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BRIEF REPORT

HIV Attitudes, Awareness and Testing Among Older Adults in Africa

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Abstract In Africa, older adults aged 50 and older are still sexually active and play a critical role as caregivers, yet little is known about their attitudes towards HIV and awareness of services. In this study, surveys were conducted in nine African sites. A multilevel model was fitted to evaluate the relationship between age and outcome variables. The study 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.

Keywords HIV testing · HIV awareness · Older adults · Africa

Introduction

In sub-Saharan Africa (SSA), HIV among older adults has largely been ignored, though there has been some emerging interest in this topic [1]. A recent study estimated that there are three million HIV positive people in SSA aged 50 and older representing more than 14% of those over the age of 15 infected [2]—suggesting that increased attention is warranted for older age groups.

Despite this, most HIV prevention efforts largely target younger people and little is known about the attitudes towards HIV and awareness of prevention, testing and treatment among older adults. Examining HIV-related knowledge and attitudes among people over 50 in SSA is important for a number of reasons. Older adults remain sexually active and therefore remain at risk of HIV infection. As anti-retroviral therapy (ART) is rolled out, more HIV positive individuals are living longer thus furthering the ageing of the epidemic. Older adults in SSA also play a critical role as educators and caregivers and older people remain influential community members and leaders. Many older people are involved in taking care of young adults and children and act as gatekeepers of information, playing a major role in reinforcing attitudes and normative behaviour. Recent work has noted that caregivers perceive a lack of skills to provide information to and care for dependents [3].

Very little research has been done on HIV-related knowledge and attitudes among older adults in SSA. A recent study on ART knowledge in Africa found only one relevant study on this topic [4]. Some research has been conducted in other parts of the world—particularly in developed countries. A review of HIV attitudes among older adults in the US showed that inadequate HIV transmission education and poor awareness contributed to increased HIV risk [5]. A study from Thailand directly compared HIV knowledge and attitudinal data for Thais 50 years of age and older against that of young adults (20–39) revealed lower levels of correct knowledge among those aged 50 and older as well as lower levels of HIV testing and less awareness of treatment availability [6].

In Africa, most work on HIV attitudes and stigma has ignored older adults and has also provided less focus on rural areas specifically. Demographic and Health Surveys (DHS) include questions on HIV awareness and attitudes but question female interviewees only up to the age of 49

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and only up to 54 or 59 for men [7]. In order to address these gaps, we examined HIV awareness, attitudes, behaviour and testing among older adults across a number of rural sites in Africa.

Setting and Methods

The study was conducted in nine clusters of villages across eight countries in sub-Saharan Africa as part of the Millennium Villages Project (MVP). The MVP is a multisectoral health and development initiative launched in 2004 that aims to demonstrate that achievement of Millennium Development Goals in rural Africa is possible through the coordinated delivery of science-based interventions at the community level in agriculture, health, education and infrastructure [8]. The project sites are all rural and are drawn from a diversity of agro-ecological zones in 'hunger hot-spots,' where rates of child under-nutrition exceeded 20% at baseline and where the majority of residents were engaged in subsistence agriculture and animal husbandry.

The sites extend across a broad geographic range including West Africa, East Africa and Southern Africa locations that had different levels of HIV prevalence at the time of the study surveys from 2005 to 2007. District-level prevalence among those aged 15–49 where project sites are located ranged from 0.5% in Louga district in Senegal to 17.8% in Zomba district in Malawi. Prevalence data for those aged 50 and older is not available as older adults are not included in UNAIDS data and most DHS studies [2].

Before project commencement, baseline surveys were conducted. Within each MVP community, a detailed household mapping was conducted including a population census and a household wealth score. Proportional sampling was carried out to randomly select 300 households stratified by geographic area, gender of household head, and wealth. Consenting households were then included in baseline data collection. Within each participating household, individuals were recruited for study inclusion based on eligible age range.

The information in this paper comes from the HIV and sexually transmitted infection baseline survey which was developed based on validated DHS tools [7]. Questions focus on HIV-related knowledge, attitudes, and behaviour; however, seroprevalence was not determined during baseline survey activities. The same questionnaire was utilised across all sites. Sites were excluded from analysis if the sample size of the 50 years and older age group was below 30.

Respondents who had not heard of HIV or AIDS were not asked subsequent questions but have been included in the denominator for relevant questions based on the assumption that they would not have correct knowledge or have awareness of other elements of HIV and AIDS. This adheres to DHS guidelines [9].

A multilevel model was fitted to evaluate the relationship between age group (25–49 years versus 50 + years) and the respective outcome variables. The research evaluated multiple outcome variables related to HIV knowledge, stigma, and behaviour. Six knowledge questions [continuous variable, range 0–6] and two stigma-related questions [binary variable: 1 = at least one stigmatic response] were used (Table 2). Multilevel models were fitted considering the hierarchical structure of data where MVP site locations is the Level 2 (higher level) classification unit. This was done to account for sources of variation between sites. Independent covariates, such as gender, that were statistically significantly associated with HIV-related outcomes in unadjusted models (using $P < 0.1$ as the cut-off) were included in further multivariable modelling. Additionally, multiplicative interaction terms were tested between age group and gender.

To examine the scope for multilevel modeling, the magnitude of between site variation in HIV related outcomes was examined in a two level random intercepts model. The variance partitioning coefficient (VPC) was computed, which is the ratio of the random site variance to the total variance. For binary variables, residuals were assumed to have a standard logistic variance structure at the Level 1 and normally distributed variance structure at Level 2.

Statistical modelling was conducted using Stata Software (Stata Corp, 4905 Lakeway Drive, College Station, TX 77845 USA).

Additionally, a secondary analysis was conducted to evaluate site-specific variation by age group for each respective question. Chi square test of independence was used to assess this site-specific variation. These site-specific analyses were conducted in Microsoft Excel (Microsoft Corporation, One Microsoft Way, Redmond, WA 98052).

Results

Across the nine sites, there were a total of 1,534 respondents aged 25–49 and 722 aged 50 and older. Of those aged 50 and older, 45.2% ($n = 326$) were aged 50–59, 32.1% ($n = 232$) aged 60–69 and 22.7% ($n = 164$) aged 70 and older. The male/female ratio among those aged 25–49 was 0.90 and among those aged 50 and older 1.19.

Multilevel models for all four outcomes variables were evaluated using three explanatory variables: age group, gender, and interaction between age group and gender. In the unadjusted model, knowledge score was significantly lower for adults older than 50 years as compared to adults

aged 25–49 years (Table 1). The average male participant correctly answered 3.47 questions, while females correctly answered 0.63 fewer questions. In the final model, controlling for other covariates, knowledge score was significantly lower for adults older than 50 years and for females. Older adults had correct knowledge of 0.50 fewer questions and females answered 0.35 fewer questions correctly than the average male respondent aged 25–49. Moreover, there was a significant multiplicative effect for older females, who had significantly lower knowledge scores (0.35 fewer correctly answered questions) after controlling for the overarching age and gender effects. As for the variance partition coefficient in the final model, 26.8% of the total variance in knowledge score was due to between-site differences.

For the two questions comprising the stigma score, stigma was not significantly different by age group. In the final model, stigma was significantly lower among females as compared to males and the difference between those older than 50 and those 25–49 was not significant.

For the final model of HIV testing, age group and gender were statistically significant. The odds of ever having an HIV test were 0.56 smaller for older adults (50+) and 0.32 smaller for females compared to males aged 25–49. However, the interaction between age group and gender was not significant. HIV testing had the highest between-site VPC of the four final models.

After controlling for other covariates, the odds of talking to a partner about HIV was significantly lower for older adults (50+) and for females. The interaction term between age group and gender was significant (P value <0.1) while controlling for the overall affects of age group and gender.

For the secondary analysis of site-specific variation, Table 2 presents selected data from five sites on knowledge, stigma, testing and whether or not respondents had talked to their partner about HIV. In eight of the nine sites, older adults were significantly ($P < 0.05$) less likely to have heard of voluntary counselling and testing than those aged 25–49. Levels of awareness of prevention of mother-to-child transmission (PMTCT) and anti-retroviral treatment (ART) were also lower among older adults. In all of the West African sites, more than 84% of older women had not heard of ART. In eight of the nine sites (six significantly), older adults were less likely to know that one could reduce their chances of getting HIV by using a condom every time they had sex when compared to respondents aged 25–49.

HIV testing levels among older adults were significantly lower than among those aged 25–49 in three of four West Africa sites, but in only one East African site. Levels of ever tested among older men ranged from 23% in Rwanda to 0% in Senegal and among older women from 17% in Rwanda to 0% in Senegal. Across all sites, a minimum of 50% of respondents aged 50 and older expressed a willingness to be tested for HIV.

Discussion

Information on HIV awareness and knowledge among younger adults is widely available. Our study is one of the first among older people and it reveals that people aged 50 years and older in rural Africa have lower levels of HIV-related knowledge and awareness than those aged 25–49. Older adults are also less likely to have been tested for HIV and are less likely to have spoken to their partners about HIV. Women aged 50 and older show particularly low levels of awareness and knowledge compared to both younger women and to men aged 50 and older. Despite this, older adults demonstrated a high level of willingness to care for family members who are HIV-positive.

The few DHS studies that included men aged 50 and older reveal similar findings to our study. In the 2008 Nigerian DHS, men aged 50–59 were less likely than men aged 15–49 to know that condoms were an effective prevention measure when used during every sexual encounter and had less knowledge of PMTCT [10]. Confirming our results, DHS reports conducted since 2005, which do not include data on older women, reveal that testing rates among men aged 50 and older (with the upper age range varying from 54–64 depending on site) are lower than among men aged 15–49 in Nigeria, Benin, Democratic Republic of Congo, Lesotho, Uganda and Cape Verde [7]. The Kenya AIDS Indicator Survey also revealed lower testing rates among older adults and among older women in particular [11]. While 18.9% of men aged 60–64 had been tested for HIV, only 6.0% of women of the same age had. Additionally, the highest syphilis prevalence rates in Kenya were among those aged 60–64. A study in Uganda revealed that participants over 50 years of age were less ART knowledgeable than younger interviewees [4].

The findings of this study have important implications for HIV services in Africa. Low levels of knowledge among sexually active older adults will impact HIV transmission. Higher general knowledge of HIV and treatment knowledge are associated with better adherence to ARVs [12] suggesting that, without information, treatment outcomes among older adults might be compromised.

The persistence of high levels of stigma among older adults and among older women in particular can reduce the possible uptake of HIV testing programs and can lead to reduced care seeking behaviour. Stigma is particularly important among older adults who are often expected to take on caregiving roles for their children or grandchildren affected by HIV. A South African study showed that providing HIV education workshops to older people led to a

Table 1 Multilevel model results for age group, gender, interaction of age group and gender

Outcome variable	Unadjusted-age group only				Full adjusted-all variables				Final			
Explanatory variable:	Score	95% CI	*P* value	VPC	Score	95% CI	*P* value	VPC	Score	95% CI	*P* value	VPC
Knowledge score				0.328				0.268				0.268
Intercept	3.47	(2.8, 4.14)			4.00	(3.29, 4.71)			4.00	(3.29, 4.71)		
Age group	−0.63	(−0.76, −0.49)	0.00***		−0.50	(−0.68, −0.32)	0.00***		−0.50	(−0.68, −0.32)	0.00***	
Gender					−0.35	(−0.5, −0.2)	0.00***		−0.35	(−0.5, −0.2)	0.00***	
Interaction: age group by gender					−0.35	(−0.61, −0.09)	0.01***		−0.35	(−0.61, −0.09)	0.01***	
	OR	95% CI	*P* value		OR	95% CI	*P* value		OR	95% CI	*P* value	
Stigma				0.049				0.046				0.041
Age group	0.99	(0.81, 1.21)	0.92		0.94	(0.71, 1.24)	0.66					
Gender					1.15	(0.93, 1.44)	0.20		1.35	(1.17, 1.58)	0.00***	
Interaction: age group by gender					1.17	(0.78, 1.75)	0.45					
Ever tested for HIV				0.303				0.303				0.302
Age group	0.43	(0.31, 0.59)	0.00***		0.51	(0.34, 0.77)	0.00***		0.44	(0.32, 0.6)	0.00***	
Gender					0.74	(0.55, 1.01)	0.06*		0.68	(0.52, 0.89)	0.01***	
Interaction: age group by gender					0.70	(0.37, 1.33)	0.28					
Talked to partner about HIV				0.157				0.172				0.172
Age group	0.58	(0.47, 0.7)	0.00***		0.62	(0.47, 0.82)	0.00***		0.62	(0.47, 0.82)	0.00***	
Gender					0.60	(0.48, 0.75)	0.00***		0.60	(0.48, 0.75)	0.00***	
Interaction: age group by gender					0.68	(0.45, 1.02)	0.06*		0.68	(0.45, 1.02)	0.06*	

VPC variance partitioning coefficient

Binary variables: age group: 1 = 50+ years; Gender: 1 = Female; Age and Gender Interaction: 1 = Female 50+ years

Significance testing: *** *P* value < 0.01, ** *P* value < 0.05; * *P* value < 0.1

Table 2 Responses to knowledge, stigma, testing and talking to partner questions by age for selected sites

	Mwandama, Malawi			Ikaram, Nigeria			Potou, Senegal			Mayange, Rwanda			Mbola, Tanzania		
	25–49 years	50+ years	*P* value	25–49 years	50+ years	*P* value	25–49 years	50+ years	*P* value	25–49 years	50+ years	*P* value	25–49 years	50+ years	*P* value
Overall Sample Size:	150	75		150	152		161	48		182	75		158	85	
Knowledge															
Is there anything a person can do to avoid getting HIV/AIDS, or the virus that causes AIDS?	98%	97%	0.755	72%	54%	0.002***	86%	60%	0.000***	100%	97%	0.026**	89%	76%	0.009***
Can a person get the AIDS virus from mosquito or other insect bites?	53%	51%	0.777	30%	20%	0.054*	32%	21%	0.147	66%	53%	0.044**	61%	49%	0.089*
Can people reduce their chances of getting the AIDS virus by using a condom every time they have sex?	60%	56%	0.593	53%	37%	0.005***	54%	25%	0.000***	82%	63%	0.002***	66%	52%	0.025**
Can a mother who is infected with the AIDS virus reduce the risk of giving the virus to the baby by taking certain drugs during pregnancy?	55%	40%	0.036**	23%	17%	0.141	28%	6%	0.002***	87%	68%	0.000***	47%	34%	0.045**
Is there any medicine that a person with AIDS can take to stay alive?	91%	72%	0.000***	19%	14%	0.197	33%	8%	0.001***	81%	65%	0.006***	61%	44%	0.008***
Have you ever heard of VCT, Voluntary Counseling and Testing for the virus that causes HIV/AIDS?	97%	84%	0.001***	40%	28%	0.032**	55%	17%	0.000***	77%	65%	0.049**	82%	65%	0.003***
Stigma															
If a member of your family got infected with the virus that causes AIDS, would you want it to remain a secret or not?	62%	56%	0.379	28%	25%	0.692	40%	42%	0.844	28%	33%	0.442	31%	32%	0.927
If a relative of yours became sick with the virus that causes AIDS, would you be willing to care for her or him in your own household?	94%	96%	0.646	84%	78%	0.283	91%	78%	0.051*	96%	97%	0.548	95%	96%	0.599
Testing															
Have you ever been tested to see if you have the AIDS virus?	31%	9%	0.000***	5%	5%	0.822	7%	0%	0.063*	44%	19%	0.000***	24%	9%	0.005***
Talking to partner															
Have you ever talked with (your husband/wife/partner you are living with) about ways to prevent getting the virus that causes AIDS?	68%	52%	0.025**	41%	26%	0.009***	30%	8%	0.003***	80%	55%	0.000***	64%	66%	0.761

Statistical testing: * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$

more positive attitude towards people living with HIV and led them to perceive themselves as more able to provide care to HIV-positive family members [3].

The role of grandparents and the older generation on the attitudes and health-seeking behaviour of the wider population is important. Bezner Kerr and colleagues note that health education efforts rarely involve grandmothers and that hospital personnel often have disparaging attitudes towards the role that grandmothers can and do play in the community and that few health education programs have addressed the role that grandmothers play in decision-making [13]. The older generation's attitudes and knowledge has resonance and impact beyond their own behaviour and therefore cannot be ignored. The low levels of awareness of service availability suggest that more needs to be done to increase the responsiveness of the health system to older individuals' needs.

The development of a better understanding of the sexual behaviour and attitudes of older adults will not only have impact on their own risk profile but also possibly on that of the younger generations. Intergenerational relationships—sexual relationships predominantly between younger women and older men—are one of the drivers of the epidemic in sub-Saharan Africa.

The strength of this study is the cross-country comparability using the same survey tool as well as its focus on rural populations. Limitations include the small sample size in some sites which precluded analysis of narrower age groupings as well as the fact that some of the data is now a few years old. Given the amount of activity and funding for HIV activities in many of these countries over the past few years (albeit starting in urban areas and not focused on older populations), attitudes and awareness might have improved slightly. The HIV status of the respondents was not available and could not be associated with knowledge responses. Lastly, the data is not nationally representative and provides a snapshot of a number of specific rural areas.

There is a need for targeted prevention messaging and the building of treatment awareness among older adults in SSA. Healthcare organisations, governments, and local communities should view older adults as sexually active, as caretakers and educators. Recognising this, South Africa has added males older than 50 to their list of most-at-risk populations [14]. Workshops have been conducted among older adults, such as caregiver workshops in South Africa, which have led to more positive attitudes and improved knowledge [3]. Such initiatives are needed so older Africans can more effectively provide leadership towards an AIDS-free generation.

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