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Age-disparate relationships and condom use among young people in Swaziland

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The kingdom of Swaziland is home to 1.1 million people, 69% of whom live in poverty (1). Like many countries in sub-Saharan Africa, Swaziland is crippled by a generalized HIV epidemic. It is worst hit of all, with more than 25% of the 15 to 50-year-old population infected (2). Although the prevalence of HIV is roughly the same among men and women, when aggregated across age categories, the risk of infection is significantly higher among young women as shown in Figure 1, with 22.6% of the 15 to 24-year-old women infected, compared to the 5.8% of men infected in the same age category (3). These differences cannot be explained by anatomical and hormonal factors that make young women particularly vulnerable to HIV infection.

Intuitively, some level of age mixing has to occur for HIV to spread throughout a population: if those who were infected only formed sexual partnerships with partners of the same age, then the epidemic would die out as the individuals of the infected birth cohort aged and passed away. Also, if the age difference between all sexual partnerships in the population was constant, then the same thing would happen. Even with some degree of heterogeneity in the age difference between sexual partners, HIV would be unable to sustain an epidemic in the population, as long as the heterogeneity is contributable to cross-sectional (between individuals) rather than temporal (within the same individual) variability in age differences.

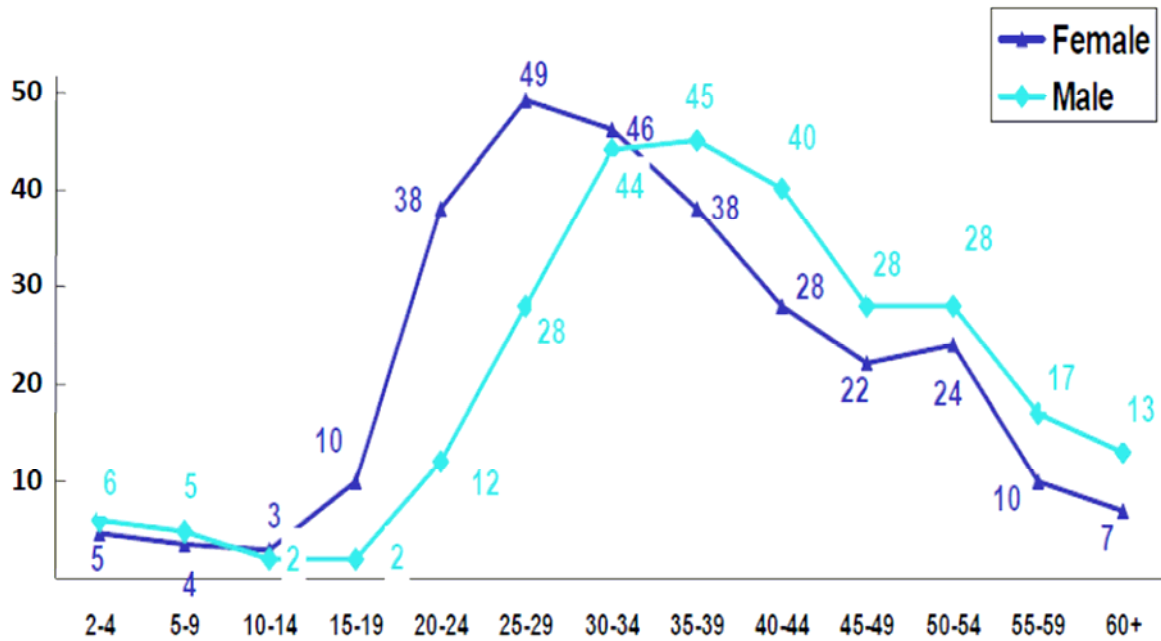


Figure 1. HIV prevalence (%) in Swaziland, disaggregated by gender and age

In recent years, it has become clear that in sub-Saharan countries with generalized HIV epidemics, girls engaging in sexual relationships with men five or more years older than themselves are at increased risk of HIV infection (4-7). This association may be explained by at least two correlated factors. Firstly, the prevalence of HIV in men is typically lowest among adolescents and rises steadily with age, to peak among men in their late thirties – in the case of Swaziland, at prevalence rates above 40%. Secondly, evidence is accumulating to suggest that men who engage in sexual relationships with younger women exhibit higher levels of sexual risk behaviour than other men of the same age group. Age-disparate relationships have been associated with decreased condom use (8, 9). Further, older partners of young women and girls frequently sustain multiple and concurrent partnerships, not only with other casual partners but also with a main ‘long-term’ partner (10). As the main partner of these men is usually older than their casual partners (11), these men may act as a bridging population, allowing HIV to spread indirectly from older age groups with a higher burden of HIV infections to younger age groups.

In this paper we describe the results of a secondary analysis of the Swaziland Demographic and Health Survey 2006-2007 data. In particular, we explored trends and variability in age differences between 872 young men aged 15-24 and their female sexual partners. In addition we investigated whether the magnitude of the age difference between sexual partners was inversely associated with consistent condom use.

We fitted a mixed-effects model to age-structured relationship and condom-use data. This type of model combines standard regression of fixed (population-level) effects, with random (individual-level) effects, which estimate the inter- and intra-subject variability around the fixed effect variables. The framework allows us to combine investigating the two most interesting characteristics of the data: the average age difference, determined by the fixed effects, and the heteroskedastic (i.e. non-constant) variability around this mean, via the random effects.

The relationship data and results of the mixed-effect analysis are shown in Figure 2, with the age of men on the horizontal axis and the age of their female partners on the vertical axis. The average age of female partners of men of a particular age is shown by the blue line. The mean age difference, given by the distance between the brown and blue lines, is derived from the mixed-effects model. The blue dashed lines indicate that the variability around the average age differences increases with the age of the male partner. This variability, graphically represented by the red dashed lines, is partially caused by differences in age preferences between partners of the same age. The complementary fraction (between the red and blue dashed lines) originates from an increasing variability in the age differences between aging men and their sexual partners.

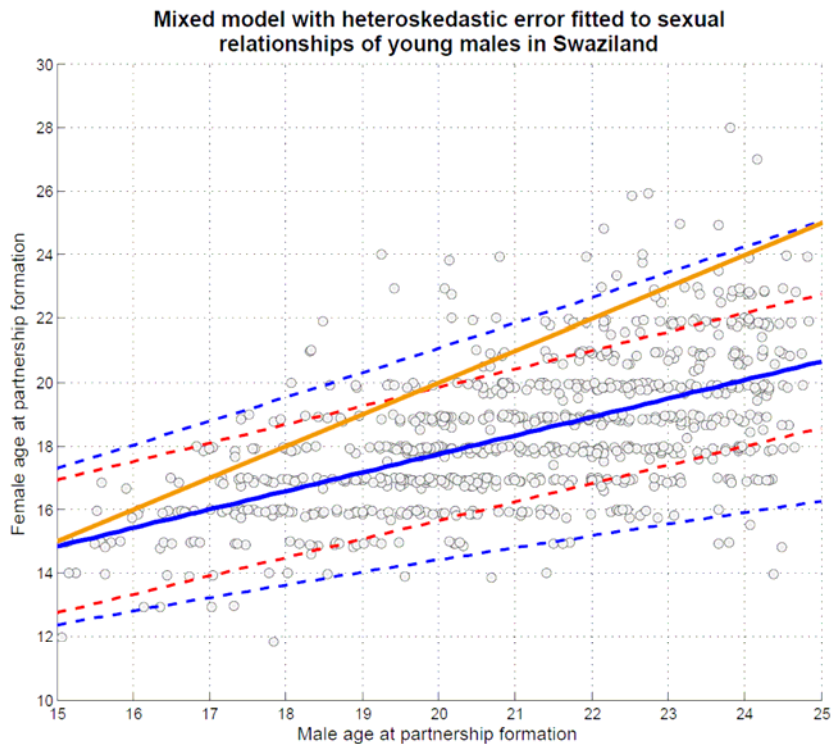


Figure 2. Age differences between partners at partnership formation.

At the age of 17 years, the model predicts that the most likely age of a male's partner will be approximately 16 years old. Keeping in mind that the interpretation of the confidence interval is that it is the range that 95% of a respondent's relationships will come from, we can see, by increasing the male age from 17 years, that girls of 16 years remains in the 'selection pool' (indicated by a green ellipse) of men up to 24 years old, according to the heteroskedastic model. Even without the heteroskedastic effect being considered, she would still remain in the potential range of partners for males aged up to 20.5 years. Thus we could conclude that the increasing variability around the average age difference between men and their sexual partners exacerbates the effect of the growing average age difference. The result is that younger girls are at risk of infection by older partners for an extensive amount of time.

Consistent condom use was found to be negatively affected by larger age differences between partners. About half of same-aged couples reported to always use condoms. This was only true for a quarter of couples in which the male was eight years older than his partner. Similar

findings have been reported for other countries in sub-Saharan Africa. A study of the 2004 National Adolescent Surveys from Burkina Faso, Ghana, Malawi and Uganda found that adolescent men whose partner was 0–4 years younger were about two and a half times more likely to use condoms consistently than those whose partner was 5–9 years younger (9).

In many countries, as is the case in Swaziland, economic and social disparities contribute to large age differences between partners. These in turn play a significant role in the spread of HIV. Whereas early studies emphasized economic concerns in the context of poverty as driving girls to accept or seek the attentions of older employed men, close-grained studies reveal strong material and monetary expectations from casual and committed male partners. Further, qualitative research describe the formation of age-disparate relationships in the context of attempts to improve one's social status, affirm self-worth, increase longer-term life chances, or otherwise add value and enjoyment to life (12-14). In view of these underlying motives, it is unlikely that behaviour-change campaigns merely aimed at raising awareness of the risks associated with age-disparate relationships will halt the spread of the HIV epidemic, unless they form part of a multisectoral 'combination prevention' approach that also addresses social, economic and gender inequality.

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