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HIV/AIDS and rape: modelling predictions of the increase in individual risk of contracting HIV from forced sex in South Africa

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Background: A high proportion of women will experience forced sex in their lifetimes, particularly in South Africa. Forced sex is thought to increase the risk of HIV transmission as compared to consensual sex; however there have been few attempts to quantify this increased risk.

Methods: A literature review was conducted to investigate factors which may increase HIV transmission during forced sex. These were found to include the higher likelihood of genital injury, and the higher prevalences of HIV and STIs observed among perpetrators. An existing mathematical model of HIV acquisition (in which perpetrator HIV/STI prevalences can be varied) was adapted to incorporate the increased risk of HIV acquisition if genital injury occurs during sex.

Results: Four scenarios were devised and parameterised to South Africa, based on the literature: (1) child sexual abuse of a 5-year-old girl, (2) forced first sex of a 17-year-old girl, (3) group rape of a young adult woman, (4) a post-menopausal woman forced into sex by her intimate partner. For each scenario, the individual risk of a susceptible female acquiring HIV through forced sex is calculated for when an assailant's HIV status is unknown and in the case that he is HIV-infected. These estimates of risk are compared to those for consensual sex. 'Low', 'moderate' and 'high' risk parameter sets were used to explore the uncertainty in the parameter values.

Conclusions: The projected risk of HIV transmission through forced sex is considerably higher than previously estimated and warrants further investigation. Whilst increasingly, developing countries are offering post-exposure prophylaxis to rape victims, its use is often limited to those cases perceived to be very high risk. What qualifies as 'very high risk' needs to be re-examined in light of these findings.

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