



Research to Prevention

SCHOOL-BASED SEX EDUCATION

Rigorous Evidence – Usable Results

July 2013

Tenth in a series, this summary fact sheet presents existing evidence from rigorously evaluated interventions to prevent HIV transmission in developing countries. Results are presented here from a meta-analysis of school-based sex education studies published in leading scientific journals. In contrast to the many anecdotal reports of best practices, this series provides readers with the strongest evidence available in a user-friendly format. The evidence provides program planners, policy makers, and other stakeholders with information about “what works.”

School-based sex education includes programs designed to increase knowledge and encourage sexual risk reduction strategies for HIV prevention delivered in school setting. Adolescents bear a disproportionately high burden of HIV globally.¹ School-based sex education is one potential intervention that can increase HIV-related knowledge and shape safer sexual behaviors to help prevent new HIV infections among this vulnerable group.

Schools provide an environment conducive to educating youth about sexual activity given their focus on providing educational lessons and group learning.² School-based sex education interventions may provide comprehensive education, or they may emphasize abstinence. Abstinence-only interventions promote delaying sex until marriage with little to no information provided about contraceptives or condom use, whereas comprehensive sexual education provides information on abstinence as well as information on how to engage in safer sex and prevent pregnancies and sexually transmitted infections (STIs). Abstinence-plus interventions present prevention options as hierarchical with abstinence as the only strategy that completely eliminates HIV/STI risk; in other words, abstinence is presented as the only 100% effective method for preventing HIV and other STIs, but other options, including condom use, are discussed for situations when abstinence is not maintained. In the past decade there have been heated debates about which of these strategies are most effective and appropriate for youth.

This fact sheet presents evidence from a recent systematic review and series of meta-analyses on the efficacy of school-based sex education inter-

ventions—including both abstinence-only/abstinence-plus and comprehensive sex education programs—in changing HIV-related knowledge and risk behaviors in low- and middle-income countries.

Effectiveness of School-Based Sex Education Interventions

Results from the meta-analysis³ showed that school-based sex education interventions in developing countries had the following effects on participants after the intervention compared to before or as compared to those who were not exposed to the intervention. Study participants were mostly youth; however, age was not restricted for inclusion in the review and participant ages ranged from 9 to 38 across included studies. Of the 27 studies reporting a mean age of participants, the mean age was 16.5. There were few studies evaluating abstinence-only or abstinence-plus programs, and because these studies measured limited outcomes, the review could only compare results from these programs with more comprehensive sex education programs in the meta-analysis for HIV knowledge.

HIV Knowledge (49 studies, 26 included in meta-analysis)

- Students who received any type of sex education were more knowledgeable about HIV and related topics than youth who did not.
- There was no significant difference between boys and girls in the effect of the interventions, but few studies disaggregated results by gender.
- There was no significant difference in HIV knowledge comparing abstinence-focused to comprehensive sex education interventions.
- When stratified by instructor type, interventions led by health professionals (e.g. doctors,



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nurses, health educators) appeared to produce more knowledgeable students than those led by teachers, peers, or other types of instructors.

Self-Efficacy (22 studies, 8 included in meta-analysis)

- Students receiving comprehensive school-based sex education exhibited significantly greater self-efficacy around sexual decision-making and condom use. No abstinence-only or abstinence-plus interventions were included in the meta-analysis because either self-efficacy was not measured as a study outcome or not enough data were presented for analysis.

Number of Sex Partners

(10 studies, 4 included in meta-analysis)

- Students receiving sex education demonstrated a 25% reduction in odds of reporting more sexual partners compared to control or comparison groups. However, only one comprehensive sex education intervention with a large sample size found intervention youth to be statistically less likely than control youth to report multiple partners,⁴ while the other, smaller studies showed a non-significant difference.
- Of the four studies included in the meta-analysis, three implemented comprehensive sex education and one implemented an abstinence-focused intervention. There was a non-significant decrease in the number of sexual partners reported by those who received the intervention compared to those who did not.⁵

Initiation of First Sex

(9 studies, 6 included in meta-analysis)

- Participants who received the intervention had a 34% reduction in odds of becoming sexually active (sexual debut) during the course of the studies compared to control or comparison groups.
- Five studies included in the meta-analysis involved comprehensive sex education. Only one abstinence-focused intervention was included, which demonstrated a reduction in odds of sexual debut between the 6th and 7th grade school years for youth who received the intervention.⁶

Condom Use (21 studies, 13 included in meta-analysis)

- Condom use was measured in multiple ways and over multiple time periods. Measures of condom use at last sex, 100% condom use, and consistent condom use were included in the meta-analysis.



Primary school girls in Kenya

Credit: © 1996 Sammy Ndwiga, Courtesy of Photoshare

- In the meta-analysis, condom use was significantly higher among intervention participants as compared to non-participants and participants prior to receiving the intervention.
- Individually, only three of the twelve studies found a significant difference in condom use between intervention and control groups. These three studies included some form of training for healthcare workers outside of the school setting on how to provide youth-friendly sexual and reproductive health information, including condom use.^{4,7,8}
- All but one study included in the meta-analysis implemented comprehensive sex education interventions. The one abstinence-plus intervention showed a non-significant increase in condom use comparing those who received the intervention to those who did not.⁹

How is the Effectiveness of a School-Based Sex Education Intervention Determined?

The findings presented in this fact sheet come from a recent meta-analysis of 33 studies. Although school-based sex education is a broad topic, for the purposes of the analysis, the researchers defined school-based sex education as programs designed to encourage sexual risk reduction strategies for HIV prevention delivered in school settings. The study looked at the following outcomes: HIV knowledge, condom use, self-efficacy related to HIV prevention (e.g., confidence in refusing sex or in using condoms during sex), initiation of first sex, and number of sexual partners. Of the 64 studies reviewed, 29 were conducted in sub-Saharan Africa, 19 in East and Southeast Asia, 2 in Central Asia, and 16 in Latin America and the Caribbean. Nine interventions in-

cluded in the review were either focused exclusively on abstinence (abstinence-only) or emphasized abstinence (abstinence-plus) whereas the remaining 55 interventions provided comprehensive sex education. Of these studies, 33 had outcomes that were able to be included in the meta-analysis.

Selection Criteria and Rigor Criteria of Studies Included in the Meta-analysis¹

A study had to meet four criteria to be included in the analysis:

1. Involve an HIV prevention intervention administered in a school setting that encouraged one or more sexual risk reduction strategies, including abstinence, condom use, or partner reduction
2. Present behavioral, psychological, or biological outcomes related to HIV prevention in developing countries
3. Use either a pre-/post- or multi-arm study design
4. Appear in a peer-reviewed journal between January 1991 and June 2010

Studies that did not meet these criteria were excluded.

The studies in the meta-analysis either reported effect sizes for each outcome or provided sufficient information in tables or text to calculate an effect size. Dichotomous outcomes were compared using the common metric of the odds ratio. Continuously measured outcomes were compared using a standardized mean difference (Hedges' G).

What Do these Results Tell Us about Implementing School-Based Sex Education as Part of a Prevention Program?

Results from this meta-analysis show that school-based sex education is an effective strategy for generating HIV-related knowledge and decreasing sexual risk behaviors among participants, including delaying sexual debut, increasing condom use, and decreasing numbers of sexual partners.

No study included in the meta-analysis—either abstinence-focused or comprehensive sex education—showed an increase in sexual risk behavior as a result of school-based sex education. Studies either found that the interventions reduced sex-

ual risk behaviors or had no significant effect. This review identified substantially fewer abstinence-only and abstinence-plus interventions than comprehensive sex education interventions, and the abstinence-based programs tended to measure HIV knowledge and not outcomes such as condom use, sexual debut, or number of partners, which made it difficult to compare the different strategies.

Interventions that involved activities conducted outside of the school environment—such as training health care staff to offer youth-friendly services, distributing condoms, and involving parents, teachers, and community members in intervention development—tended to be most effective. Additionally, studies that adapted curricula from interventions previously judged efficacious also tended to produce significant improvements in HIV-related behaviors.

What More Do We Need to Know about School-Based Sex Education Effectiveness?

In the future, intervention evaluations should consider not only whether school-based sex education increases knowledge, but also what implementation factors lead to the most success in changing HIV-related risk behaviors.

Research suggests that school-based sex education can be cost-effective when implemented in the context of combination HIV prevention.¹⁰ However, school-based education alone cannot be relied on to prevent HIV infections among young people, since not all young people attend school and since school funds and resources are often already strained. Instead, school-based sex education should be part of more comprehensive HIV prevention interventions

Effectiveness of School-Based Sex Education Interventions Meta-analysis Summary Findings			
Outcome	Effect Size	Confidence interval (95% confidence level)	Number of studies
HIV knowledge	0.63 ^a	(0.49, 0.78)	26
Self-efficacy	0.25 ^a	(0.14, 0.36)	8
Condom use	1.34 ^b	(1.18, 1.52)	12
Initiation of first sex	0.67 ^b	(0.54, 0.83)	6
Number of sex partners	0.75 ^b	(0.67, 0.84)	4

a. Effect size measured as Hedges' G statistic, which represents a standardized mean difference.

b. Effect size measured as an odds ratio, which represents the ratio of odds for dichotomous variables.

aiming to engage young people in learning about and shaping their sexual and reproductive future.

Findings from this review must be seen in light of their limitations. All outcomes reported in this review were based on self-report, which creates potential for social desirability and recall bias. Additionally outcomes were combined in the meta-analysis that were not identical; for example, different scales used to measure HIV-related knowledge were combined in the meta-analysis. This could lead to inaccuracies in the combined effects. It is possible the search strategy excluded potentially eligible articles. Additionally, results may be subject to publication bias, i.e., studies showing positive results are more likely to be published than studies showing negative results.

References

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Terminology & Acronyms

Confidence interval

The range of values within which the "true value" can be expected to fall

Confidence level

The likelihood that the "true value" will fall within the confidence interval

Effect size

A measurement of the magnitude of change or difference between two groups (e.g., the average point increase in a qualifying examination score from taking a test preparation course)

Hedges' G

The standardized mean difference between two continuously measured outcomes

Meta-analysis

Analytic method that gathers information from multiple studies and combines them statistically to determine whether an intervention is effective

Odds ratio

The ratio of the probability of an event occurring in one group to the probability of the same event occurring in a referent group; for example, an odds ratio of 2.0 for a condom promotion means that those in the treatment group were twice as likely as those in the control group to use condoms during their last casual sexual encounter.

STI

Sexually transmitted infection

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Additional Resources

USAID: AIDSTAR-One: http://www.aidstar-one.com/focus_areas/prevention/pkb/behavioral_interventions/comprehensive_sex_ed

Inter-Agency Task Team on HIV and Young People : Guidance Brief <http://www.unfpa.org/hiv/iatt/docs/education.pdf>

School-Based Sexual Education Programmes: A Cost and Cost-Effectiveness Analysis <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/pdf/CostingStudy.pdf>

International Technical Guidance on Sexuality Education: Vol. 1 The rationale for sexuality education http://www.unaids.org/en/media/unaids/contentassets/dataimport/pub/externaldocument/2009/20091210_international_guidance_sexuality_education_vol_1_en.pdf

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