1. Abstract

Background: Risk behavior does not always result in HIV acquisition. It is important to understand why some individuals exposed to high-risk environments do not contract HIV, as exposed in the high-risk networks of injection drug users (IDUs) and heterosexual sex. Studies of HIV incidence are often based on random sampling of at-risk populations, which can lead to selection bias and a significant loss of inference. This study reviewed the literature on risk behavior to understand why some individuals exposed to high-risk environments do not contract HIV.

Methods: A systematic review and meta-analysis of HIV incidence studies was conducted. The search was conducted in MEDLINE, EMBASE, Cochrane, and ProQuest databases. The search strategy included terms related to HIV incidence, risk behavior, and selection bias. The inclusion criteria were randomized controlled trials or observational studies with a high level of evidence. The results were analyzed using a random-effects model using standard errors.

Results: A total of 30 studies were included in the review. The incidence of HIV was significantly lower in the control group compared to the intervention group. The risk factors identified were older age, higher education, and better knowledge of HIV prevention. The incidence of HIV was also lower in individuals who used condoms or injectable drugs, and those who had multiple sexual partners. The incidence was highest in individuals who had multiple recent sexual partners and those who used drugs.

Conclusions: Risk behavior does not always result in HIV acquisition, and studies of HIV incidence should consider selection bias. The incidence of HIV is significantly lower in individuals who use condoms or injectable drugs, and those who have multiple sexual partners. The incidence is highest in individuals who have multiple recent sexual partners and those who use drugs. Further studies are needed to understand why some individuals exposed to high-risk environments do not contract HIV.