Behavioural interventions to reduce the transmission of HIV infection among sex workers and their clients in low- and middle-income countries

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Behavioural interventions appear to reduce the rates of transmission of sexually transmitted infections such as gonorrhoea, syphilis, genital warts, and chlamydial infections among sex workers in low- and middle-income countries. The interventions were also found to be effective in increasing knowledge about risks. However, none of the interventions significantly reduced the incidence of HIV infection.

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1. INTRODUCTION

The human immunodeficiency virus (HIV) pandemic remains a global public health problem three decades after the discovery of the causative virus. In 2010, according to World Health Organization (WHO), approximately 34 million people were living with HIV globally (1). The risk factors for HIV infection include: unprotected sexual intercourse; having other sexually transmitted infections (STIs) such as gonorrhoea; having multiple sexual partnerships; sharing contaminated injection needles; and receiving transfusion of contaminated blood and blood products (1, 2). The burden of HIV infection lies heavily on high-risk groups such as sex workers and their clients, injection drug users (IDUs), and men who have sex with men (MSM) (1, 2). Coincidentally, these groups of people are marginalized in the society and therefore have limited access to HIV health-care services (1). In order to decrease the spread of the virus, there is need to focus preventative services on these high-risk groups; one such way is through risk-reduction behavioural interventions.

Behavioural interventions targeted at risk behaviour reduction have been developed and implemented worldwide, especially among the high-risk groups. Among sex workers, behavioural interventions have used models that have included social cognitive theory, client and peer education, negotiation skills, condom use promotion, and community engagement (3-6). These interventions have been targeted at increasing condom use, decreasing number of sexual partners, negotiation of safe sex practices, and increasing HIV knowledge and risk assessment.

Despite the number of behavioural interventions that have been developed and implemented, no study has examined the effectiveness of the different intervention models. For this reason, the authors of the Cochrane review conducted a systematic review of published randomized and quasi-randomized controlled trials to assess the effectiveness of behavioural interventions targeted at reducing the transmission of HIV and STIs among sex workers (male, female, and transgender) and their clients in low- and middle-income countries (7).
2. METHODS OF THE REVIEW

The authors conducted the review using the standard Cochrane methodology—comprehensive search for trials, inclusion of trials according to predefined quality criteria, transparent data extraction, and pre-specified analyses. Search was conducted for articles published between January 1980 and September 2010. The inclusion criteria for the reviewed articles were based on sex workers in middle- and low-income countries and described behavioural interventions on any one of the outcome measures. The outcome measures for this review were disease incidence and risk behaviour change among female sex workers (FSWs) at six months post-intervention. These include incidence of HIV, syphilis, gonorrhoea, other STIs, consistent condom use, drug use, and alcohol use. The interventions aimed to change the behaviour of individuals or peers and/or change social norms to prevent HIV/STI infection while the controls were studied with no behavioural intervention or other non-behavioural interventions for preventing the spread of HIV/STI among sex workers and their clients.

The target population for the reviewed articles was sex workers and their clients regardless of age, ethnicity, gender identity, language, and nationality. The authors defined sex workers as anyone who had ever received money in exchange for sex and the sex workers’ clients as anyone who had ever paid someone for sex. Data collection and extraction were performed by the authors and meta-analysis was conducted using Review Manager Software.

3. RESULTS OF THE REVIEW

The authors found a total of 2667 articles published between 1980 and 2010; of these, 13 trials with 8698 participants met the criteria for inclusion and analysis. The included trials had been conducted in ten countries (Armenia, China, Cote d’Ivoire, India, Madagascar, Mexico, Philippines, South Africa, Thailand, and Zimbabwe) and were published between 1998 and 2010. The identified interventions were based on several theories and behavioural change models and included social cognitive theory, community empowerment, microenterprise, peer education, manager training, promotion of female condom use, STI screening, and HIV voluntary counselling and testing. The findings of the different behavioural interventions were compared to the control interventions.

3.1 Social cognitive theory versus standard care

Two trials comprising of 1017 FSWs were included in this comparison. The studies assessed incidence rates of HIV STIs. The results indicated that after a six-month follow-up period, there was no significant difference between the intervention and control group for HIV incidence [relative risk (RR) 0.12, 95% confidence interval (CI) 0.01–2.22] but there was a significant reduction in STI incidence in the intervention group compared with the control group (RR 0.57, 95% CI 0.34–0.96). The studies did not find any impact of the intervention on consistent condom use, injection drug use, or alcohol use among the FSWs.

3.2 Social cognitive theory versus no intervention

One trial comprising of 120 FSWs examined the change in consistent condom use and HIV knowledge between those that received the intervention and those that did not. The intervention was found to have no effect on the measured outcomes.

3.3 Community empowerment versus standard care

Three trials assessed this comparison and included a total of 3858 FSWs. One of the trials had compared the prevalence of STIs between those who received the intervention and those who did not. The trial found that the intervention did not have an effect on the prevalence of syphilis and HSV-2. Two of the three trials
assessed consistent condom use, HIV-related knowledge, and HIV testing and found that community empowerment did not result in any benefit. However, one of the studies reported a decrease in the number of non-protected sex acts with regular partners (RR 0.55, 95% CI 0.48–0.64). Although condom use was increased in that one study, the intervention did not impact the consistency of condom use.

3.4 Microenterprise plus education intervention versus education alone

Microenterprise intervention includes empowering individuals through provision of microfinance, teaching basic literacy, and training in alternative economic livelihoods such as tailoring. Only one trial comprising of 128 FSWs assessed this comparison. The study found that although the intervention did not cause an increase in condom use at the six-month follow-up, it reduced the mean number of sex partners by approximately seven (mean difference ?6.9; 95% CI: ?10.0 to ?3.8).

3.5 Peer education versus standard care

One trial comprising of 980 FSWs examined this comparison and found no effect on self-reported consistent condom use, HIV-related knowledge, or perceived need for HIV testing. However, the intervention found an increase in perceived control over risk of HIV acquisition (RR 0.74, 95% CI 0.84–0.99).

3.6 Peer education plus clinic-based counselling versus peer education only

One trial comprising of 1000 FSWs assessed this comparison and found that the combination of clinic-based counselling and a peer education intervention decreased the prevalence of chlamydia infection at six-month follow-up (RR 0.70, 95% CI: 0.50–0.97) and any STI at six-month follow-up (RR 0.78, 95% CI 0.65–0.93) compared with peer education alone. However, the intervention did not have a sustained effect on the outcomes at 12-month and 18-month follow-ups.

3.7 Peer education plus manager training versus standard care

This comparison was assessed in one trial that comprised of 980 FSWs. The intervention increased the likelihood of HIV testing by 67% (95% CI 59%–73%) at the three-month follow-up, but did not have any effect on consistent condom use, HIV-related knowledge, perceived control over HIV acquisition, and perceived AIDS severity.

3.8 Manager training versus standard care

This comparison was assessed by the same trial as above (980 FSWs) and found that the intervention had no effect on condom use, HIV-related knowledge, HIV testing, and perceived control over HIV acquisition. However, the manager training intervention was found to increase the FSWs perceived severity of acquiring HIV (mean difference ?0.43, 95% CI ?0.80 to ?0.06).

3.9 Promotion of female and male condom versus promotion of male condom alone

Two studies involving 653 FSWs examined this comparison. One of the studies showed a decrease in the incidence of gonorrhoea (RR 0.71) and chlamydia infection (RR 0.63) in the intervention group compared with the control group. The other study which examined HIV incidence did not show a significant difference between the intervention and control groups (RR 0.07, 95% CI 0.01–1.38). The two studies reported on consistent female and male condom use and found that there was no effect on male condom use at three-month follow-up; however there was a significant decrease in non-use of female condoms (RR 0.12, 95% CI 0.09–0.17) at both the three- and twelve-month follow-ups in intervention versus control groups. This means that female condom use increased among those who received the intervention compared to those in the control group.
3.10 Intensive STI screening versus basic STI screening

This comparison was assessed by one trial involving 542 FSWs. The intervention significantly decreased the incidence of gonorrhoea and chlamydia infection at six-month follow-up (RR 0.38, 95% CI 0.19–0.77 and RR 0.23, 95% CI 0.07–0.79, respectively) but did not significantly decrease HIV incidence at the six-month follow-up (RR 0.65, 95% CI 0.24–1.73). The trial did not find a difference in consistent condom use between the intervention and control groups at the six-month follow-up assessment (RR 1.04, 95% CI: 0.96–1.13).

3.11 Voluntary counselling and testing versus the standard care for STIs

This comparison was assessed by one trial that involved 400 FSWs. Voluntary counselling and testing (VCT) was found to reduce the prevalence of genital warts compared with standard STI care at six-month follow-up (RR 0.22, 95% CI 0.05–0.98). However, the intervention had no effect on consistent condom use and HIV/STI knowledge.

In general, the authors found that some of the trials were weak either due to poor design or small sample sizes both of which may have resulted in some bias (such as selection bias). These biases and caveats resulted in the review authors’ inability to generalize the results of this review to a larger population or to different contexts. Although the authors hoped to include all types of sex workers, including males, females, and transgender, the trials reviewed only assessed female sex workers.

4. DISCUSSION

4.1 Applicability of the results

This review shows that among sex workers in low- and middle-income countries, behavioural interventions that reduced the incidence of sexually transmitted infections such as gonorrhoea, syphilis, genital warts, and chlamydial infections were based on social cognitive theory, promotion of male and female condom use, intensive STI screening, voluntary counselling and testing, and peer education in addition to clinic-based counselling. None of the interventions significantly reduced the incidence of HIV infection. Since the included trials were conducted in low- and middle-income countries, these findings are applicable to those settings.

4.2 Implementation of the intervention

HIV-related knowledge, risk perception, and testing were increased by interventions that utilized peer education, either alone or in addition to manager training, on safe sex practices. Condom use was increased by interventions that were based on promotion of female and male condoms and community empowerment. The micro-finance and sexual health education intervention decreased the number of sexual partners that the sex workers had. All of the behavioural interventions had an effect on at least one of the studied outcomes. In other words, behavioural interventions targeted at reducing the risk of HIV or STIs among sex workers were found to be effective either by increasing the knowledge about risks or by reducing the practice of risky behaviours.

Despite the limitations in the literature on behavioural interventions targeted at reducing HIV/STI incidence among sex workers and their clients, this review provides scientific evidence that interventions based on social cognitive theory, promotion of condom use, peer education, and provision of micro-finance result in reduction of risk behaviours and HIV/STI incidence among the studied populations. Programmatic interventions together with health policies should incorporate these evidence-based interventions in the fight against the spread of HIV and STIs.
4.3 Implications for research

Further research should focus on using scientifically strong methodologies in the study and implementation of behavioural interventions in order to provide strong evidence-based results that can inform health practices.

References