An Experiment that May Resolve Many Disputes Over HIV Transmission

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Authors’ contributions

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

The present paper proposes an experiment that may resolve many controversial issues regarding HIV transmission and prevention: Compare HIV prevalence between mothers of HIV positive and HIV negative women ages 15-19 who attended antenatal clinics in SSA. For example, HIV prevention guidelines contradict each other over whether or not exposure of oral mucosa to HIV contaminated blood is a risk for transmission. The proposed experiment could result in direct data that allow us know the flaw in our current prevention strategy, and offer insights into why our prevention of HIV has failed.

Keywords: HIV; dispute; transmission; prevention; risk factor.

1. INTRODUCTION

As suggested in my recent paper, a disproportionately high HIV prevalence among adolescent females is the crucial reason why HIV is disproportionately high in sub-Saharan Africa (SSA); since, these infected adolescents would transmit HIV to their partners after entering adult life, the infected males further infect females, and so on [1]. Therefore, to understand how the female adolescents ages 15-19 got infected is important.

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A common opinion is that, females of this age group obtained HIV through sex with older men who were HIV positive [2]. However, this opinion conflicted with the common data collected in SSA in 1990s. Deaths due to HIV among women aged 15-19 and 20-24 year in SSA were very high in 1990s [1]. Few of young people who were infected during ages 15-24 died during ages 15-24, given that the time from infection to AIDS diagnosis was usually 10 to 15 years, with a longer period for those infected at a younger age than those infected at an older age. It is also unlikely that the infections had occurred in utero, or during delivery or breastfeeding; because, absent effective treatment, 80% of infected during those 3 stages would have died by age 5. For example, in national mortality data of South Africa for 1996 (Fig. 1), the deaths in age group <1 and 1-4 were very higher, and in age group 5-9 much lower, leaving very few who died at 10-14 [3]. Therefore, my recent report suggested that, many people aged 15-24 years had obtained HIV during in their childhood, and studies are urgently needed to explore whether many young people aged 15-24 got infected from their parents during childhood [1].

2. METHODS

The present paper proposes an experiment that may resolve the above disparities, and also many other controversial issues regarding HIV transmission and prevention: Compare HIV prevalence between mothers of HIV positive and HIV negative women ages 15-19 who attended antenatal clinics in SSA. This comparison would allow us to know roughly that, whether and how many HIV infected adolescents ages 15-19 years got infected through the mother-to-child route during childhood, or through sexual intercourse during ages 15-19.

HIV prevalence among adolescents ages 15-19 has deceased a lot since later 1990s. The reason is largely unknown. Therefore, the ideal experiment is to examine data collected in SSA during 1990s.

The mothers’ HIV status could be established from any registered data available. If the registered data are not available, personal interview survey has to be conducted. Most of the HIV negative women would still be alive (their current ages around 40-50 years old). HIV positive women may have died, but, their relatives or neighbors might know.

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Fig. 1. Age distribution of total death, South Africa, 1996. Source: Dorrington et al. [3]
3. DISCUSSION

The results of the experiment could also resolve many other disputed issues. For example, HIV prevention guidelines contradict each other over whether or not exposure of oral mucosa to HIV contaminated blood is a risk for transmission [4]. About 30-80% of HIV infected people have at least one oral manifestation [5], and the most frequently occurring ones are bleeding lesions [6-8]. Such blood could easily expose children and partners by multiple means. According to guidelines for dental occupational safety, exposure of oral mucosa to bloody fluid of HIV infected patients is a risk for HIV transmission, and immediate flushing of the exposed site with water is needed [9-11]. However, according to general prevention guidelines, there is little to no risk of oral activities leading to the exposure [12,13]. The proposed experiment would show us how many infections occurred through a non-sexual route (mother-to-child) and would provide a proper data to resolve the conflict between the two sets of guidelines.

Child sexual abuse is claimed to be a source of HIV infections among children. Studies showed that female child sexual abuse was similar, around 20-22%, in Australia, Africa and North America [14]. While, HIV prevalence varies greatly in the three regions. Some researchers reported that the disclosure rates were low in SSA. For example, in Zimbabwe, only 9% of the sufferers reported the first incident of abuse [15]. The proposed experiment would help us understand this issue. If the proposed experiment reveals that, a larger number of infections occurred through mother-to-child transmission during childhood, the infections due to sexual abuse would have been limited.

Some scientists believe that condoms are highly effective for HIV prevention. Their explanation of unsatisfactory results in practice has often been that, subjects did not know how to use the condoms correctly, or other reasons [16]. In contrast, other scientists showed data suggesting that condoms do not work for HIV prevention. For example, Hearst et al. reported that, consistent condom use was associated with lower HIV infection rates for Swazi men, but with higher HIV infection rates for women in Tanzania and Zambia, and there was no significant difference among the sexual subgroups analyzed in the other five countries [17]. If the proposed experiment reveal that, a larger number of infections occurred through mother-to-child route during childhood, a non-sexual route (lip-kissing, sharing food/drinking cups, etc.), the non sexual route would also apply to HIV transmission between sexual partners, given that physical contacts (deep-mouth kissing, sharing food/drinking cups, etc.) between partners are likely similar intimate as or more than between mothers and children. This would explain why condoms use for HIV prevention is not satisfactory.

If the results of the proposed experiment show that a larger number of infections among women ages 15-19 occurred during childhood through mother to child route, we would have to re-evaluate our current concept that, HIV transmission between partners usually occurred through sexual intercourse. Therefore, the proposed experiment could result in a direct data that allow us know the flaw in our current prevention strategy.

Many risk factors can cause HIV transmission. Studies can be planned in various ways to test the issue. For example, to clarify the role of oral bleeding or condom use in HIV transmission, inquiries can be conducted to compare HIV incidence rates between partners consistently using condoms, who do, and do not practice deep-mouth kissing and oral sex.

4. CONCLUSION

In summary, this paper suggests an experiment. the results of which may resolve multiple issues regarding HIV transmission, and offer insights into why our prevention of HIV has failed.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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