Meta-analysis of the effectiveness of HIV prevention interventions for women

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Authors' objectives
To investigate the effectiveness of current interventions to prevent human immunodeficiency virus (HIV) in American women from different ethnicities.

Searching
MEDLINE, Psych Abstracts, Sociological Abstracts and ERIC were searched from 1989 to 1997. The references of retrieved articles were also checked. The search was restricted to English language papers of research conducted in the USA. No unpublished studies were searched for or included in the review. The search terms were reported.

Study selection
Study designs of evaluations included in the review
The inclusion criteria for study design were not stated. Studies that did not analyse data over at least two time periods were excluded.

Specific interventions included in the review
Studies investigating the effectiveness of HIV/AIDS prevention interventions in women were eligible for inclusion. No further inclusion criteria were specified. The interventions included in the review were: reading pamphlets or brochures, watching video tapes or slide presentations, talking to nurse educators and counselling.

Participants included in the review
Studies of women resident in the USA were eligible for inclusion. Studies including girls under the age of 14 years were excluded. Mixed-gender studies that did not evaluate women separately were also excluded. Eleven studies had greater than 70% African-American ethnicity (n=2,722), with 7 of these studies being conducted entirely on African-American women (n=826). Two studies had greater than 70% white women (n=360), and a single study had entirely Hispanic women (n=548). The remaining 10 studies had mixed or unreported ethnicity (n=3,326).

Outcomes assessed in the review
The outcomes examined in the review were knowledge, self-efficacy and behaviour. Sexual self-efficacy was measured by assessments of a woman's perceived ability to prevent herself from contracting HIV/AIDS. Behaviour was defined using questions about the number of current partners, high-risk sexual behaviours, or frequency of condom use. Behavioural intentions and skill development were not assessed in the review, as only 6 studies reported these outcomes. Studies that did not report P-values were excluded from the review. Most articles used a scale to assess knowledge.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. Data were extracted on the number and type of interventions, length of follow-up, whether a comparator group was used, race, and whether the interventions were culture-specific. If both scales and individual items were used to assess the same outcome variable, the results from the scale were used. In studies with control groups, the P-value of the group-by-time interaction effect was used in the analysis. When a study had a control group but no group-
by-time information, or no control group, the authors stated that they evaluated the change over time within a single group. When a test was reported as non significant and no P-values were reported, a P-value of 1 was assumed. P-values reported as P<0.05, and reports of statistical significance without corresponding P-values, were assumed to have P-values of 0.05.

**Methods of synthesis**

How were the studies combined?

The P-values from the individual studies were combined using Fisher's sum of logs method. This meta-analysis method assesses the significance of the effect of the interventions rather than the effect size. The chi-square and P values were combined for the following groups: all ethnicities, African-American, Caucasian, Hispanic, and mixed ethnicity. Combined chi-square and P values were calculated for up to four time periods post-intervention. Mixed ethnicity was defined as those studies where there was not a majority (75% or more) of one particular ethnic group.

How were differences between studies investigated?

No statistical tests for heterogeneity were undertaken, nor were differences between the studies addressed in the narrative. Study details were tabulated to allow comparison.

**Results of the review**

Twenty-four studies (n=6,956) were included in the review. There were 11 randomised controlled trials (n=2,138), of which 4 had non-AIDS intervention control groups. There were 13 non-randomised trials (n=4,818), 7 with a control group (n=2,884) and 6 with no control group (n=1,934).

Participant knowledge.

The interventions were reported to result in a statistically-significant (P<0.05) increase in knowledge for all ethnic groups, at all follow-up time points where data were available.

Self-efficacy.

The interventions were reported to result in a statistically-significant increase in self-efficacy in Hispanic women at all time points where data were available. There was also a significant increase in self-efficacy in African-American women at least 6 months after the intervention, and in mixed ethnicity groups both immediately post-intervention and at least 6 months after the intervention. The intervention had no statistically-significant effect in Caucasian women.

Participant risk behaviours. The interventions were reported to result in a statistically-significant decrease in risk behaviours in all ethnic groups combined at all time points available, with the exception of mixed ethnicity studies at 2 to 3 months; follow-up.

**Authors' conclusions**

HIV/AIDS prevention interventions were effective at improving knowledge, self-efficacy and behaviours in women of all ethnicities.

**CRD commentary**

The authors reported inclusion criteria for the participants and outcomes, but not for the intervention or study design. The restriction to papers published in English may have led to language and publication bias. The restriction to studies undertaken on women resident in the USA may have resulted in the conclusions of the review being applicable to that population only, and not applicable to women in other countries. While validity was not assessed in the review, the designs of the included studies were described, thus providing some indication of their quality. Variations in study designs were not taken into account when the data were pooled; this may have introduced bias into the results. This, along with the possibility of language and publication bias, means that caution must be taken when drawing conclusions from the review. The recommendations for future research were appropriate and would enhance future understanding of this area.
Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors made several recommendations. First, researchers should report summary data sufficient for calculating effects sizes to facilitate future meta-analyses. Second, operational definitions of 'culturally specific' intervention components should be developed for different ethnicities and used in prevention efforts. Third, longer periods of follow-up are required and behavioural change should be assessed as an outcome. Finally, ethnic groups should be separated during studies and future meta-analyses should examine the effectiveness of interventions in women around the world, and not just the USA.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.