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Household and individual level factors associated with HIV infection in KwaZulu-Natal

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Abstract

Background:

Sub-Saharan Africa continues to bear the brunt of the global HIV epidemic, with the epicentre located in Southern Africa. Of all the adult and children living with HIV globally in 2006, two-thirds (63%) were in sub-Saharan Africa.[1] The epicenter of the HIV/AIDS epidemic in South Africa is located in the KwaZulu Natal province, where HIV incidence and prevalence continue to remain high and this has serious implications for HIV prevention and control programmes.

Objectives

i. *To profile individuals who sero-converted during the period 2003-2007 in order to better target interventions.*
ii. *To estimate the incidence rate for HIV during the period 2003 to 2007.*
iii. *To identify factors associated with HIV infection at individual and household levels in Kwazulu-Natal.*

Methods

This involved analysis data of a dynamic cohort study. The follow-up period was 2003-2007, and the study was a household-based HIV sero-prevalence survey of a population in Kwazulu Natal, South Africa, conducted by the Africa Centre for Health and Population Studies. The cohort comprised females aged 15 to 49 and males 15 to 54 years who participated in the baseline HIV sero-prevalence survey in 2003 and/ or subsequent surveys in 2005, 2006 and 2007. Individuals who participated in at least two surveys and had a negative HIV result on first enrolment were included in the analysis.

Selected demographic, socio-economic, behavioural and geographic variables of the participants were obtained from the demographic surveillance system (DSS) database of the Africa Centre Demographic and Information System (ACDIS) for analysis.

Profiles of recently HIV sero-converters were based on these variables and descriptive statistics used to compare the differences in sero-conversion between the different strata of each variable. Multiple logistic regression was used to investigate the association between variables of key interest.

Results

A total of 39, 738 individuals were surveyed for the four annual sero-prevalence surveys conducted from 2003-2007. Of these, 41.5% (n=16,491) were HIV negative on their first enrolment into the study, 11.6% (n=4610) were HIV positive on first enrolment, while 46.9% (n=18,637) had either participated in just one out of the four surveys, or were non-resident at baseline. These two categories of participants as well as those who tested HIV positive on first enrolment were dropped from the analysis.

The final sample size used for analysis was 16,491 individuals and comprised 8,425(51.1%) females aged 15-49 years old and 8,066 (48.9%) males aged 15-54 years old.

The incidence rate for HIV sero-conversion among the 16, 491 individuals included in the final analysis was 11.5 per 1000PYs during the follow-up period. In other words, 539 individuals sero-converted during 46818.15 person-years (PYs) at risk from 2003-2007.

A significant proportion of the new HIV acquisitions (69.8%) occurred in households without any recently or previously infected household member, and women had a significantly greater risk of HIV infection(IR= 16.9 per 1000PYs; 95% CI: 15.33-18.640) compared to men(IR=5.9; 95% CI: 4.95-6.94) in this study area.

Conclusion

The younger age bracket (24-30 years old) was associated with significantly higher risk of HIV infection compared to the older age category. However, the age group 20-24 years bears the greatest burden of HIV pandemic in this community. Majority of seroconverters were rural dwellers but peri-urban dwellers had the greatest risk of HIV acquisition.

The study also showed that attendance of a school or a training facility on a full-time basis during the follow-up period was protective for HIV acquisition compared. Also, attainment of standard 10 to 12 level of education was associated with a greater risk of HIV seroconversion. This can be attributed to the age of individuals at these levels of education and the associated high risk profile of this group. Living in close proximity to primary or secondary roads was also associated with a risk of HIV infection compared to those living far from major roads. This could be due to the ease of mobility and potential exposure multiple sex partners. This may be due to a desire for modern social amenities which requires financial wherewithal, which in turn facilitates transactional sex.