

## **Aging and the Botswana HIV and AIDS epidemic: Factors associated with HIV testing and counselling among older persons**

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### **ABSTRACT**

*Since its inception in 2002, Botswana's Masa antiretroviral treatment programme has contributed significantly to the reduction of HIV related mortality in Botswana. This implies that as more people were enrolled in the treatment, HIV positive individuals were surviving longer, resulting in the high number of older persons living with HIV over the years. However, older people still remain at risk of being infected. In light of the ageing population, it is important to understand the prevalence and characteristics of HIV infection among older adults in Botswana. This paper explores factors associated with HIV testing and counselling service utilization among older persons aged 50 years to discover relevant interventions that could cater for their needs and ultimately curb infections for more years. The paper utilized data from the Botswana AIDS Impact Survey (BAIS IV) conducted in 2013, which was a cross-sectional survey conducted on a nationally representative sample of 8,275 households drawn systematically for the study. Descriptive statistics was computed to examine the association of each independent variable with the dependent variable. The findings of the study indicate that 77.8% of the respondents had tested for HIV and 84.7% of respondents had knowledge about HIV at the time of the study. According to the results, HIV related knowledge, educational level and sexual behaviour were the major factors influencing HIV testing service utilization among older adults in Botswana. It is recommended that studies on older adults living with HIV be conducted to better understand the relationship between aging with the AIDS epidemic and its impact in different contexts in order to develop and implement targeted prevention and care programmes.*

**Keywords:** HIV and AIDS, testing and counselling and older persons

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## **Introduction**

In Eastern and Southern Africa, Human Deficiency Virus (HIV) testing and counselling uptake has improved from about 64 million tests in 2009 to 72 million in 2010. However, many people living with the virus in low and middle-income countries are still not aware of their HIV status. An estimated 7.5 million people in Africa are thus eligible for treatment, but they are not accessing antiretroviral therapy (ART) because they are unaware of their HIV serostatus (World Health Organisation (WHO), 2011; United Nations International Children's Emergency Fund (UNICEF), 2011; Joint United Nations Programme on HIV/AIDS (UNAIDS), 2011). The high occurrence of HIV infection might be due to various factors, amongst them are period of diagnosis and health issues. According to the Center for Disease Control and Prevention, older people in the United States are more likely than younger people to be diagnosed with HIV infection late in the course of the disease, which means that they start treatment late and as a result they suffer more immune-system damage. An estimated 89% of people aged 50 to 54, 86% of people aged 55 to 59, 82% of people aged 60 to 64, and 73% of people aged 65 and older were diagnosed with HIV in 2013. However, this late diagnoses may be because health care providers do not always test older people for HIV, and older people may mistake HIV symptoms for those of normal aging and not consider HIV as a cause (Center for Disease Control, 2016).

Additionally, older adults living with HIV face a series of unique problems such as HIV-related illnesses, health concerns associated with growing older, multiple stigmas (ageism, homophobia, racism, and HIV-related stigma), and limited economic resources. Older people living with HIV and AIDS in the United States report higher rates of health risk behaviours such as smoking, alcohol and substance use, and they experience higher rates of mental health problems such as depression (Cahill, Geffen, Marquez & Taylor, 2016). However, the impact of the epidemic on older persons and parents of adults with AIDS in African context have been comparatively overlooked. Greater attention has been given to the role of older adults as grandparents caring for AIDS orphans and their sick adult children, than to their own vulnerability to HIV. Physical and health effects of the strain of care giving, additional domestic responsibilities, insufficient income and food deprivation, community stigmatization and the emotional effects of caring for a terminally ill person and coping with the loss of a child or children to AIDS all exact enormous pressure on older persons in general, and on women in particular (Ferreira, 2004).

## **Aging and HIV and AIDS**

The elderly population aged 60 years and above in Africa is currently estimated to be slightly over 38 million, and is projected to reach between 203 and 212 million by 2050 (Help Age International, 2002). The ageing of the world's population is one of the most important demographic trends in this era. There is a growing number of people aged 50 and older who are living with HIV in the world today, and this group includes men, women and transgender people. In addition, a large proportion of people aged 50 and older are sexually active. Statistics from the Gap Report (2014) estimated that more than 2 million people aged 50 and above live in Sub-Saharan Africa, and about 60% of them are living with HIV and AIDS.

Studies of HIV prevalence in sub-Saharan Africa usually focus on the age group 15 - 49 years. According to Mall (2005) older people are largely invisible in international data on HIV and

AIDS. Data on infection rates does not include over-50s, despite the fact that older men and women continue to engage in sexual relations well into old age. However, their understanding of the nature, cause and transmission of HIV can be limited, as they seldom have access to information on it, and awareness campaigns typically target the young. Knodel et al. (2003) observe that older persons in the United States are at high risk of HIV and AIDS, and their circumstances and needs may differ from those of younger persons on whom most research and intervention programmes typically focus. Their argument is based on the sentiment that globally, the greatest impact of AIDS on older persons occurs not on older persons who are HIV infected, but rather on those who are indirectly affected as a result of their adult children and younger generation relatives becoming ill and dying of AIDS. Most research in the United States tends to focus on older persons who are either infected or at high risk of infection and ignores the broader range of factors that are relevant for understanding the impact of the epidemic on older persons worldwide (Knodel et al., 2003).

### **HIV and AIDS in Botswana**

According to the World Health Organisation statistics, Botswana is reported to have one of the highest prevalence of HIV and AIDS estimated at 25.16% of the population aged 15 to 49 years (WHO; UNICEF, 2011). As the Botswana population continues to age, it is important to be aware of specific challenges faced by older persons, and to determine the factors that affect their HIV status. Results from 2013 BAIS IV preliminary report indicates that of the older persons (50 years and older) who tested for HIV and declared their results, 23.2% were HIV positive (25.5% of males and 21.5% of females) and the main way of transmission was sexual activity (96.4% of them had sex in the past 12 months) (Statistics Botswana, 2013). This proportion of older adults with HIV is expected to grow due to increased life expectancy as AIDS related mortality rates decline both at individual and national population levels due to the uptake of ART. A study conducted by Tlou (1996) focused on a qualitative and quantitative study of older adults in Botswana to identify their knowledge, experiences and attitudes towards HIV and AIDS. The qualitative study used 24 interviews and showed that older people were marginalized by government messages on HIV and AIDS. The study recommended that a culturally sensitive peer education intervention for AIDS prevention, care and control for older people be developed. The contextual factors contributing to HIV testing and counselling service utilization are expected to be different, and evidence shows that service utilisation is influenced by the interaction of multiple factors. HIV testing and counselling form the core of prevention and control programmes in Botswana, but little is known about the factors influencing HIV testing and counselling among older persons aged 50 and above.

Shaibu and Wallhagen (2002) carried out a study on the experiences of family caregivers to older persons in Botswana, and 24 caregivers who were caring for an older person were interviewed. Their study indicated that caring for the elderly in Botswana was a family responsibility exclusively, and the families experience a lot of stress as a result. While the number of older adults has increased, the fertility rate has declined as more women enter the labour force. Additionally, there is an increased rural to urban migration as more people search for better employment opportunities. According to Shaibu and Wallhagen's findings, the elderly population faced challenges such as stigma and embarrassment to enrol in government programmes that assist individuals who do not have any sources of income. The major concerns raised by the caregivers were that family remittances, assistance from grandchildren, assistance from within the caregivers own home environment and social support in the form of family visits were helpful but inadequate.

They further recommended that the family members' the perception of their own needs must be clearly understood and taken into consideration as these differ from health workers' perceptions of family needs (Shaibu & Wallhagen, 2002). The concerns and issues explored in the Shaibu and Wallhagen study affect the elderly population in general, which means that they also elderly people living with HIV and AIDS. This paper therefore explores factors that are associated with HIV testing and counselling among older persons aged 50 years and above in Botswana in order to advocate for intensified programmes that could cater for their needs and ultimately curb the infection for further years.

### **Theoretical framework**

The conceptualisation of this paper was influenced by a set of behavioural theories: the Health Belief Model (HBM) and the Theory of Reasoned Action. The Health Belief Model is based on the principle that the likelihood of someone adopting preventive behaviour is influenced by two factors: the perceived risk of a disease and the perception that the benefits of adopting the behaviour outweigh the costs of doing so (Strecher & Rosenstock, 1997; Fishbein & Guinan, 1996). Applied to HIV and AIDS, self-perceived risk of HIV infection and knowledge of someone who died of AIDS can be used to measure perceived risk. In addition, two constructs have been added to the HBM later in its development – cues to action and self-efficacy (Strecher & Rosenstock, 1997; Becker, 1998). The former concept refers to the external influence on the adoption of the behaviour, whereas the latter concept indicates individuals' belief of their ability to adopt the behaviour successfully. Ideally, the availability of antiretroviral treatment would be a good indicator of cues to action for adoption of HBM. However, this variable is not readily available in the current BAIS IV dataset.

The Theory of Reasoned Action, on the other hand, states that a person's intentions are the best guide to behaviour. The intentions are further determined by his or her attitude towards the behaviour and the subjective norm (Fishbein & Guinan, 1996). In this paper, we consider people's intention or desire to take voluntary counselling and testing as the outcome. The dataset used unfortunately did not capture data on individuals' attitude towards HIV testing. However, the subjective norm can be surrogated by stigma toward people living with HIV and AIDS (PLWHA). In addition, there are some established socio-demographic covariates that may confound the association between HIV related factors and individuals' desire for HIV testing and counselling. In this paper, the individual level HIV related factors were studied, adjusting for these socio-demographic variables, in relationship to desire for HIV testing and counselling.

### **Objective of the paper**

The paper therefore, intends to provide an insight from the Botswana AIDS Impact Survey (BAIS IV) conducted in 2013 by examining the factors associated with HIV testing and counselling among older persons aged 50 years and above in Botswana in order to discover interventions that could curb HIV infection. Using data from 2013 BAIS IV results, the paper further explore the factors by age, marital status, educational background, and place of residence, knowledge of HIV testing and social behaviour of older persons. The data will facilitate in advocating for programmes or interventions that could cater for older persons needs and ultimately reducing the HIV infection rates among senior citizens of Botswana.

## **Method**

The data for this paper were derived from the *Botswana AIDS Impact Study (BAIS IV)* conducted in 2013 by Statistics Botswana in collaboration with the National AIDS Coordinating Agency (NACA), Botswana. The study is usually conducted every four years to provide current national HIV estimates among the population aged 6 weeks through 64 years to provide indicative trends in sexual and preventive behaviour among the population aged 10-64 years, to provide a comparison between HIV rate, behaviour, knowledge, attitude, poverty and cultural factors that are associated with the epidemic with estimates derived from previous surveys, to increase the numbers of those who know their HIV status and assist linking those found to be HIV positive to healthcare system and to produce survey results in a timely manner, and to ensure that the data are disseminated to a wide audience of potential users in government and non-governmental organizations within and outside Botswana. The sampling frame was based on the 2011 Population and Housing Census. This comprised the list of all enumeration areas (EAs) and the number of households. In 2011 Census, the EAs were of manageable size (in terms of dwellings or households) and the primary sampling units (PSUs) were EAs.

## **Stratification**

All the districts and major urban centres constituted the strata. In order to increase precision, the EAs were grouped according to ecological zones in rural districts, and income categories in cities and towns. Furthermore, geographical stratification along ecological zones and income categories was done to improve the accuracy of survey data.

## **Sample design**

A stratified two-stage probability sample design was used for the selection of the sample. The first stage was the selection of EAs as primary sampling units (PSUs) and selection was with probability proportional to measures of size (PPS), where measures of size (MOS) were the number of households in the EA as defined by the 2011 Population and Housing Census. In all 459 EAs were selected. At the second stage of sampling, the households were systematically selected from a fresh list of occupied households prepared at the beginning of the survey's fieldwork (i.e. listing of households for the selected EAs). Overall 8,275 households were drawn systematically.

## **Questionnaires and coverage**

The questionnaires were the primary recording documents of the survey. In the development of the questionnaires, the opinions of the professionals and users were invited. The final version of the questionnaires was finalized on the basis of the experiences gained from the pre-test conducted for the survey. The 2013 BAIS IV consisted of two questionnaires, namely: (i) The household questionnaire and (ii) The individual questionnaire. Fieldwork and data processing Smart phones were used for data collection in the survey. The information gathered was directly entered into smart phones during field enumeration period and sent to a storage centre through network systems, which enabled data capture directly to data savers. This procedure saved costs and data processing period resulting in the availability of the preliminary results within seven months. The data were processed and analysed using the SPSS programme. Blood samples were collected from participants and analysed under good clinical laboratory practice (GCLP) at Botswana National Health Laboratory (NHL). All laboratory testing personnel for the study were knowledgeable

about testing procedures. New employees were trained and assessed for competence before they could handle participants' samples. Documentation of training on the procedure was placed in Personnel Files. The results of the tests were then sent to Statistics Botswana.

## Results

### Demographic variables

Descriptive statistics was used to analyse the demographic variables such as gender, age, marital status, educational level, residence and HIV testing. A total of 132,765 aged 50 to 80 years were sampled for this study. From the total respondents 44% were males while 56% were females. The results from the table show that 27% of the respondents were aged 50-54 years, 25% were aged 55-59 years, and 16% were aged 60-64 years. Fourteen percent (14%) of the respondents were aged 65-69 years, while 10% were aged 70-74 years. With regard to marital status, almost 44% of the respondents were married, 28% were never married and 13% were co-habiting. About 10% of the respondents were widowed and 4% were divorced. More than one-third had Primary School Leaving Examination (PSLE), while 35% had no education background and 15% had tertiary education. Eight percent (8%) had Junior Certificate Education (JCE) and 3% had Botswana General Certificate of Secondary Education (BGCSE). A small percentage of 2% had non-formal education. With regard to type of residence, 49% of the respondents were residing in rural areas, while 16% were residing in urban areas. A high percentage of 78% had tested for HIV, while 22% had not tested for HIV. For a summary of demographic characteristics of participants (see Table 1).

**Table 1 Frequency of demographic variables**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Sex</b>		
Male	57894	43.6
Female	74871	56.4
<b>Age (years)</b>		
50-54	67027	27.2
55-59	61359	24.9
60-64	38771	15.7
65-69	34267	13.9
70-74	24882	10.1
75-79	15609	6.3
80+	4460	1.8
<b>Marital status</b>		
Married	58023	43.7
Never married	37448	28.2
Living Together/cohabitating	17334	13.1
Separated	1963	1.5
Divorced	4657	3.5
Widowed	13340	10.0

<b>Education</b>		
None	46633	35.1
Non-formal	2600	2.0
PSLE	49548	37.3
JCE	10820	8.2
BGCSE	3411	2.6
Tertiary	19752	14.9
<b>Residence</b>		
City or town	30912	12.5
Urban village	8084	3.3
Rural area	86328	49.0
<b>Tested for HIV</b>		
Yes	100027	77.8
No	28520	22.2

### **HIV testing and demographic variables**

Descriptive statistics was calculated to determine the relationship between HIV testing and socio-demographic status of older persons in Botswana. The results show that 78% of female respondents had tested for HIV, while 77% of the male respondents had tested. With regard to age, almost 84% of the respondents aged 50-54 years had tested for HIV, while 77% of those aged 55-59, 66% of those aged 60-64 and 49% of those aged 75-79 had tested for HIV. The relationship between age and HIV testing is statistically significant ( $p < 0.05$ ). As for marital status, 84% of those who are married had tested for HIV, while 83% of those who are widowed, 76% of those who were living together or cohabiting, 71% of those who were divorced and 69% of those who were never married had tested for HIV. The results also show that 55% of respondents who were separated had tested for HIV. The relationship between marital status and HIV testing is statistically significant ( $p < 0.05$ ). The majority (82%) of the respondents who had primary education had tested for HIV, 80% of the respondents who had tertiary education had tested, 80% tested who had a JCE certificate and 74% who had no education background had tested. Fifty-eight percent (58%) of the respondents with non-formal education had tested for HIV. With regard to type of residence, the majority (84%) of the respondents who were residing in urban areas had tested for HIV. The results also show that 80% and 69% of the respondents who were residing in rural areas and city or towns respectively had tested for HIV. The results indicate that 100% of the respondents who paid for sex had tested for HIV, while 83% for those who have not paid for sex had tested for HIV. For a summary of HIV testing and demographic variables (see Table 2).

**Table 2 Cross-tabulation of HIV testing and demographic variables**

<b>Variable</b>	<b>Tested for HIV % (Count)</b>
<b>Sex</b>	
Male	77.2(43546)

Female	78.3(56481)
<b>Age (years)</b>	
50-54	83.9(43911)
55-59	77.6(37783)
60-64	66.2(17778)
65-69	100(428)
70-74	(0.0)
75-79	48.9(128)
80+	(0.0)
<b>Marital status</b>	
Married	83.9(47347)
Never married	69.2(24867)
Living Together/cohabitating	76.4(12716)
Separated	55.4(1087)
Divorced	70.8(3295)
Widowed	82.7(10715)
<b>Education</b>	
None	73.5(32552)
Non-formal	57.5(1494)
PSLE	81.9(39823)
JCE	79.7(8620)
BGCSE	72.6(2341)
Tertiary	80.0(15197)
<b>Residence</b>	
City or town	69.4(13696)
Urban village	84.3(4731)
Rural area	79.7(46658)
<b>Ever been paid or received gifts for sex</b>	
Yes	100(597)
No	82.7(59901)

### **Knowledge on HIV, Testing and Social Behaviour**

Descriptive statistics was calculated to determine the relationship between knowledge on HIV and testing and social behaviour of older persons in Botswana. According to the findings, a higher percentage of respondents (85%) had knowledge about HIV and had tested for the virus, while 75% of the respondents who lacked the knowledge had tested for HIV. The relationship between knowledge about HIV and testing is significant. 83% of those who live with husband or wife weekly had tested for HIV, while 82% of those who live with husband or wife daily had tested for HIV. The relationship between living with husband or wife is statistically significant. The results indicated that 79% of respondents who have not taken an alcoholic drink in the last 12 months had tested for HIV. As for those who have taken alcoholic drink in the last 12 months, about 77% had tested for HIV. The relationship between taking alcoholic drink and HIV testing is statistically significant. For a summary of the relationship between knowledge on HIV, testing and social behaviour variables (see Table 3).

Table 3

*Knowledge on HIV, Testing, and Social Behaviour Variables*

<b>Variable</b>	<b>Tested for HIV % (Count)</b>
<b>Knowledge of HIV</b>	
Yes	84.7(31640)
No	75.0(68387)
<b>Does your husband/wife live with you</b>	
Daily	81.9(44850)
Weekly	83.2(15213)
<b>Have you taken an alcoholic drink in the last 12 months</b>	
Yes	76.2(30143)
No	78.5(69885)

**Discussion**

The paper aimed to assess and explore the factors associated with HIV testing and counselling among older persons aged 50 and above by utilising information from the BAIS IV results. The paper explored these factors by age, marital status, educational background, and place of residence, knowledge on HIV testing and social behaviour of older persons. The results show that a high percentage of older persons had tested for HIV as 83.9% of persons aged 50-54 years and 100% of persons 65-69 years had tested for HIV at the time of the survey. This indicates that in addition to voluntary testing, routine testing has made a significant contribution to the HIV testing and counselling services in Botswana, and has boosted the number of people who undergo HIV testing. The government introduced routine HIV testing in 2004 with HIV tests being offered as a routine part of checkups in public and private clinics. The testing is routine, but if people do not want to be tested they can 'opt out' (AVERT, 2016).

In respect to knowledge on HIV, the paper shows that 75% of respondents had no knowledge of HIV related issues. According to Ryan White (2014) the HIV and AIDS programme in the United States involves people living with HIV; of these, about 50.2 % of persons aged 45 to 64 and 3.5 % over the age of 65 reported to have limited knowledge about HIV transmission and perceive themselves to be at low risk of infection. White's findings indicate that the problem of lack of knowledge was aggravated by the common misconception that older adults are sexually inactive, resulting in a lack of targeted educational health campaigns and low levels of HIV education and screening by health care providers. White further stated that older adults demonstrated low levels of HIV testing, delayed HIV diagnosis and treatment, and inconsistent condom use (White, 2014). Additionally, topics about sexuality for the elderly population, which are not concerned with contraception anymore, are focused on such aspects as sexual performance or dysfunctions and their relationship to the quality of life. They put less emphasis on sexual health promotion and HIV and AIDS prevention (Negin et al., 2011). Several studies suggest that

stereotypes and lack of information about sexual behavioural patterns among older people (Emlet, 2005; Gott, 2001; Xu et al, 2001) continue to limit their access to adequate HIV testing, and this makes them an invisible at-risk population (Feldman, 1994).

The level of education plays a pivotal role in understanding health related issues. The results of BAIS IV show that 81.9% of older persons with primary education and 80% of those with higher education had tested for HIV. This result is in line with other studies which found that having a higher educational status was associated with ever being tested for HIV in both men and women such as those conducted by Admassu et.al., (2006) and Habte et.al., (2006) in Ethiopia and those conducted in South Africa and Kenya (Ziraba et.al., 2011). The possible reason could be that education is more likely to increase awareness and understanding of health related information as well as confidence in interacting with health care providers as supported by Lynch and Kaplan, (2000) in their study. Phillips (1990) concurs with the sentiment that education influences knowledge about which types of health care services to use, as well as when and how to use them.

From the BAIS IV results, 100% of the respondents reported to have been paid or received gifts for sex. These results are not surprising considering the fact that many older people are sexually active, including those living with HIV. Additionally, older persons have many of the same HIV risk factors as younger people such as lack of knowledge about HIV and how to prevent transmission, as well as having multiple concurrent partners. According to Onen et al., (2010) it was highlighted that engaging in sexual activity with a person who was HIV positive was risky, especially since many older adults do not use condoms during sexual intercourse, including older adults who are infected with HIV. Sexually active women aged 50 and older are at high risk of acquiring HIV, owing to biological changes. The fact that birth control is usually not necessary after menopause may influence the sexual behaviours of these women, and this may lead to older adults becoming reluctant to use condoms. Onen and colleagues (2010) further affirmed that vaginal dryness was common among menopausal women, potentially leading to vaginal abrasions that increase the risk of HIV infection during sexual intercourse.

In their study, Orchi and colleagues explored the characteristics of older adults aged 50 years and above with newly-diagnosed HIV infection compared with younger counterparts aged 18 – 49. They analyzed data from a prospective observational multi-centre study on individuals newly diagnosed with HIV between January 2004 and March 2007 in 10 public counselling and testing sites in Latium, Italy. From their results, it was shown that the rate of condom use was comparable between older and younger individuals. Both populations reported an absent or poor condom use (never or sometimes) with occasional partners during anal, vaginal and oral intercourse. In particular, older adults reported poor condom use in 70.0%, 58.8% and 91.7% of anal, vaginal and oral intercourse respectively (Orchi et al, 2008).

Further, people aged 50 and older generally have a low perception of their own risk of acquiring HIV and AIDS (Gap Report, 2014) which makes them more likely not to use condoms and not get tested for HIV. Older persons tend to view condoms primarily as a form of contraception, and women who no longer fear unwanted pregnancy may not insist on their use. Many people believe that older adults are not having sexual intercourse because they no longer have a libido and many health care providers may also believe in this stereotype (Negin et al., 2011). Although they visit their doctors more frequently, older persons are less likely than younger persons to discuss their sexual or drug use habits with their doctors (CDC, 2015). Due to their own

discomfort, health care providers are less likely to talk to their older patients about the latter's sexual activity.

### **Conclusion and recommendations**

Few studies on HIV infection among older adults have come mainly from developed countries (Orchi et al, 2008; Onen et al, 2010; White, 2014; Cahill et al, 2016), whereas in developing countries the studies focus on the social and economic impact of HIV infection among the elderly, especially on the effects of HIV on grandparents in their role as caretakers of their orphaned grandchildren who lost their parents to AIDS (Tlou, 1996; Shaibu et al, 2002). Due to insufficient studies and information on the prevalence of HIV infection among older adults and its impact on their lives, it is possible that this population may be at risk of contracting HIV or being re-infected. Little is known about morbidity and sexual behaviour among HIV positive older adults or about the biological and cultural factors that increase the risk of transmission. Therefore, HIV services need to be better targeted to respond to the growing needs of older adults living with HIV (Negin and Cumming, 2010).

It is clear from the BAIS IV results that the majority of respondents have knowledge about HIV and have tested for it. The fact that older adults are able to test for HIV shows that interventions are reaching almost everyone. Also, when the first case of HIV and AIDS was first reported in Botswana people who are now 50-54 years old were about 35-40 years old and they took advantage of the Masa programme which was officially launched in 2002. As a result, they have lived the longest with HIV. There is also a need to help those with low education in ensuring that the information is provided in a manner that they would understand. Policy should ensure that everyone is included by designing interventions that focus on educating older adults about the prevention of HIV and AIDS. It is apparent that more information about HIV prevention and risk reduction should be provided to older persons through different channels in order to promote the skills necessary for the adoption of safe sex practices. There is also a need to reach adults who are living in rural areas to ensure that they are not left out. HIV testing and counselling is the primary strategy to control the generalized epidemic. It serves as the entry point for HIV prevention, treatment and care. Knowledge of one's status is crucial for one to receive HIV related health care.

Besides the degradation of their immune systems due to HIV, older persons living with HIV face other health complications such as tuberculosis, diabetes, and hypertension. There are also issues that affect their health that are associated with ageing even in people who are otherwise completely healthy. These conditions include hearing loss, receding gums, and menopause in the case of women. Growing older with HIV appears to increase the risk of experiencing illness compared to growing older without HIV, but the reasons for this are not well understood (AVERT, 2016). Therefore, further studies which focus on older adults with HIV are clearly needed to better understand problems associated with aging with the AIDS epidemic, and its impact in different contexts, in order to develop and implement specifically targeted prevention and care programmes. More research is needed to understand health complications associated with aging and HIV, and future research efforts related to this would probably benefit from a mix of quantitative and qualitative methods. Also, information campaigns targeting older patients and their doctors are needed to ensure timely diagnoses of HIV infection and appropriate care.

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