12 months, have you engaged in a sexual relationship with a person whose HIV status was different from your own?	Yes	2	0.7	1	0.8	0	0	0	0
	No	276	99.3	132	99.2	42	100	25	100
In the past 12 months, have you engaged in a sexual relationship with a person whose HIV status you did not know?	Yes	77	27.7	29	22	4	9.5	6	24
	No	201	72.3	103	78	38	90.5	19	76

Table 2: Sexual characteristics of the older adults.

Who should be tested?		Age of respondents								Sex of respondent				Total	
		50-59		60-69		70-79		80 and above		Male		Female		Number	%
		Number	%	Number	%	Number	%	Number	%	Number	%	Number	%		
All people	Yes	319	92.7	146	89.6	47	83.9	36	90.0	225	94.5	323	88.5	548	90.9
	No	25	7.3	17	10.4	9	16.1	4	10.0	13	5.5	42	11.5	55	9.1
People who have had unprotected sex	Yes	45	13.1	27	16.6	4	7.3	0	0.0	37	15.6	39	10.7	76	12.6
	No	298	86.9	136	83.4	51	92.7	40	100.0	200	84.4	325	89.3	525	87.4
People who think they have had sex with HIV infected persons	Yes	47	13.7	25	15.3	4	7.1	0	0.0	38	16	38	10.4	76	12.6
	No	296	86.3	138	84.7	52	92.9	40	100.0	199	84	327	89.6	526	87.4
People with direct dealing with needles, like tattoos, piercing	Yes	45	13.1	23	14.1	5	8.9	0	0.0	37	15.6	36	9.9	73	12.1
	No	298	86.9	140	85.9	51	91.1	40	100.0	200	84.4	329	90.1	529	87.9
Only younger people	Yes	12	3.5	7	4.3	0	0.0	0	0.0	9	3.8	10	2.7	19	3.2
	No	331	96.5	156	95.7	56	100.0	40	100.0	228	96.2	355	97.3	583	96.8
Only people who are sexually active	Yes	33	9.6	25	15.3	12	21.4	4	10.0	21	8.9	53	14.5	74	12.3
	No	310	90.4	138	84.7	44	78.6	36	90.0	216	91.1	312	85.5	528	87.7
Do you know where to go to get an HIV test?	Yes	329	96.8	158	95.8	52	91.2	40	100.0	229	97.9	350	95.1	579	96.2
	No	11	3.2	7	4.2	5	8.8	0	0.0	5	2.1	18	4.9	23	3.8
Have you ever been tested to see if you have the HIV virus?	Yes	266	77.3	128	77.1	45	76.3	29	72.5	196	82.4	272	73.3	468	76.8
	No	78	22.7	38	22.9	14	23.7	11	27.5	42	17.6	99	26.7	141	23.2
Have you heard of the Voluntary Counselling and Testing Services (VCTS)?	Yes	307	89.2	139	83.7	38	64.4	25	62.5	197	82.8	312	84.1	509	83.6
	No	37	10.8	27	16.3	21	35.6	15	37.5	41	17.2	59	15.9	100	16.4
Have you participated in the counselling program?	Yes	75	21.8	32	19.3	10	16.9	0	0	58	24.4	59	15.9	117	19.2
	No	269	78.2	134	80.7	49	83.1	40	100	180	75.6	312	84.1	492	80.8
IF YES...did you find it helpful?	Yes	54	74	28	90.3	2	20	1	100	43	78.2	42	70	85	73.9
	No	19	26	3	9.7	8	80	0	0	12	21.8	18	30	30	26.1

Table 3: Older adults' knowledge of VCT.

Barrier to taking HIV test

The older adults who indicated that they had not taken any HIV test were asked to indicate what constituted their major barriers. The responses which are summarized in Table 5 show that 76.8% (75.6%, male and 77.3%, female) of them felt that they were not at risk of any HIV infection. The other main reasons were fear of testing positive because of the adverse reactions of the partner (10.9%) and the resulting stigma that is associated with HIV infection (8%) (the subjective norms). Some of the older adults felt they were too busy, too lazy or had no time to travel to the testing centre (6.5%).

Impact of socio-economic and demographic characteristics of older adults to take or not to take HIV test

In order to determine how intention to take or not to take an HIV test is affected by socio-economic and demographic variables, the older adults were asked, "Have you ever been tested to see if you have the HIV virus?" The responses were, 1 = Yes and 2 = No. A binary logistic regression was fitted with log of the odds of taking HIV test as dependent variable and sex of the respondent, marital status, educational status, location of study, employment status, HIV status, and whether or not they requested the test as independent variables. The results are shown in Table 6. The table shows that location of study, sex and age of respondents are negatively correlated with being tested for HIV ($B<0$). However, employment status, highest educational qualification, marital status, HIV status and whether or not they requested the test are all positively correlated with having an HIV test ($B>0$).

Furthermore, those who live in the rural areas are less likely to have taken HIV test than those who live in the city/town (OR =0.666). Females are also less likely to take the HIV test than males (OR = 0.762). The older adults, who are aged 60-69 years, 70-79 and 80 years and over, are less likely to take HIV test than those aged 50-59 years.

		Sex of respondent		Total
Where test was done		Male	Female	
District Hospital	Number	115	149	264
	%	59.3	54.8	56.7
Regional Referral Hospital	Number	1	25	26
	%	0.5	9.2	5.6
Mission Hospital	Number	3	1	4
	%	1.5	0.4	0.9
Government Health Centre	Number	41	69	110
	%	21.1	25.4	23.6
Government Parastatal Dispensary	Number	3	0	3
	%	1.5	0.0	0.6
Voluntary Counselling and Testing (VCT) Centre	Number	22	14	36
	%	11.3	5.1	7.7
Pharmacy/Chemist	Number	1	2	3
	%	0.5	0.7	0.6
Private Doctor/Clinic	Number	14	14	28
	%	7.2	5.1	6.0
Shop	Number	1	0	1
	%	0.5	0.0	0.2
Mobile clinic/stop	Number	3	2	5
	%	1.5	0.7	1.1
University Health Centre	Number	1	3	4
	%	0.5	1.1	0.9
Office/work	Number	0	2	2
	%	0.0	0.7	0.4
Kgotla	Number	0	2	2
	%	0.0	0.7	0.4
Total		194	272	466

Table 4: Older adults' assessment of where HIV test is done.

The older adults with less than primary education, primary completed, secondary school completed and tertiary completed are 2.8 times, 1.37 times. 1.63 times and 5.11 times, respectively, more likely to have taken an HIV test than those who have never attended any school while the unemployed are 1.3 times more likely to have taken the test than the employed.

The married older adults and the others (cohabiting, divorced, separated, widowed) are 1.3 times and 2.1 times respectively more likely to take an HIV test than the single (never married). Not knowing one's HIV status or being HIV negative enhances desire to test for HIV. The study reveals that those who are HIV negative are 1.87 times more likely to test for HIV than those who are HIV positive. Similarly those who do not know their HIV status or failed to disclose their HIV status are 35.78 times and 1.207 times, respectively, more likely to take the HIV test than those that are positive, while those who did not request the test are 108 times more likely to take the test.

Impact of socio-economic and demographic variables on intension to use VCT

The intention to use VCT was derived from the question posed to the older adults, namely, "Do you plan to be tested again in the future?" The responses were 1=Yes, 2= No. The binary logistic regression was fitted to the log odds of the intention to use VCT as dependent variable while the independent variables are: age, employment, highest educational level attained, marital status, sex of respondent, location and HIV status. The results are shown in Table 7.

The table shows that older adults who are 60-69 years and 70-79 years old are 1.1 times and 1.25 times, respectively, have higher intention of using the VCT than those 50-59 years old. Employment is negatively correlated with intention to use. The unemployed older

		Sex of respondent		Total
Main reasons for not taking HIV test (n=138)		Male	Female	
I am not at risk of infection	Number	31	75	106
	%	75.6	77.3	76.8
I do not know where to get tested or how to go about it	Number	1	4	5
	%	2.4	4.1	3.6
I am afraid of testing positive because of the reactions of my partner(s)	Number	5	10	15
	%	12.2	10.3	10.9
I am afraid of testing positive because others will judge me/ treat me badly (stigma)	Number	4	7	11
	%	9.8	7.2	8.0
I do not want to know results since nothing can be done	Number	6	1	7
	%	14.6	1.0	5.1
I am too busy, no time, too lazy	Number	1	8	9
	%	2.4	8.2	6.5
Faithfulness	Number	1	3	4
	%	2.4	3.1	2.9
No reason	Number	0	2	2
	%	0.0	2.1	1.4
Total	Number	41	97	138
	%	29.7	70.3	100

Table 5: Old adults' main reasons for not taking HIV test.

Ref. category	Variables in the model	B	S.E.	Wald	df	Sig.	Exp(B)
Male	Female	-0.272	0.492	0.304	1	0.581	0.762
City/Town	Rural	-0.406	0.44	0.851	1	0.356	0.666
	Age of respondent			1.235	3	0.745	
50-59	60-69	-0.092	0.488	0.035	1	0.851	0.913
	70-79	-0.918	0.846	1.175	1	0.278	0.399
	80 and over	-0.249	0.724	0.119	1	0.731	0.779
Employed	Unemployed	0.282	0.526	0.288	1	0.592	1.326
	Highest educational level			9.238	5	0.1	
Never attended school	Less than primary school	1.041	0.726	2.054	1	0.152	2.832
	Primary school completed	0.316	0.755	0.175	1	0.676	1.371
	Secondary school completed	0.491	0.838	0.344	1	0.558	1.634
	High school completed	-0.673	1.023	0.434	1	0.51	0.51
	Tertiary education completed	1.632	0.905	3.248	1	0.072	5.112
	Marital status			2.029	2	0.363	
Single	Married	0.236	0.604	0.153	1	0.696	1.266
	Others(co-habiting, widowed, divorced)	0.746	0.581	1.646	1	0.199	2.108
	HIV status			47.86	3	0	
Positive	Negative	0.627	0.633	0.982	1	0.322	1.873
	Don't know	3.577	0.671	28.462	1	0	35.78
	Don't want to disclose	0.188	0.775	0.059	1	0.808	1.207
Yes	Did request the test? No	4.678	0.483	93.975	1	0	107.5
	Constant	-5.612	1.117	25.248	1	0	0.004

Table 6: Logistic regression model with odds of being tested for HIV as dependent variable.

Variables in Equation Ref category		B	S.E.	Wald	df	Sig.	Exp(B)
50-59	**Age**			6.655	3	0.08	
	60-69	0.099	0.47	0.045	1	0.83	1.105
	70-79	0.22	0.805	0.075	1	0.78	1.247
	80-89	-3.162	1.293	5.983	1	0.01	0.042
Employed	Unemployed	-0.091	0.474	0.037	1	0.85	0.913
	Highest educational status			1.623	5	0.9	
No schooling	Less than primary school	0.444	0.959	0.214	1	0.64	1.559
	Primary school completed	0.951	1.026	0.86	1	0.35	2.589
	Secondary school completed	0.512	0.986	0.27	1	0.6	1.669
	High school completed	1.083	1.106	0.958	1	0.33	2.953
	Tertiary education completed	0.884	1.097	0.649	1	0.42	2.421
Single	**Marital status**			5.934	2	0.05	
	Married	0.113	0.684	0.027	1	0.87	1.12
	Others(co-habiting, widowed, divorced, separated)	-0.945	0.635	2.217	1	0.14	0.389
Male	Female	0.014	0.484	0.001	1	0.98	1.015
City/Town	Rural	1.532	0.471	10.578	1	0	4.628
Positive	**HIV status**			11.975	3	0.01	
	Negative	0.89	1.02	0.762	1	0.38	2.436
	Don't know	-1.059	0.955	1.23	1	0.27	0.347
	Don't want to disclose	-0.465	1.156	0.162	1	0.69	0.628
	Constant	0.179	1.446	0.015	1	0.9	1.197

Table 7: Logistic regression of intention to use VCT on socio-demographic variables.

adults have less intention to use the services than the employed. The higher the level of education attained the greater the intention to use the VCT services. The study shows that those that have completed primary, completed high school and completed tertiary education are 2.6, 2.95 and 2.4 times respectively, higher intention to use the services than those who did not attain any level of education. The married older adults have slightly more intention (OR = 1.12; $p > 0.05$) to use the services than the single while the females are as likely to use the VCT services as the males (OR = 1.0) and those in the rural areas have significantly greater intention to use than those in the city (OR = 4.63, $p < 0.01$). The older adults who are HIV negative have greater intention use the services than those who are positive (OR =2.4).

HIV-testing options for older adults

Usually before an HIV test, the patient discusses the decision to have the HIV test with a health care provider or counsellor in order to make up their minds as to whether to have a test. Such counselling include discussion of sexual behaviours and number of partners, perception of risk from sexual and other sources, fears about the consequences of a positive test result and anticipation of the reactions of others to a positive test result. The cultural set up in Botswana makes it difficult for younger persons to discuss sexual issues with older people. This might constitute a hindrance to older people discovering their HIV status early enough for necessary interventions. Doctors who discuss other serious medical tests with clients each day do not discuss HIV testing. This leaves the older adults with no other option than to discover their HIV status on their own [38].

In this study, the older adults were asked, "Did you request the test or was it offered to you?" The responses were, "I requested the test", "The test was offered to me and I accepted it", or "It was a requirement for work permit, contract renewal, insurance policy, medical requirement". The results of the responses are shown in Figure 1. The figure reveals that 51.6% of the older adults who had tested for HIV actually requested the test (voluntary HIV testing-client initiated), 20.7% were provider initiated (routine HIV testing) (the test was offered to them by the provider and they accepted them). Yet, 4.6% of the HIV tests were mandatory HIV test (requirement for surgery, contract renewal, as a medical procedure or requirement for insurance). The not applicable represent those who had not gone for any test (23.2%).

Discussion

This study set as its objectives: to explore the older adults' knowledge about VCT, use, knowledge about source of VCT, intention to use and barriers, and compare the acceptance of VCT among older adults (male and female).

Using the responses from a stratified sample of 609 older adults, the study shows that 95% of the males and 89% of the females think that everyone should be subjected to an HIV test while 96.2% of the older adults (97.9% of males and 95.1% of females) know where to get the HIV test. However, less than 16% of them know that people who had unprotected sex, people who think they had sex with HIV infected persons and people who had direct dealings with needles and tattoos should be tested, and 76.8% of them have been tested for HIV. These low and imperfect knowledge levels have major implications for prevention (e.g., primary vs. secondary; self vs. partners) and treatment (e.g. duration, adherence, response, co-morbidities and drug toxicity) of HIV. The results are supported by the report of [12] who acknowledges that current understandings of HIV risk and risk prevention efforts by persons in couple relationships in sub-Saharan Africa are unsatisfactory and recommends that the prevention potential of VCT for couples in Africa can be realized only if more couples learn about and gain access to VCT. The paper further showed that women are less informed about HIV than men in both rural and urban areas with young men being 20% more likely to have correct knowledge of HIV than young women [12]. Mahmoud et al. [11] also found that

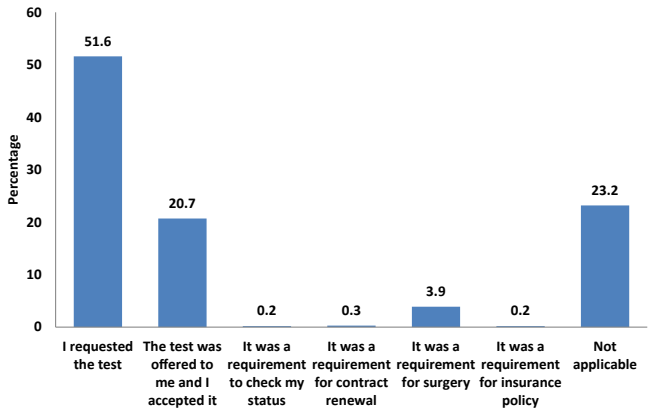

Figure 1: Older adults' choice of test procedure.

only 79% of 1005 pregnant women interviewed had basic knowledge of HIV. A study by [39] in Nnewi, Nigeria, on older adults (50 years and over) shows that uptake of HCT among males and females 50 years and above is low and concluded that offering HCT routinely is feasible and may increase linkage to HIV care and treatment for many individuals with HIV infections

The main barriers identified by the older adults to taking the VCT were, not feeling at risk of HIV infection (76.8%). Yet over 98% of them have had sex before and 73% of those aged 50-59 years, 62.5% of the 60-69 year older adults had sexual intercourse in the past 12 months while more than 20%, in the past 12 months, have engaged in a sexual relationship with a person whose HIV status they did not know. Other barriers were: fear of testing positive because of the reactions of my partner(s) (10.9%), and fear of testing positive because others will judge/treat them badly (stigma) (8%). These findings are similar to those given in the US when routine HIV testing was offered in hospital associated urgent-care settings where 47% did not feel at risk and 11% felt too ill to test [40]. Our findings are also comparable with the findings in a qualitative study in Western Uganda where individuals feared consequences of the test results and were concerned about linkage to HIV and AIDS care [41, 5]. Nakanjako et al. [5], in a study of acceptance of Routine Testing for HIV among Adult patients, found out that the main reasons for lack of prior HIV testing were no perceived individual risk for HIV infection (77%) and lack of access to free testing (25%) patients (see also [30]).

The study shows that 76.8% of the older adults have been tested and 23.7% of them are HIV positive. This percentage (76.8%) is slightly higher than 63.7% obtained by Statistics Botswana (2013) for the population aged 15-49 years who in the 12 months preceding the survey had an HIV test and were informed of the results. However, the fact that only 19.2% of them have participated in the voluntary counselling programme is indicative of ineffectiveness of the current programmes in this population and calls for immediate intervention to help those in this population. A door-to-door HIV testing would be both desirable and effective in reaching the older adults considering their age and to maintain confidentiality.

The study shows that sex and age of respondents are negatively correlated with to taking an HIV test (B<0) while employment status, highest educational qualification, marital status, HIV status and whether or not respondents requested the test are positively correlated with prior taking of HIV test (B>0). The females are less likely to take the HIV test than males while the young age groups are more likely than the older to take the test. The results are inconsistent with the study by [42] which found out that women were significantly more likely than men to have taken an HIV test (85.2% vs.76.7%, $p<0.001$), notwithstanding that of women and men who had taken the HIV test, 8% and 10%, respectively, self-reported that they had tested positive for HIV.

On the impact of the socio-economic and demographic variables on intention to use of the VCT services, the study shows that being educated, older than 59 years, married, female, coming from a rural location and having a negative HIV status increase the likelihood of intention to use VCT services. These findings point to the fact that increasing the HIV educational knowledge and encouraging marriage in the society in this era of HIV and AIDS can increase peoples' intention to use VCT to promote risk reduction, behaviour change and reduced transmission. It can assists HIV-positive individuals in accessing intervention and support services, including management of other infectious diseases, education about living with HIV and avoid infecting others, assist uninfected individuals in assessing their personal risk and adopting risk reduction behaviours as well as strengthening prevention efforts, particularly at the community-level. Creek et al, [2], [5], and [6], all share this view.

The greater proportions of older adults (51.6%) who have used the VCT have been client-initiated. This is a good omen for HIV intervention in Botswana and shows that with minimum information and education and reaching out to the older adults, the uptake of VCT will increase tremendously among the older adults, resulting in greater quality of life, whether infected or without HIV infection. There is considerable evidence that HIV-positive persons who know their status are more likely to change their behaviours in order to protect their partners [43,44]. Benefits to individuals who test negative include prevention education and counselling to reduce HIV transmission risks.

Recommendations

In the light of the findings in this study, it is recommended that:

1. Education about HIV/AIDS and VCT needs to be improved, and levels of stigma and discrimination reduced, in order to enhance the uptake of VCT services, an essential step for the initiation of treatment.
2. Since the intention to use VCT increases with being a rural dweller and recognizing that most of the older adults live in rural areas and cannot travel long distances, an appropriate intervention to meet the older adults VCT needs (including condom use should be put in place). A door-to-door HIV testing and counselling would be both desirable and effective in reaching the older adults considering their age and to maintain confidentiality
3. Information about VCT (including condom use messages) to be imparted on the older need to be culturally sensitive and age-specific.

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