

Abstract

OBJECTIVE:

Conventional survival estimates may be biased if loss to follow-up (LTF) is associated with the outcome of interest. Our goal was to assess whether the association between sexual risk behavior and HIV-1 acquisition changed after accounting for LTF with competing risks regression.

METHODS:

HIV-1-seronegative women who enrolled in a Kenyan sex worker cohort from 1993-2007 were followed prospectively and tested for HIV at monthly clinic visits. Our primary predictor was self-reported sexual risk behavior in the past week, analyzed as a time-dependent covariate. Outcomes included HIV-1 acquisition and LTF. We analyzed the data using Cox proportional hazards regression and competing risks regression, in which LTF was treated as a competing event.

RESULTS:

A total of 1,513 women contributed 4,150 person-years (py), during which 198 (13.1%) acquired HIV-1 infection (incidence, 4.5 per 100 py) and 969 (64.0%) were LTF (incidence, 23.4 per 100 py). After adjusting for potential confounders, women reporting unprotected sex with multiple partners were less likely to be lost to follow-up (adjusted sub-hazard ratio (aSHR) 0.50, 95% confidence interval (CI) 0.32-0.76, relative to no sexual activity). The risk of HIV-1 acquisition after reporting unprotected sex with multiple partners was similar with Cox regression (adjusted hazard ratio (aHR) 2.41, 95% CI 1.36-4.27) and competing risks regression (aSHR 2.47, 95% CI 1.33-4.58).

CONCLUSIONS:

Unprotected sex with multiple partners was associated with higher HIV-1 acquisition risk, but lower attrition. This differential attrition did not substantially bias Cox regression estimates when compared to competing risks regression results.