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HIV after 40 in Rural South Africa¹: A Life Course Approach to HIV Vulnerability among Middle Aged and Older Adults

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Abstract

South Africa has the highest number of people living with HIV in the world (over 6 million) as well as a rapidly aging population, with 15% of the population aged 50 and over. High HIV prevalence in rural former apartheid homeland areas suggests substantial aging with HIV and acquisition of HIV at older ages. We develop a life course approach to HIV vulnerability, highlighting the rise and fall of risk and protection as people age, as well as the role of contextual density in shaping HIV vulnerability. Using this approach, we draw on an innovative multi-method data set collected within the Agincourt Health and Demographic Surveillance System in South Africa, combining survey data with 60 nested life history interviews and 9 community focus

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group interviews. We examine HIV risk and protective factors among adults aged 40–80, as well as how and why these vary among people at older ages.

Keywords

South Africa; HIV/AIDS; Aging; Life Course; Global Health

INTRODUCTION

As anti-retroviral treatment (ART) rolls out across the African continent, increasing numbers of Africans in their middle and older ages are living and aging with HIV. According to UNAIDS 2013, adults over 50 years old account for an increasing proportion of people living with HIV, and 75% of older adults who acquire HIV live in sub-Saharan Africa. Research on older populations is limited, however. Few surveys and qualitative projects even collect data on women past age 49 (reproductive age) or men over the age of 54 (UNAIDS 2013a, Cohen and Menken 2006, Mutevedzi and Newell 2011, Negin and Cumming 2010, Rammohan and Awofeso 2010, Schmid et al 2009).

South Africa is a critical site to understand HIV/AIDS in older age groups for several reasons. First, it suffers from a severe HIV/AIDS epidemic with high prevalence (16.5%) (Rehle et al 2010), and has the world's largest population of people living with HIV/AIDS (over 6 million) (UNAIDS 2013b). Second, South Africa has a rapidly aging population, with 15% of the population aged over 50, the highest proportion of older people in Africa (Hosegood and Timaeus 2006, Statistics South Africa 2009). Hontelez and colleagues (2011) estimate a 50% increase in HIV infections among older people in the next 15 years. Finally, in 2009, South Africa significantly increased the availability of ART, thereby improving survival rates and increasing the number of adults surviving to older ages with HIV disease (Hontelez et al 2012). Collectively, these significant demographic shifts suggest that South Africa will soon be coping with the largest number of adults transitioning to older age with HIV/AIDS.

Nationally, HIV prevalence is high in middle and older ages. Among men aged 40–44, 45–49 and 50–54, corresponding prevalence is estimated at 19%, 8% and 10%; for same aged women, prevalence is estimated at 16%, 14% and 10% respectively (Rehle et al 2010). Former apartheid homeland areas ('Bantustans') are likely the leading edge of a much larger and more extended demographic shift in the profile of people living with HIV/AIDS, as they have particularly high HIV burdens overall, and rates among people aged 40 and older are even higher than national averages. For example, Figure 1 from Gómez-Olivé et al 2013 illustrates the HIV prevalence estimates in two former Bantustans, KwaZulu-Natal and our study setting, Agincourt. As the figure shows, HIV prevalence is high among older adults well into their 60s and 70s. Among women, 34% of those in their 40s, 27% in their 50s, 11% in their 60s and early 70s, and 6% of those in their late 70s are HIV positive. Among men, 40% of those in their early 40s, 30% of those aged between 45–60, 20% of those in their early 60s, and 5% of those in their 70s are HIV positive. In both settings, and with an expanded use of ART, almost half of those in their 30s and 40s will be aging with HIV.

In Agincourt, ART only became widely available in 2010. The recent expansion of ART suggests that given the 6–10 year incubation period for the HIV to AIDS transition in the absence of medication, high HIV prevalence at older ages reflects not just survival of HIV positive people into their 50s, 60s and 70s, but also *new* HIV infections occurring at older ages (Zaba et al 2008; Wallrauch et al 2010). Indeed, in the era of ART, over a third of the Agincourt population will be living and aging with HIV in the coming decades. This high HIV burden underscores the need for research on how and why adults over 40 become vulnerable to HIV, particularly as they transition to ages where they become more susceptible to other chronic diseases.

THEORETICAL FRAMEWORK: A LIFE COURSE APPROACH TO HIV VULNERABILITY

Some of the most prominent theoretical approaches to studying HIV risk, among others, include models establishing proximate and distal determinants (e.g. Boerma and Weir 2005), the importance of structural and environmental drivers (e.g. Blankenship et al. 2006; Dworkin and Ehrhardt 2007; Auerbach, Parkhurst, and Cáceres 2011; Mojola 2011a), and the role of sexual networks (e.g. Kretschmar and Morris 1995, HELLERINGER and Kohler 2007). We build upon this literature by developing a *life course approach to HIV vulnerability* particularly suited to examining HIV/AIDS among older adults. Life course approaches to the study of health outcomes are now well established (Ben-Shlomo and Kuh 2002, Hayward and Gorman 2004, Umberson et al 2010, Pavalko and Caputo 2013, Kuh et al 2013), but are rarely applied to the study of HIV/AIDS in Africa. To guide our analysis, we build on prior work by Mojola (2011b, Mojola 2014) who employed a life course approach to understanding HIV risk among youth transitioning to adulthood, and extend and broaden this approach to examining the transition to older ages. Our framework emphasizes three features.

First, we recognize that vulnerability to HIV can rise and fall as people age. Here, the rise and fall in HIV vulnerability is understood to function at two levels: the risky or protective *actions and strategies* in which individuals engage, and the risky or protective *environments* in which individuals are situated that increase or reduce vulnerability to HIV. Limited research thus far among older adults may reflect the unstated assumption that there is a unilateral decrease in HIV vulnerability as people age. This vulnerability may persist into older ages, however, and can place different genders at greater risk at different points in the transition to old age. For example, the risk of HIV acquisition may be high while people are in their 40s, and then steadily decline as they transition to their 50s, but may rise again in their 60s and decline again in their 70s.

Second, the rise and fall in vulnerability may be shaped by the various gendered life course stages that characterize the transition to old age. For example, a major life course stage that unfolds among women in their 40s and 50s is the transition out of reproductive ages culminating in menopause. This process may be characterized initially by decreased vulnerability to HIV infection if, for example, women have less frequent sex because of decreasing sexual desire (Lindau et al 2007, McCabe and Goldhammer 2012, Freeman and Coast 2014). Among men, there may be heightened vulnerability in their 40s and early 50s

during migratory work if they have unprotected sex with multiple or concurrent extramarital sexual partners at their work site (e.g. Campbell 1997, Campbell 2000). However, as they transition out of migratory work in their late 50s and 60s and return home to their wives or main partners, their vulnerability may decrease if they become monogamous on return (and their wives did not have extramarital partners in their absence – see Lurie et al. 2003). If either one of the couple members has had extramarital sex and acquired HIV during separation, then reunion and the subsequent repeated exposure to HIV with unprotected sex as they transition to their 60s and 70s may increase their vulnerability. Figure 2 illustrates how this may unfold for a couple.

Third, contextual features at household and larger structural levels may circumscribe an individual's choices. Treating the life course as contextually or “demographically dense” (Rindfuss 1991), we recognize that HIV outcomes do not occur in a vacuum. Beyond an individual's sexual behavior and decision-making, various proximate and distal domains in their lives might work together to shape individual level actions. Figure 3 illustrates the different contextual domains at play in an individual's life that may shape HIV vulnerability.

Proximate domains include work (e.g., high risk occupations such as mining or fishing), finances (e.g., access to various sources of income or economic sustenance, or lack thereof, which may shape transactional or commercial relationships), partner/household dynamics (e.g., extramarital partners, polygamous living arrangements, widowhood, remarriage or divorce), and general health (e.g. having other STIs). The figure also captures overarching distal social structural, cultural and institutional factors such as the normative environment of the extended family or community, which may support or discourage extramarital sex; as well as the national and local economy (job markets), which may shape availability of money-making opportunities at home or the need to migrate out to work; government safety net provision through grants (such as disability grants, child grants or pensions); and finally, the health care institutional environment, which shapes availability of HIV testing, ART provision, and the public dissemination of educational information about HIV/AIDS to people who are no longer in reproductive ages. These contextual layers may all play a role in shaping individual HIV vulnerability.

Taking account of gendered life course variation and contextual density in HIV vulnerability is particularly important in South Africa, where significant social structural and political change has occurred over the past 20 years with the end of apartheid in 1994, the introduction of a package of welfare provisions such as age eligible pensions and disability grants, and the absence and then widespread provision of ART in public clinics (Hunter 2010, Decouteau 2013). Collectively, these social, political, economic and health changes are likely to have affected the experience of aging and HIV vulnerability in South Africa in important, and thus far unknown, ways.

In this paper, we use this theoretical framework to examine life course factors shaping HIV vulnerability among middle aged and older adults aged between 40 and 80 years old. We focus on age group and gendered cross sectional trends in four sexual risk and protective behaviors – multiple partners, extramarital partners, celibacy and condom use - and examine the gendered age group varying and contextual mechanisms that may be shaping these

behaviors. In addition to contributing new information on an often ignored population in the HIV/AIDS literature, this paper highlights the importance of a nuanced theoretical approach to understanding HIV vulnerability among older adults.

SETTING, DATA AND METHODS

Our study site, the MRC/Wits Agincourt Research Unit Site (here after referred to as Agincourt), is located in the Bushbuckridge sub-district of Ehlangeni District, Mpumalanga Province in the rural northeast region of South Africa, and covers an area of 402 km² of semi-arid scrubland. Agincourt shares similarities with much of southern Africa in several key respects: 1) the land is not sufficient to support subsistence agriculture; 2) there are limited employment opportunities; and 3) migration and mobility in the area is considerable (Schatz et al., 2015). In Agincourt, approximately 60% of men and 20% of women aged 20–60 are regular circular labor migrants (Clark et al 2007).

Most families live in multigenerational households in close proximity to extended family. Individuals aged 50 years and over constitute 12% of the population. The primary ethnic group is ama-Shangaan who speak XiTsonga/Shangaan, a language spoken in both neighboring Mozambique and South Africa. Since democratic elections in 1994, there has been substantial development in the area, and clean water and electricity is now generally available. The infrastructure nonetheless remains weak and many residents are poor (Kahn et al 2012). The setting is further discussed in the findings section.

The sampling framework for this study comes from the Agincourt Health and Socio-demographic Surveillance System (Agincourt HDSS). The Agincourt HDSS (1992-current) covers approximately 90,000 people in 16,000 households across 27 villages (ibid). In this study we use the following data collected within the Agincourt HDSS:

1) HIV Prevalence Survey data – 2010–2011 (HIV Survey)

A population-based survey was conducted in 2010–2011 using an age-sex stratified random sample of women and men ages 15+ from the Agincourt HDSS (see Gómez-Olivé et al (2013) for more details of the survey). We draw on responses from 2,080 adults aged 40 and above, and focus on survey questions about respondents' sexual behavior in the last two years, as well as their perceptions of partner infidelity.

2) Nested In-depth Life History Interviews – 2013 (LHIs)

We worked with a team of 5 local interviewers, two men and three women, to conduct qualitative life history interviews of a random sample of 60 respondents drawn from the HIV Survey. Interviewers were matched by gender to their respondents, and were in their 30s and 40s. We stratified the interview sample by gender (male/female), HIV sero-status (positive/negative), and age cohort (40s, 50s, 60s, 70s). (Eligibility for an old-age pension begins at age 60). While qualitative data draws on a different logic of inquiry than that of quantitative survey sampling (Small 2009, Baker and Edwards 2012), random sampling in this case allowed us to ensure a good distribution of respondents across the study villages, to avoid convenience sampling of the most accessible respondents, and to achieve a sample of respondents with sufficient variation in gender, HIV serostatus and age cohort. Each LHI

lasted between 1–2 hours and was audio-recorded, translated and transcribed from XiTsonga/Shangaan to English by the respective interviewer. Following each interview, the field supervisor, Angotti, in collaboration with the five interviewers, reviewed the transcripts for translation accuracy and clarity. After this, Mojola, Williams and Angotti collectively read them and produced follow-up questions for respective interviewers on any translations, cultural issues or stories shared by respondents that were still unclear, confusing or particularly interesting. For a sample of ten HIV-positive respondents, we produced additional follow-up questions for a second interview. We chose to preserve vernacular English in the interviewer translations to maintain a local flavor to voices from our study setting. The LHIs aimed to situate individual HIV risk and sero-status within the context of respondents' lives as a whole, from birth until the present. They include information about respondent's family lives, work and livelihood strategies, sexual and romantic relationships, general health and healthcare utilization (including co-morbidities), as well as their HIV risk and protective strategies. Interviewers were blinded to respondents' HIV sero-status unless respondents disclosed it in the course of the interview, which the majority did.

3) Community-Based Focus Group Interviews – 2013 (FGIs)

We also conducted 9 FGIs stratified by age group (40s, 50s, 60+ [pension eligible]) and gender (men, women, mixed gender). Each focus group included 5–12 participants, amounting to a total of 77 respondents from 7 villages. For each FGI, there was a facilitator who posed questions and moderated the discussion, as well as a note-taker. FGIs lasted 2–3 hours, and were audio-recorded, translated and transcribed from XiTsonga/Shangaan to English by the interview team in a similar process to that described above. We designed the community FGIs to help us better contextualize respondents' interviews and lives by providing information on the normative and institutional environments in which community members live and make decisions. Information gathered included community norms and discourses around sexual behavior and aging; discourses and dominant expectations around the key social roles, institutions and life events unique to adults at different points in the transition to old age; and the collective community experience of apartheid and post-apartheid change in Agincourt and South Africa more broadly. Respondents were recruited from places within the site where locals regularly gather such as market places, taxi ranks, and home verandas. Those approached for participation were asked to bring 2–3 people their same age and gender to the focus group.

The authors obtained informed consent from all respondents in every stage of data collection. The research protocols were approved by the Institutional Review Board of the University of Colorado Boulder, the University of the Witwatersrand, South Africa, as well as the Mpumalanga Provincial Government Department of Health, South Africa. We conducted multi-method analyses for this study.

We independently analyzed our quantitative and qualitative data, and then combined and triangulated findings from both analyses to address our study aims (see Creswell et al 2011). While in analyses of this kind there are frequently discrepancies among findings produced from multiple methods (e.g. Nnko et al 2004; Mensch et al 2004; see also Angotti and Kaler 2013), in this particular paper, we found a striking degree of alignment between our

quantitative and qualitative findings. We thus begin with our quantitative findings, followed by our qualitative findings. In our quantitative analysis, we used STATA 11.2 to produce weighted cross tabulations of trends from the HIV Survey in sexual risk behavior (self-reports of multiple partners in the last 2 years and perceptions of partner's infidelity) and protective behavior (celibacy and condom use) by age group, gender and HIV serostatus, to characterize risk and protective behaviors in this population. In our qualitative analysis of the LHI and FGI data, we used NVivo 10 to conduct both deductive (for themes in which we had prior interest) and inductive (for themes that emerged from our analysis) coding, drawing on elements of grounded theory (Corbin and Strauss 1994, Emerson et al 1995, Charmaz 2001). We conducted team coding of transcripts, which included: collaborative creation of a master code sheet, initial coding of a sample of interviews to ensure consistency across coders, and collaborative drafting of memos of the meaning of codes. Specific themes in the qualitative data included individual respondents' and community members' perceptions, experiences and explanations for sexual risk and protective behavior, and HIV acquisition and transmission vulnerability, paying attention to life course, gendered and contextual factors shaping these outcomes.

A key limitation of this multi-method approach is our cross sectional treatment of the life course. While our approach enables us to better combine cross sectional data on differences across age groups from the HIV Survey with the LHI and FGI data, we acknowledge that the quantitative data limits our ability to unpack the full range of age-period-cohort effects, such as shifts in the meaning of being in one's 40s in the 1990s vs 2000s vs 2010s. Our qualitative data helps us to at least partially overcome these limitations. Overall, this paper serves as a first step in understanding variation in HIV risk and protective factors at middle and older ages of the life course.

FINDINGS

1. Sexual Risk and Protective Behaviors of Adults over 40

Multiple partners—While less than 1% of women over 40 reported having more than 1 sexual partner in the last two years, almost 15% of men over 40 reported two or more sexual partners in the last two years. There was a general decline in these reports among men at older ages, with men in their 70s having the lowest reports (8.3%) of multiple partners (Table 1).

Men who were HIV positive had higher reports of multiple partners (19.8%) than their HIV negative counterparts (13.3%). Only a slightly higher proportion of women who were HIV positive reported multiple partners compared to HIV negative women (1.3% and 0.4% respectively).

Extramarital partners—Self-reports of multiple partners were in part supported by respondents' beliefs about their partner's infidelity. Overall, 38.9% of women believed their most recent sexual partner was having sex with others. Women in their 40s and 50s were most likely to report this belief (39.2% and 41.6% respectively) with slight declines among women in their 60s (32%) and 70s (34.8%). In contrast, only 7.6% of men believed their most recent sexual partner was having sex with others. Men in their 40s and 50s were most

likely to report this belief (8.9% and 9.6% respectively) with slight declines among men in their 60s (6.7%) and 70s (4.7%).

These results are even more striking when parsed by HIV serostatus. Among women reporting on their most recent sexual partner, just over half (56.6%) of HIV positive women believed their partner was having extramarital sex, compared to a third (33.6%) of HIV negative women. Respondents' beliefs about partner infidelity varied by age group in a non-linear fashion: among HIV positive women, 50.5% of women in their 40s, 68.3% of women in their 50s, 26% of women in their 60s, and all the women in their 70s believed their sexual partner was having sex with others. Among men, 11.9% of HIV positive men believed their most recent partner was having extramarital sex compared to 6.7% of HIV negative men. Among HIV negative men, there was a general decline in beliefs about a partner's infidelity with age. Reports peaked among HIV negative men in their 40s, before declining to 0% among men in their 70s. In sum, HIV positive adults over 40 were more likely to believe their partner was having sex with others compared to HIV negative adults.

Celibacy—As Table 1 also illustrates, there are striking gender differences in reports of celibacy across age groups. Overall, *half* the women report no sex with their partners in the past 2 years, compared to 20% of men. By their 60s, 70% of women and 15% of men report celibacy in the last two years. By the 70s, 93% of women report celibacy compared with only 36% of same aged men. (Large gender differences remain even if we assume cross-generational relationships). The survey findings not only support gender differences in self-reports and beliefs of extramarital partnerships, with large gaps between men's and women's reports of celibacy, but also suggest conscious or inadvertent sexual *protective* actions on the part of women in light of their beliefs about men's sexual behavior in a high HIV prevalence environment.

Parsing the data by HIV serostatus further supports this idea. Specifically, we find that HIV negative women were more likely to report celibacy (52.6%) compared to HIV positive women (39.4%). Similarly, HIV negative men were more likely to report celibacy (22.1%) compared to HIV positive men (13.3%). These findings suggest that for older HIV negative women and men, recent celibacy may be a strategy to avoid HIV acquisition.

Condom Use—Condom use is very low among sexually active adults over 40: only 11% reported using a condom the last time they had sex. Condom use among women in their 40s and 50s was 16.5% and 10.2% respectively. No women in their 60s and 70s reported condom use at last sex. Among men in their 40s and 50s, condom use was 20% and 6% respectively, with 5.6% of men in their 60s and 1.8% of men in their 70s reporting condom use at last sex. These trends suggest dramatic drops in condom use at older ages that may be a result of limited familiarity with condoms among older adults or declining use as relationship duration increases.

Parsing these data by HIV sero-status gives further insight into mechanisms underlying this pattern. Overall, while only 6% of HIV negative women over 40 report using a condom the last time they had sex, 28% of HIV positive women report using condoms at last sex. There is age group variation in these patterns. Specifically, among HIV positive women, 26% of

those in their 40s and 35% of those in their 50s reported condom use at last sex. In contrast, among their HIV negative counterparts, 12% of those in their 40s and 2% of those in their 50s report condom use at last sex. No women in their 60s and 70s (HIV-positive or negative), however, reported condom use at last sex. Among men overall, only 6% of HIV negative men report using a condom at last sex, compared to 19% of HIV positive men. Parsed by age group, among HIV positive men, 28% of those in their 40s and 10% of those in their 50s reported condom use at last sex, in contrast to 15% and 3.5% respectively of their HIV negative counterparts. Among men in their 60s and 70s, 22% and 0% of HIV positive men reported condom use at last sex, compared to 2.7% and 2% among their HIV negative counterparts. In sum, these findings suggest that HIV positive adults over 40 may be using condoms to protect against HIV transmission and/or their own re-infection. The findings also suggest a clear gendered strategy among women in particular that varies as they age, with women in their 40s and 50s using condoms, especially if HIV positive, while those in their 60s and 70s use celibacy, especially if HIV negative.

To understand the meaning of these trends in sexual risk and protective behavior, we use our theoretical framework to guide our qualitative examination of life course and contextual factors shaping HIV vulnerability among older adults.

2. Gendered Life Course and Contextual Dynamics Shaping HIV Vulnerability 40s and Early 50s

Life course dynamics in the 40s and early 50s—In FGI and LHI interviews, infidelity in marriage was seen as particularly acute among younger couples in their 40s and early 50s, among whom men were still migrating back and forth for work on the farms, the nearby game reserves, the mines, or the cities. As noted earlier, 39% of surveyed women age 40 and above believed their partner was having sex with others. In the LHIs with individuals in their 50s to 70s, many married women (some of whom were HIV positive) with formerly migrant husbands discussed frankly their suspicions or knowledge that their partners had had many girlfriends in their place of work. A 50 year old HIV positive LHI respondent, for example, regularly conducted random visits to her husband's work place home to chase away the various girlfriends he had acquired when she was in her late 40s. As she related:

R: Hey... In 2011 things were bad... jaa... it was really bad. He was not coming home the way he used to. He had another woman there. .. I went there and stayed with my sister in law. ...Around six we went there. When we arrived he was also coming from work. We entered the house and sat down... I told his girlfriend to sit down. I asked her if he told her about me. She said he told her that he is married and had children. Then I said I am the wife and I am here, do you hear me? She said yes. I asked her why my husband is not coming home. She didn't answer me. Then I asked him why he is not coming home. He doesn't send money for food, he does nothing. How are we going to survive? How are the children going to eat? How are they going to wash when they go to school? ... I asked his girlfriend if he stays with the money not given to us, is that what she is saying? Are you happy when you eat well and my children are suffering at home? I told her to pack and go and it was night. I did nothing to her but I told her to go. She entered the bedroom

and packed her bags.... After some time my sister in law called me again saying that there is another woman...

Married men also reported having different partners – as well as “*makwaphenes*” (hidden or secret partners. The literal isiZulu meaning is “under the armpit”) -- in their place of work as they discussed their past relationship histories. For example, during an LHI, an HIV positive man aged 51 described his concurrent partnerships when he was younger – with one regular partner, and several casual partners - this way:

R: At Komatipoort I met a lot of girls but I only had one full time partner. She was from Makoko. The other ones were just casual partners and I met them during school holidays because at work they were calling them for part-time jobs during school holidays. That’s when I met a lot of them. They were from different places like Malayinini and some other areas and they were going back home after school holidays. So I only had one full time partner. I even came home with her one time.

In a few instances, respondents reported that migrant wives also had extramarital affairs while away from their husbands. For example, an HIV positive LHI respondent aged 52 discussed an affair she had while a labor migrant. As she related:

R: ... to tell you the truth my child, as I have told you that my husband was going away, not knowing where he is. It happened that I had an affair a long time ago. When my husband came back, he also disappeared. I don’t know where he is. ...

I: ... Where did you meet?

R: [*she laughs*] We were working on a project where we were cutting grass. That’s where we met... We started working from June until December.

I: What attracted you to him?

R: [*she laughs*] There was nothing that attracted me. I was still young and my body was still having the desire to have sex. I was alone and my body was telling me what it wanted. That’s it.

I: How long did your relationship last?

R: Only for that six months that we worked. After the contract expired we didn’t see each other.

I: Was the relationship serious or what?

R: [*she laughs*] If it’s serious, it’s when a person marries you. But for us it was just an affair, and I was telling him that I’m married. I’m just doing it because my husband doesn’t stay at home, then he understood.

Contextual density in the 40s and late 50s—Labor migration is a dominant contextual factor underlying reports of extramarital partnerships and subsequent HIV risk among LHI and community FGI respondents. As noted earlier, in Agincourt, approximately 60% of men and 20% of women aged 20–60 are regular circular labor migrants (Clark et al 2007). Studies in South Africa consistently show higher rates of HIV for both migrant men and migrant women (Zuma et al 2003, Lurie et al 2003a). The high male out-migration from

former apartheid homelands to work in mines, farms and cities such as Johannesburg reflects the continued paucity of jobs in these areas, of which Agincourt is one. Extramarital relationships that thrive in the midst of such family-separating labor dynamics have been associated with high rates of HIV acquisition, subsequently placing partners at home at risk when migrant spouses periodically return home (Lurie et al 2003, Campbell 2000, Campbell 2003, Lurie et al 2003b, Hirsch et al 2002).

This was reflected in many of our community FGI respondents' comments in identifying, in particular, men's labor migration and extramarital sex without condoms as a key source of HIV acquisition, and subsequent transmission to their wives at home who are faithfully abstinent in the interim. The following is a typical exchange from a mixed gender 40s focus group, posing a hypothetical scenario:

W4: Here's a father and mother in a family. The mother [wife] is always faithful [*all agree*]. She's always at home every time. To put it well/correctly, we women, we are dying and we are [being killed] by you men ...

M2: Yes it is true. I also agree.

W4: Mmm...I'm staying faithful and waiting for my husband as he's still at Marikana mine. [*women agree*] When he comes back from the mine he transmits the disease to me and I start to get sick. Meanwhile, I didn't do anything. Alright, my husband here at home you must not use a condom. But outside with partners, you must use a condom. But he also deny [refuses] to use it outside. He wants to use flesh to flesh with partners and also here at home [*some agree*]. When I start to get sick he said "shame my wife" [*my poor wife*]. Meanwhile, he knows he have brought it [HIV]...

W6: Haah! ... we can die together.

W4: So, I don't know as brother [M2] have said, how we can do this gospel [*M3 agrees*] that we, the married one who stay at home, our husband...they are abusing us because they found us staying and bring it and give it to us [transmitting the disease] [*some laugh*].

Late 50s and 60s+

Life course dynamics in the late 50s and 60s—As couples and households transitioned out of the migratory stage of their relationship, and spouses stopped travelling for work, respondents in their 50s and 60s highlighted patterns of HIV acquisition and transmission at home. The main perception was that older adults, and men in particular, acquired HIV from relationships with younger partners who were [accurately as Figure 1 illustrates] thought to have higher rates of HIV. This was supported by the HIV Survey data. Among men in their 50s, 60s and 70s, HIV negative men had partners who were on average 6, 8, and 12 years younger respectively, while same aged HIV positive men had partners who were 9, 11 and 15 years younger respectively. (Data not shown)

Inadvertently protective actions resulting in HIV avoidance were understood among respondents in life course and gendered varying ways. A key theme emerging from

interviews was the assumption of *gender differences in sexual desire* as people aged (Freeman and Coast 2014). There was a sense among men and women that men could not “stay alone” without sex: they might have fewer “rounds” of sex as they aged, but in general, their desire to have sex remained as long as their “blood is flowing”. For women, many felt that when they reached menopause, they could “stay alone” without sex. For example, in the following excerpt from an LHI with an HIV negative woman aged 55, the interviewer asked:

I: Has the way you feel about sex changed in any way as you have gotten older?

R: It has changed, because my blood is no longer flowing like when I was young. The blood that was making a person to want a man has stopped, so how are you going to want [a] man?...

This change sometimes led to accepting a husband’s infidelity. One FGI respondent in her 50s remarked of her husband’s extramarital partners, “let them take him, I’m tired.” In saying this, however, women were aware that their husbands might introduce HIV into their relationship. Indeed the connection between reduced sexual desire, infidelity and subsequent HIV acquisition was recognized by women of all age groups. In a mixed gender FGI among respondents in their 40s, one woman noted:

W5: Because if you are the wife, and you are tired [have no feelings anymore] he will go out and he will find someone at my same age and you find that I’m sick with the disease inside. [*Claps hands, meaning infected with HIV*].

As the above excerpt highlights, women were aware that celibacy due to their own lack of sexual desire could increase the risk of their husband’s HIV acquisition outside the home. They were also aware of the limits of this strategy within marriage. As one respondent noted in a FGI among women in their 50s,

“When he comes home, I refuse to have sex with him. [But] he is my husband, how many days will you refuse?”

This might lead to periods of celibacy during which time a husband may have extramarital partners and thus increase his risk of HIV acquisition (if he is not using condoms), followed by marital reunions where HIV transmission might occur when wives suspend their celibacy. Consciously protective strategies in this setting, such as condom use, were difficult for many women to negotiate in the context of marriage (see also Chimbir 2007), as noted earlier. While loss of sexual desire was understood as a common and thus legitimate reason for celibacy among older women, condom use was difficult to continually enforce as husbands would refuse to use them preferring “flesh to flesh.” Among men, the main motivation for using condoms was fear of HIV. For example, in an LHI interview with an HIV negative man in his 50s, his response to his fear of HIV was using condoms with his wife and extramarital partner because “I was afraid of diseases.”

Contextual density in the late 50s and 60s+—Another important contextual feature shaping sexual behavior in the Agincourt site is *poverty*. Despite substantial progress in the post-apartheid era, the site continues to experience poverty unique to former apartheid homeland areas unfavorably affected by a history of policies of differential development

(Kahn et al 2012). Unemployment rates are particularly high, with 25% of men and 48% of women unemployed in 2008 (Blalock 2014). This means that South Africa's means-based social welfare grants - old age pensions (available to those 60+), child dependent grants, and disability grants - are vital and stable sources of household income for the many poor rural households in the site (Schatz and Ogunmefun 2007). This has implications for sexual relationship dynamics in South Africa, where men's material provision to sexual partners is a widespread but often challenging expectation (Hunter 2002, Hunter 2010, Bhana and Pattman 2011). Men become eligible for non-contributory, means tested public pension money at the age of 60 and some receive private pensions from work at earlier ages. "Pension money" was mentioned by some older men as a way to sustain relationships with younger and riskier sexual partners, as the following representative excerpt from an FGI among men in their 60s illustrates:

FAC: What are some of the sexual risks that might put men your age at risk for HIV/AIDS?

M12: If you don't respect yourself, by living with your wife at home, go out and sleep with young women, because you give them your money for pension.... But if I can respect myself and my wife, by not going out to sleep with young women, stay home and use my pension money with my wife.

FAC: Other inputs.

M4: Yes [M12] is telling the truth. If you take care of yourself not sleeping with young women, you won't get infected by HIV, because young women are the one with HIV.

DISCUSSION

In this paper we use a life course approach to examine HIV vulnerability among adults over 40 in the MRC/Wits Agincourt Research Unit site, a rural, former apartheid homeland area of South Africa - a setting where HIV prevalence at older ages is high and a substantial proportion of the population is aging with HIV or at risk of acquiring HIV at older ages. Drawing on a rich multi-method data set, and a nuanced theoretical framework, we characterize sexual risk and protective behavior as it varies by age group, gender and HIV serostatus, and then examine gendered life course and contextual factors shaping these behaviors at older ages.

As with any study, however, our study has limitations. First, the sexual behavior survey data (HIV Survey) is cross sectional and only covers the last two years of respondents' lives. As such our quantitative findings suggest associations between current measures, but not causality. Second, the nature of the survey data precludes us from identifying when people actually acquire HIV, and whether their knowledge of their HIV status is driving their sexual behavior. These drawbacks are overcome, at least in part, by our multi-method approach in triangulating the quantitative findings with the qualitative data. The LHIs in particular, with known HIV serostatus, helps elucidate the connection between HIV status and its associated behavior. FGIs provide information on the normative environment around sexual risk and protection that informs individual motivations for behavior. We also use both our

quantitative and qualitative data to examine people's perceptions of HIV vulnerability, as these can be consequential in the protective and risky actions in which people engage. Finally, we recognize that reports of sexual behavior are highly subject to social desirability biases, particularly by gender and age (see for example Mensch et al 2003, Nnko et al 2004, and Houle et al, 2016). Notably, in surveys and qualitative interviews soliciting reports of sexual behavior, women may minimize their sexual activity while men may exaggerate theirs. Focus group discussions, by design aimed to solicit normative ideas, may suffer from the same methodological biases that make them useful substantively: respondents may feel pressure to report what they believe to be age or gender-appropriate responses.

Our findings nonetheless make significant contributions to an important and understudied area of research. We find that several contextual, life course and individual factors predispose older adults to HIV risk, including long periods of migratory work leading to forced separation of spouses and enabling environments for extra-marital partners during the 40s and early 50s. We also find that in the late 50s and 60+ age groups, government provision of pensions among men in an otherwise poverty-stricken area, and reduced sexual desire among women, may be contributing to older men's sexual relationships with younger adults who have higher rates of HIV infection. We also identify how adults over 40 may be proactively or inadvertently avoiding HIV acquisition and transmission through celibacy and condom use, with gender differences in the ability to enact these strategies and gendered norms around infidelity at older ages.

POLICY IMPLICATIONS AND CONCLUSIONS

Attending to multi-level contextual, gendered and age group specific points of HIV vulnerability enables a more nuanced approach to policy and programmatic planning to help prevent HIV acquisition and transmission among an often ignored population. Condom use and HIV testing campaigns, for example, might be targeted at particular points in the life course – at workplaces when men are discharged from labor migrating work on reaching retirement; when couples reunite for public holidays; at events where community women and men who are left at home are gathered; and when adults first become pension eligible. Linking HIV prevention programming to contextualized life course stages may more effectively resonate with older adults, not just young adults, the demographic for whom social marketing campaigns are currently primarily targeted.

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Highlights

- South Africa will soon have the world's largest population of people aging with HIV.
- We conduct a mixed methods study examining HIV risk and protective factors among adults over 40.
- A gendered, life course and contextual theoretical approach to HIV vulnerability is presented.
- Factors such as celibacy, sexual desire, labor migration, poverty and pensions are considered.
- HIV prevention programming for older adults attentive to life course stage and context is needed.

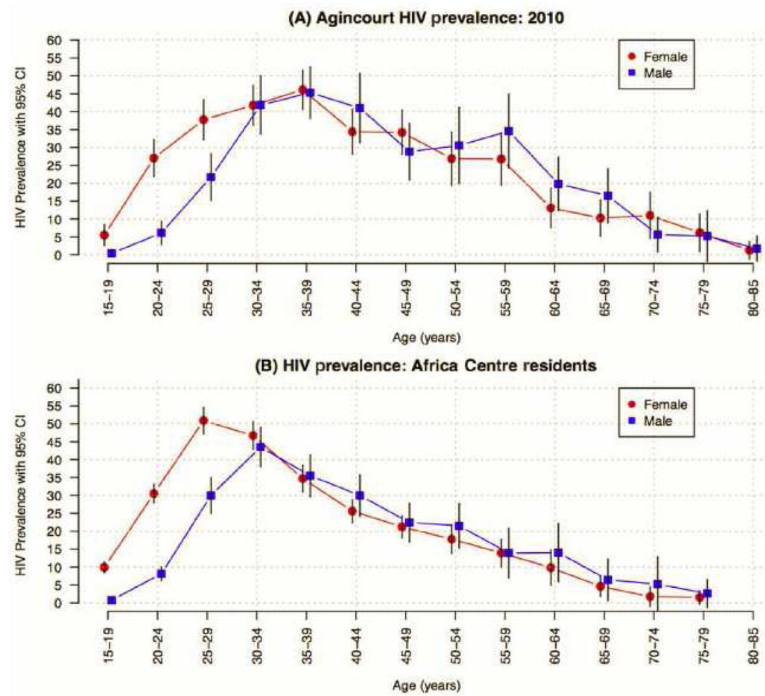


Figure 1. HIV prevalence in Rural South Africa, 2010

Source: Gómez-Olivé et al., 2013

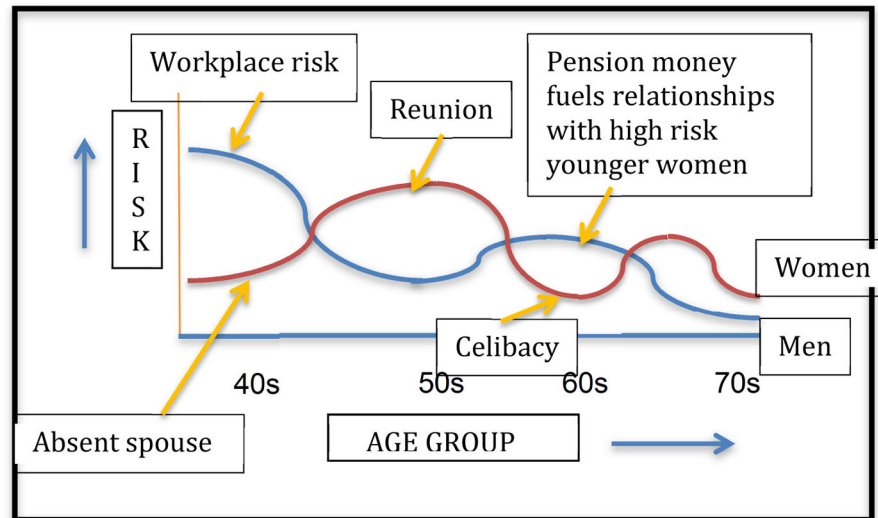


Figure 2.
Example of life course variation in HIV risk and protection

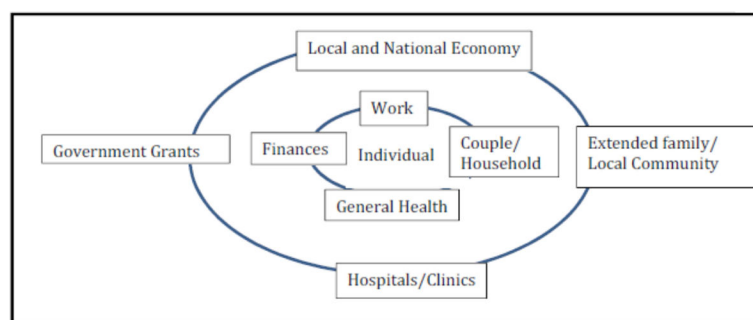


Figure 3.
Contextual density and HIV vulnerability

Table 1
Number of Sexual partners in the last two years for women and men, by age group

	WOMEN (%) N=1350					MEN (%) N = 866				
# of partners	40s	50s	60s	70s	Total	40s3	50s3	60s3	70s3	Total3
0	18.6	36	69.5	92.7	50.2	9.23	15.63	15.33	36.13	203
1	79.8	64	30.1	7.3	49.3	71.33	64.73	72.43	55.63	65.43
2	1.3	0	0.3	0	0.5	143	15.73	10.53	7.33	11.63
3	0.2	0	0	0	0.06	4.73	3.43	1.83	0.43	2.53
4						0.8	0.6	0	0.6	0.5

[All estimates include sampling weights; percentages may not sum to 100 due to rounding]