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Migration patterns in rural KwaZulu Natal, and the association with adult HIV infection

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Abstract

Background

Assessing HIV incidence over time in a rural population, largely characterized by high levels of migration and poverty is important to understand the dynamics of the spread of HIV infection. Understanding patterns of HIV infection is a key to defining the appropriate strategies for prevention of the disease especially in areas where information on HIV incidence is scarce, such as in Africa and South Africa in particular.

Objectives and methods

The main objective of this study is to measure the association between migration history and newly acquired HIV infection by sex. The specific objectives are to: (i) quantify median distance of migration by members of the cohort during the period of observation; (ii) measure the association between migration status and acquisition of HIV infection among males and females study participants.
The current analysis is based on secondary data collected at the Africa Centre Demographic Surveillance System (DSS) in South Africa. Women aged 15-49 years and men aged 15-54 years were enrolled in the study and tested for HIV between 2003/5 and 2008. A Weibull survival model was used to determine the probability of HIV infection, subject to migration and possible confounders.

Results

For external migration, the median of external in-migration distance was 53.9 km, with a lower quartile of 27 km and upper quartile of 204 km while the median of external out-migration distance was 104.7 km, with a lower quartile of 52 km and upper quartile of 204 km. The total migration rate among males is 8.8 and for females the rate is 8.2 per 100 person-years (PYO). The majority of external migrants moved to Durban, which

appeared to be the most important origin and destination for most migrants. Of the 9300 individuals enrolled in this study, 699 sero-converted. The HIV incidence rate among non-migrants males was 2.0/100 PYO (95% CI, 1.7 – 2.3) and for non-migrants females was 4.1/100 PYO (95% CI, 3.8 – 4.5) while the HIV incidence rates among migrants were higher for females in all categories: 2.0/100 PYO (95% CI, 1.3- 3.1) among internal migrants, 3.8/100 PYO (95% CI, 1.7- 8.5) for external in-migrant and among external out-migrants the HIV incidence rate was 3.2/100 PYO (95% CI, 2.3 – 4.5). For both genders, except internal migration showed a significant risk of HIV acquisition, other types of migration showed no significant association with HIV acquisition. Among other predictors, males who were in the age group 25-29 had the highest hazard of 3.75 times increased risk of HIV acquisition compared to the age group 15-19 [HR = 3.75, 95% CI (2.30 – 6.32), P < 0.001]. Females aged 20-24 years had 43% increased risk of HIV acquisition compared to the those aged 15-19 years [HR = 1.43, 95% CI (1.13 – 1.79), P = 0.002]. For marital status, females who had never been married and not engaged had 71% increased risk of HIV acquisition compared to those who were married, [HR = 1.71, 95% CI (1.09 – 2.68), P = 0.019]. Females with conjugal partners who were always resident and females with conjugal partners who were partial resident had a reduced risk of HIV acquisition of 41% [HR = 0.59, 95% CI (0.36 – 0.95), P = 0.031] and 38% [HR = 0.62, 95% CI (0.40 – 0.96), P = 0.034] respectively.

Conclusion

Rates of migration vary by age and gender in this cohort of repeat-testers of HIV. Younger individuals migrated more often and the majority of migrants moved to urban centres close to the study area. In terms of HIV incidence, for all covariates, females had higher rates of HIV acquisition than males. External migration does not appear to increase HIV acquisition for this cohort of repeat-testers of HIV, and those who internally migrated had a reduced risk of HIV acquisition. Based on these findings, public health efforts aimed at controlling the spread of HIV infection in this cohort should target at socio-economic condition, sexual behaviour and empowering of women in particular.