# Re-Examining the Evidence for Comprehensive Sex Education in Schools 2018



## A Global Research Review

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THE INSTITUTE FOR RESEARCH & EVALUATION



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**The Institute for Research and Evaluation (IRE)** is a nonprofit research organization noted for its work evaluating sex education programs over the past 25 years. *IRE* has conducted program evaluations for federal Title V, CBAE, and Title XX projects in 30 states, and has evaluated sex education in three foreign countries, in total collecting data from more than 900,000 teens, and conducting over 100 evaluation studies. *IRE* staff members have published articles in professional journals and presented at professional conferences and workshops. Irene H. Ericksen has served on a national panel of consultants to the CDC-supported *Community Preventive Services Task Force* meta-analysis on sex education effectiveness and as a secondary author for the published study on the same topic (2012). Dr. Stan E. Weed, Founder and Director of *IRE*, has served as a national consultant for federal Title XX and CBAE projects, and was a charter member of the *National Campaign to Prevent Teen and Unplanned Pregnancy*. He has been invited to provide expert testimony about sex education to state legislative bodies, the U.S. Senate, the U.S. House of Representatives, and the White House.

#### **EXECUTIVE SUMMARY**

#### Background

The negative consequences of teenage sexual activity continue at unacceptable rates. For example, in the U.S., one in four sexually active girls has an STD (CDC, 2016), and worldwide, youth aged 15–24 account for 45% of all new HIV infections (UNESCO, 2009). Comprehensive sex education (CSE) is widely promoted as being effective at protecting adolescents from these harms and therefore a remedy that should be implemented in school classrooms worldwide (UNESCO, 2009, 2018). Yet the permissive and explicit content of many CSE curricula raise questions about its acceptability, and the weak definitions of "effectiveness" used in many reviews of CSE research raise serious concerns about its true impact. But if CSE is to be implemented on a global scale, then the question of its effectiveness in school classrooms is crucial to the real protection of youth and the prudent stewardship of public funds around the world.

#### Purpose

To evaluate the global research evidence for school-based comprehensive sex education (CSE) according to meaningful standards of effectiveness rather than the lenient definition used by many CSE research reviews (i.e., the occurrence of any minor positive outcome), *in order to identify evidence of real program effectiveness*.

#### **Methods**

We examined the studies contained in three authoritative research reviews of sex education effectiveness: one conducted for the United Nations Educational, Scientific and Cultural Organization (UNESCO) and two sponsored by the U.S. federal government (the Teen Pregnancy Prevention evidence review, and a meta-analysis study supported by the Centers for Disease Control and Prevention). These three reviews screened several hundred sex education studies for research quality and included only the studies that reached a threshold of adequate rigor.

The 120 studies of school-based sex education which met that test included 60 U.S. studies and 43 non-U.S. studies of school-based CSE programs (103 total), as well as 17 U.S. studies of school-based abstinence education programs (AE), the often-used alternative to CSE. (The non-U.S. data did not contain enough studies of true abstinence programs for meaningful analysis.) Note: We identify a curriculum as "abstinence education" (or AE) if it teaches sexual abstinence (refraining from sexual activity) as the primary protective behavior and does not promote condom or contraception use, whereas, "comprehensive sex education" (CSE) encompasses programs that promote both condom/contraceptive use and abstinence within the same curriculum.

We evaluated the outcomes of these 120 studies according to meaningful criteria of effectiveness derived from the field of prevention research, namely: sustained effects (at least 12 months after the program), on protective indicators (abstinence, condom use—especially consistent condom use, pregnancy, or STDs), for the main (intended) teen population, based on the preponderance of research evidence, and excluding programs that produced negative effects.

#### Results

Out of the 103 sufficiently rigorous school-based CSE studies (60 in the U.S., 43 internationally):

- Only one study showed a reduction in teen pregnancy 12 months after the program for the intended population without other negative effects (most studies did not measure this outcome).
- Only one study showed a reduction in teen STDs 12 months after the program for the intended population without other negative effects (most studies did not measure this outcome).
- Although there were a few initial findings of effectiveness at increasing teen abstinence (four studies showed delay in sexual debut/initiation) and condom use frequency (two studies) for the intended

population 12 months after the program, additional evidence from multiple replication studies did not confirm most of the original positive results.

- We found no evidence of effectiveness for school-based CSE at increasing consistent condom use—the behavior required for significant protection from STDs: there were no sustained effects for the intended population without other negative effects.
- There was no evidence of success for CSE's purported dual benefit—there were no sustained increases in both teen abstinence (delay of sexual initiation) and condom use by sexually active teens—within the same school population.
- Worldwide, school-based CSE programs failed to produce sustained effects on a key protective outcome for the intended youth population 87% of the times it was attempted.
- Worldwide, the eight studies that found evidence of effectiveness stand in contrast to 15 studies (15%) that found significant negative effects produced by school-based CSE programs: increases in teen sexual risk behavior, STDs, or pregnancy.
- School-based CSE programs implemented outside the U.S. showed somewhat worse outcomes than those within the U.S.: an 89% failure rate outside the U.S. and in U.S. settings an 85% failure rate. And for school-based CSE in Africa the failure rate was 89% (i.e., no sustained effects for the intended population).
- With regard to negative impact, 21% of non-U.S. school-based CSE studies found harmful effects (24% in Africa) compared to 10% of the studies in the U.S.

For the 17 studies of school-based abstinence education (AE) in the U.S.:

- Applying the same standards used for the CSE results to the 17 studies of U.S. school-based AE: seven studies found sustained (12-month) delays in teen sexual initiation for the intended population, without other negative effects, a 47% success ratio. Only one study found a negative impact.
- The nine studies that tested AE's impact on condom use found no negative effects, providing strong evidence that contrary to the claims of its critics, AE does not reduce teen condom use.

#### Conclusions

Applying meaningful standards of effectiveness—criteria that have scientific validity and practical utility for policymakers and parents—to sex education outcomes produces a very different pattern of evidence for school-based CSE than the findings of effectiveness typically reported by other research reviews that employ more-lenient standards.

Using this more-credible approach, the claims that school-based CSE has been proven effective and AE is ineffective are not supported by 120 of the strongest and most recent outcome studies of sex education worldwide, the same studies that have been relied upon by the U.S. government and UNESCO in their extensive reviews of CSE research.

In fact, the research evidence indicates that comprehensive sex education has not been an effective public health strategy in schools around the world, has shown far more evidence of failure than success, and has produced a concerning number of harmful impacts. The evidence about abstinence education effectiveness from the same database, though limited, is more promising, enough to justify prioritizing additional research.

#### FULL REPORT

#### I. Background

The short- and long-term consequences of teenage sexual activity continue to cause significant health and social problems in cultures and countries around the world, in spite of more than 30 years of prevention efforts. In the U.S., "1 in 4 sexually active adolescent females has an STD," and STD rates for adolescents are rising.<sup>1</sup> Worldwide, the AIDS epidemic continues, with "young people aged 15–24 account[ing] for 45% of all new HIV infections."<sup>2</sup> In addition, sexual activity for adolescents contributes to decreased mental/emotional health (e.g., higher risk of depression and suicide) and increased likelihood of sexual violence, especially for females and younger teens.<sup>3</sup> Moreover, the children born to unmarried teenagers are significantly more susceptible to dropping out of high school, living in poverty, criminal behavior, and becoming teen parents themselves, in a self-perpetuating vicious cycle.<sup>4</sup>

Given these harms, many public policymakers continue to place a high priority on 1) reducing teen pregnancies, 2) reducing STD and HIV infections contracted by youth, and 3) influencing adolescents to abstain from sexual activity. The wholesale delivery of "clear, well informed, and scientifically-grounded sexuality education"<sup>5</sup> to youth populations worldwide is seen by many as an essential mechanism for achieving these goals in order to address the social problems at their source. One type of sex education strategy promoted widely as a remedy is generally known as "comprehensive sex/sexuality education,"<sup>6</sup> or CSE. CSE programs typically attempt to teach youth to use condoms and other contraception if they are sexually active, and if they are not, that they can choose to delay the onset of sexual activity until some indeterminate time when they are older or they decide that they are "ready."<sup>7</sup>

The sex education strategy most often mentioned as an alternative to CSE is "abstinence education" (AE), also referred to by some as "abstinence-only" programs or "sexual risk avoidance." The AE approach typically teaches youth to abstain from overtly sexual behavior with another person (including vaginal intercourse, oral and anal sex, mutual masturbation, and heavy petting) until they can form a mutually monogamous relationship in adulthood (preferably marriage), in order to eliminate risk (rather than merely reduce it) and avoid the negative consequences of teen sex. Condom use is sometimes addressed in AE, but often in terms of its limitations or failure rates; AE does not promote or demonstrate condom or contraceptive use.<sup>8</sup>

The justifying rationale for CSE has been that it is best suited to protect the full spectrum of youth from unwanted pregnancy and STDs through its purported dual benefit: that it can simultaneously increase rates of both teen abstinence (i.e., delay sexual initiation by the sexually inexperienced and promote a return to abstinence by the sexually experienced) *and* condom use (by sexually active teens who reject abstinence), all within the same population of youth, and by a single CSE program.

However, CSE programs are often founded on a "values-free" sexual philosophy containing permissive and explicit content<sup>9</sup> that can shock parents when it is revealed and is considered morally unacceptable to many, especially in traditional cultures. Yet, because such programs claim to be effective, they are presented as a necessary solution—indeed the only solution—to the damaging consequences of teenage sex. For example, UNESCO's sexuality education "Guidance" document asserts that abstinence education programs "have been found to be ineffective and potentially harmful to young people's sexual and reproductive health and rights," and "Programmes that combine a focus on delaying sexual activity with content about condom or contraceptive use [i.e., CSE] are effective."<sup>10</sup> The "International Technical Guidance on Sexuality Education," produced by UNESCO recommends implementation of comprehensive sexuality education (CSE) programs in school classrooms worldwide as "part of the formal school curriculum," that is, to "bring CSE to children and young people everywhere."<sup>11</sup> And if the school setting is considered the venue of choice worldwide for the delivery of CSE, then the question of CSE effectiveness in school classrooms is crucial to the real protection of children and youth and the prudent stewardship of public funds on a global scale. Certainly the effectiveness of CSE programs should be clearly established before they are adopted and tax dollars are expended to implement them worldwide.

However, the weak definitions of "effectiveness" employed by many reviews of CSE research to evaluate program outcomes raise serious questions about the real extent of CSE success. These concerns and the gravity of their consequences for the health and safety of youth and for sound public policy was the impetus for our institute's examination of the best available sex education outcome research, as identified by three reputed scientific agencies, with the purpose of addressing the critical question: how effective are CSE programs in schools—what does the scientific evidence show?

#### II. Methods

#### A. Defining Program Effectiveness

We have examined many of the major reviews of sex education research conducted by key organizations in this field<sup>12</sup> and have observed an important but little-reported characteristic common to many of them. While most of these organizations set a reasonable standard for the quality of the *scientific methods* employed by the studies included in their review, they often employ much more lenient standards for the quality of program *outcomes* used to define effectiveness. Their claims of CSE program effectiveness are typically based on a fairly low benchmark for these outcomes, often the finding of only one minimal indicator of positive impact. This could be a short-term effect (e.g., found at three or six months but not 12 months after the program) or a subgroup effect (e.g., impact for girls but not boys) or impact on a less-protective behavior (e.g., reduced frequency of sex) while no effects are found for key protective behaviors (e.g., delayed sexual initiation or increased condom use). Often this minimal evidence comes from a study by the program's developers, not an independent evaluator. And too often other evidence of program ineffectiveness or even harm is disregarded. This lax definition gives a different meaning to the term *effective* than what many people think of when they hear that a CSE program has "shown evidence of effectiveness."

The U.S. federal *Teen Pregnancy Prevention (TPP)* initiative established by the Obama Administration to identify "evidence-based" sex education programs is one example. It has designated a program as having "shown evidence of effectiveness"<sup>13</sup> by virtue of producing only one statistically significant positive effect, even if only of short duration or only for a subgroup of the target population, in a single study by the program's developer, and regardless of other contradictory findings. Thus, two school-based CSE programs on the *TPP* list of "evidence-based curricula" (*¡Cuídate!* and *It's Your Game: Keep It Real*) actually produced both null and negative effects in studies by independent evaluators. Yet these programs are still recommended on the U.S. federal *TPP* register as evidence based and eligible for public funding and implementation in U.S. schools because they showed some positive effects in initial studies by the programs' developers.<sup>14</sup> (Note: The field of prevention research cautions that study findings by program developers—who have a vested interest in the program's effectiveness—are less credible than those conducted by independent researchers. Outcome studies by program developers tend to find higher levels of effectiveness than research on the same program conducted by independent researchers.<sup>15</sup> There is also

a consensus in this field that programs producing negative behavioral/biological effects do not qualify for the label "effective."<sup>16</sup>)

Thus, when brought to light, the lenient definition of effectiveness employed by many CSE research reviews can be seen to overstate and even misrepresent the scientific evidence for CSE program effectiveness. Most people would agree that finding a single positive effect on a minor outcome is not the same as finding evidence of real program effectiveness.

The present review used a different approach: program results were evaluated according to meaningful criteria for program effectiveness derived from the field of prevention research. Assuming that adequate standards of *methodological* rigor have been met (so that confidence in findings is high), the scientific consensus on prevention research recommends measuring program effectiveness using rigorous standards for critical *program outcomes*.<sup>17</sup> We applied these recommendations in ways relevant to sex education in school settings. Specifically:

- 1. We looked for positive program effects (significant at the p<.05 level)...
  - a. On at least one key protective indicator (delay of sexual initiation/debut, increased condom use—especially consistent condom use, or decreased pregnancy or STDs rates),<sup>18</sup>
  - b. Sustained at least 12 months after the end of the program so as to endure from one school year to the next,
  - c. Found for the main (intended) youth population, not just a subgroup,
  - d. Without concurrent negative effects, and
  - e. Based on all credible studies of the program, including studies by independent evaluators, not just those by program developers.
- 2. Negative/harmful program effects on important sexual health indicators were documented if they impacted the intended population or a substantial subgroup (e.g., males only or females only) and lasted for any duration. Such negative program impacts are a cause for concern and negate a prevention program's claim to "effectiveness."<sup>19</sup>

Applying these more-credible standards of effectiveness to CSE program outcomes enabled us to identify *meaningful* evidence of CSE program effectiveness, evidence that has scientific validity and practical utility for policymakers and parents.

<u>A note about consistent condom use (CCU)</u>: Consistent condom use (i.e., using a condom with every act of sexual intercourse) is required for effective condom protection. According to the *Centers for Disease Control and Prevention*, "Consistent and correct use of male latex condoms can reduce (though not eliminate) the risk of STD transmission. To achieve the maximum protective effect, condoms must be used both <u>consistently and correctly</u>. Inconsistent use can lead to STD acquisition because transmission can occur with a single act of intercourse with an infected partner."<sup>20</sup> This is illustrated by a study of African American teenage girls that found 17.8% of those who used condoms consistently acquired an STD, but the number was 30% for those who used condoms inconsistently.<sup>21</sup> At least three peer-reviewed studies have found *STD rates were higher for inconsistent condom users than non-users*.<sup>22</sup> (Even consistent condom use does not provide the 100% protection from STDs afforded by abstinence,<sup>23</sup> nor prevent the increased emotional harm and sexual violence associated with teen sex.<sup>24</sup>)

However, most CSE studies do not measure CCU but instead assess less-protective indicators—frequency of condom use or use at last intercourse. We distinguished between measures of "consistent condom use"

(CCU) and "less-protective measures of condom use," and reported research findings for both. However, where both were measured in the same study, the CCU outcome was considered the key indicator, with failure on this outcome *not* outweighed by success on a less-protective measure of condom use. On the other hand, where CCU was not measured, we accepted a less-protective measure of condom use as a key indicator of program effectiveness. It should be noted that the term "condom use" is used in this report to include both types of measures unless otherwise indicated.

#### B. The Database

Many hundreds of studies of sex education program effectiveness have been conducted in the U.S. and worldwide since such programs became popular in the early 1990s. This large universe of studies has been reviewed and sifted by many scientific entities, which have then summarized the results of the studies that met their standards for acceptable research quality. Among such entities are three authoritative agencies: the *Teen Pregnancy Prevention* program (*TPP*)<sup>25</sup> in the U.S. Department of Health and Human Services, the *Community Preventive Services Task Force* at the U.S. *Centers for Disease Control & Prevention* (*CDC*),<sup>26</sup> and the *United Nations Educational, Scientific and Cultural Organization* (*UNESCO*).<sup>27</sup> Each of these agencies has identified and reviewed the credible studies of CSE conducted since 1990. (For the two U.S. agencies, their reviews covered only sex education implemented in the U.S., while the UNESCO review included programs in both U.S. and non-U.S. settings.) And the latter two have asserted that CSE has shown sufficient evidence of effectiveness in school settings to recommend it as a prevention strategy.

Because the studies included in these three databases met the standards for adequate research quality established by these preeminent agencies, and because our focus was programs in school settings, we used the studies of *school-based* sex education contained in these three reviews as the database for our analysis. This allowed us to examine what other experts have independently identified as some of the best evidence for school-based CSE effectiveness. (Note: We defined a sex education program as "school-based" if it occurred in a school classroom during the normal school day, or recruited its subjects from the school population and occurred after school or at the school on Saturdays, but did not have a major community component. Basically, a school-based program was one that could be easily implemented visa-vis the school system.)

Combining these three reviews yielded 103 studies of 79 CSE programs in school settings around the world: 60 studies of 40 programs in the U.S. and 43 international studies of 39 programs in other countries (40 of the non-U.S. studies were in "low or middle income" countries, including 29 in Africa). In addition, there were 17 studies of 16 school-based abstinence education programs (AE) conducted in the U.S. that were found to meet the same standards of research quality and included in the same database. (Note: The international data did not contain enough studies of true abstinence-only programs for meaningful analysis.) This resulted in a total of 120 studies for our review.<sup>28</sup>

We examined each of these studies (rather than relying on summaries by other reviewers) to determine whether program outcomes met the criteria outlined above—credible standards derived from the field of prevention research. Because these criteria were more rigorous than the standards typically employed in reviews of CSE programs, our findings produced a different picture than what has typically been portrayed by such reviews, revealing a pervasive lack of evidence for the claim that CSE in school settings has been "proven effective."

#### III. Summary of Findings

#### A. Findings for U.S. School-Based Comprehensive Sex Education (Table 1A)

For the 60 studies of 40 school-based CSE programs in the U.S., the research shows that:

- None of the school-based CSE programs showed reductions in teen pregnancy beyond the end of the program, and none reduced STDs. (Few programs even measured these outcomes.) One program was actually found to increase teen pregnancy in one school-based setting.
- There was no evidence of school-based CSE effectiveness at producing sustained increases in consistent condom use by teens. (Consistent use is necessary to provide significant protection from STDs.) One school-based CSE program reported a sustained effect in a study by its developer, but a subsequent study by an independent evaluator did not confirm that effect and actually found harmful results—the CSE program increased sexual risk behaviors.
- Although there were a few school-based CSE programs that showed effectiveness at increasing teen abstinence (three studies of two programs reported delayed sexual initiation) or frequency of condom use (two programs) 12 months after the program, for the intended population, without other harmful effects, evidence from multiple replication studies did not confirm most of the original positive results.
- There was no evidence of effectiveness for CSE's purported dual benefit—no increases in *both* teen abstinence and condom use (by sexually active teens) within the same program and teen population twelve months after the program.
- Out of the 34 studies that measured a long-term effect (at least 12 months after the program), only five produced positive impact on one of the key protective outcomes without other negative effects. This is a success ratio of only 15%, or a failure rate of 85%.
- Five school-based CSE programs produced significant harmful effects in six studies: three increased rates of teen sex (in three different studies), one increased teen pregnancy, one increased number of sex partners, and one reduced contraceptive use. This is a 10% rate of harm (6/60 studies) caused by 13% of the 40 school-based CSE programs (5/40).

### B. Findings for U.S. School-Based Abstinence Education (Table 1B)

The 17 studies of 16 school-based abstinence education programs in the U.S. found that:

- Seven school-based abstinence education (AE) programs produced sustained (12-month postprogram) delays in teen sexual initiation (increased rates of abstinence).
- Three of the seven programs also produced a reduction in frequency or recency of sex, representing a move toward abstinence by sexually experienced teens.
- Nine studies tested AE impact on condom use, with none finding a negative effect, and one AE program producing an increase in condom use frequency12 months after the program.
- There was not adequate evidence about AE impact on pregnancy or STDs. Very few studies measured these outcomes, and those that did had some methodological problems, but found no impact on pregnancy or abstinence. However, the increases in teen abstinence documented in other AE studies would be expected to produce reductions in these outcomes, though unmeasured.
- Out of the 15 AE studies that measured a 12-month post-program effect, seven produced a positive impact on one of the key protective outcomes, a success ratio of 47% (or a 53% failure rate).
- One of the AE studies found a harmful impact: an increase in number of sex partners.

#### C. <u>Findings for International School-Based Comprehensive Sex Education (Table 2)</u>

For the 43 studies that evaluated 39 CSE programs outside the United States, the research shows:

- Only one school-based CSE study in a non-U.S. country showed effectiveness at reducing teen pregnancy (an effect sustained 12 months after the program for the intended population without other negative effects), and only one was effective at reducing STDs. Very few of these studies measured (or reported) effects on teen pregnancy or STDs.
- Only one of the 43 school-based CSE studies in a non-U.S. setting demonstrated an increase in teen abstinence 12 months after the program for the intended population without negative effects on other outcomes.
- None of the 43 school-based CSE studies in non-U.S. countries showed an increase in consistent condom use for any period of time or any subgroup; very few studies even measured this outcome. (Consistent condom use is necessary for significant protection from STDs.)
- Only one of the 43 school-based CSE studies in a non-U.S. setting showed an increase in a lessprotective measure of condom use (recent use) 12 months after the program for the intended population and without negative effects on other outcomes. *But because the same study also measured consistent condom use—the more crucial outcome—without a significant effect, the effect on the less-protective measure was not counted here as evidence of program effectiveness.*
- None of the 43 school-based CSE studies showed effectiveness at achieving the dual benefit intended by most CSE programs: a sustained increase in both teen abstinence and condom use (by the sexually active) for the intended population within the same CSE program.
- Out of the 28 studies that measured a long-term effect, three showed effectiveness on a key protective outcome without other negative effects, a success ratio of 11% or an 89% failure rate: one program reduced teen pregnancy, one reduced STDs, and one delayed sexual initiation.
- Nine school-based CSE programs in non-U.S. settings had a negative impact (i.e., did harm to program participants): they either increased teen sexual initiation, STDs, number of partners, recent sex, paid sex, or forced/coerced intercourse, or they decreased condom use. Three of these programs had harmful impacts on multiple outcomes. Thus, approximately one in five school-based CSE programs (nine out of 39 programs, 23%, or nine out of 43 studies, 21%) produced negative effects.
- There were 29 studies of school-based CSE in Africa, representing 26 programs. Of these, 19 measured CSE program impact after 12 months, with two showing effectiveness on one of the key protective indicators (one delayed sexual initiation and one reduced STDs), for a success ratio of 11% (or an 89% failure rate). Seven of the 29 African studies found school-based CSE produced a negative impact, a rate of harm of 24% (7/29). This was 27% of the 26 different school-based CSE programs (7/26) measured by these studies.

#### D. <u>Combined U.S. and International Findings for School-based CSE</u>

Of the 79 U.S. and international school-based CSE programs evaluated by 103 studies:

- Worldwide, seven of the 79 school-based CSE programs (analyzed by eight studies) showed evidence of effectiveness as defined previously (a positive impact at least 12 months after the program for the intended population on key protective outcomes without producing other negative effects):
  - One school-based CSE program reduced teen pregnancy, one reduced STDs, three programs delayed teen sexual initiation (increased abstinence) and two increased condom

use *frequency* (not consistent use).

- This is eight out of the 62 studies that measured a 12-month post-program effect, an overall "success ratio" of 13%, or inversely, an overall failure ratio of 87%.
- There was no evidence of success for school-based CSE programs at increasing *consistent* condom use—the behavior required for significant protection from STDs.
- There was no evidence of effectiveness for CSE's purported dual benefit of increasing both abstinence (i.e., delaying sexual initiation) and condom use (by the sexually active) within the same CSE program and school populations—no program produced sustained effects on both outcomes.
- Worldwide, 15 studies of school-based CSE programs found negative impact on participants, a rate of harm of 15% (15/103) or more than one in seven studies that found harmful effects.

#### E. <u>Summary of Worldwide Findings (Tables 3 – 6)</u>

When considering this credible database for school-based CSE programs worldwide, we found seven programs (analyzed by eight studies) that produced evidence of real effectiveness, that is, sustained impact (for at least 12 months post-program) on key protective indicators for the intended population without producing other negative effects (see Table 3). This was 9% of the programs (7/79 programs) or 8% of the studies (8/103 studies).

A "success ratio," estimated by taking the number of studies *finding* effectiveness as a proportion of the studies that actually *measured* effectiveness (i.e., that measured a 12-month post-program effect on one of the key indicators), was eight out of 62 or 13% (see Table 4). This success ratio was somewhat higher for school-based CSE in U.S. settings (15%) than outside the U.S. (11%). By comparison, the smaller number of credible studies of U.S. school-based abstinence education (AE) showed a success ratio of 47% (seven out of 15 studies), as defined above.

The inverse of this rate of success could be considered a failure rate, that is, the proportion of studies that measured effectiveness and found none. Worldwide, the failure rate for CSE in school settings was 87%, again, somewhat lower in U.S. settings (85%) and higher outside the U.S. (89%). The failure rate for AE programs in the U.S. was 53%.

A similar geographic pattern was found for evidence of harmful program impact (see Table 5). Worldwide, 14 school-based CSE programs produced negative effects on participants as analyzed by 15 studies. This was 18% of programs (14/79) or 15% of studies (15/103). In the U.S., 13% of school-based CSE programs (5/40) or 10% of studies (6/60) produced negative effects, while for programs outside the U.S., 23% of programs (9/39) and 21% of studies (9/43) found negative effects for CSE. For the 17 studies of school-based AE in the U.S., negative impact was found for one program, representing about 6% of the programs/studies.

Another way to summarize these findings is to compare the evidence of program effectiveness/success to the evidence of negative or harmful impact. In terms of sheer quantity, worldwide, there was more evidence of harm by school-based CSE, 15 studies, than evidence of real effectiveness, eight studies (see Tables 3 and 5). Translating this into comparative *rates* of impact, as shown in Table 6, the global rate of effectiveness/success for school-based CSE was estimated at 13% (eight out of 62 studies), whereas the rate of negative effects or harm was estimated at 15% (15 out of 103 studies). In other words, *worldwide, the rate of CSE effectiveness in school classrooms (13%) appears to be of a similar magnitude to the rate of harm (15%)*. For school-based CSE programs in the U.S., the rate of effectiveness (15%) appeared

higher than the rate of harm (10%), but for programs outside the U.S., this was reversed, with 11% success and 21% harm. For school-based AE programs in the U.S., the estimated rate of success was 47% compared to a 6% rate of negative impact.

It should be noted that estimating a rate of success is limited by the number of studies that actually measured at least a 12-month post-program effect, as well as the high number of studies that did not make it into the database because of poor scientific quality. So the true success rate is unknown, and these estimates should not be considered as absolute. But they do represent the *available* credible evidence.

As mentioned previously, there was a different pattern of results for school-based CSE programs based on geographic location. It appears that programs outside the U.S. had a somewhat lower rate of positive impact (11% vs. 15%) and a much higher rate of negative impact (21% vs. 10%) than those in U.S. settings. The majority of the non-U.S. studies took place in Africa (29/43 studies), where the rate of negative impact appeared even higher (24% of studies).

Finally, school-based CSE produced no evidence of effectiveness for two key CSE outcomes. Worldwide, few studies measured consistent condom use (the behavior required for meaningful protection from STDs), and among those that did, there was no evidence of success for school-based CSE programs at increasing adolescents' consistent condom use: no program produced significant sustained effects for the intended population without other negative effects. And worldwide, there was no evidence of effectiveness for CSE's intended dual benefit of increasing both abstinence (i.e., delaying sexual initiation) and condom use (by the sexually active) within the same CSE program and population: no school-based program produced sustained effects on both outcomes (Table 3).

### **IV.** Discussion

This review demonstrates the value of employing rigorous criteria—that provide a useful real-world definition of program effectiveness, grounded in the scientific field of prevention research—when evaluating sex education success. Applying such criteria to school-based programs worldwide, both within the United States and internationally, we found little evidence of CSE effectiveness in school settings—there was far more evidence of CSE failure (87%) than success (13%).

Our analysis paints a very different picture than the reports of CSE success presented by many reviews of CSE research, which have looked at the same studies we did but used a more lenient and less meaningful definition of effectiveness for evaluating program outcomes. In light of the push by national and international entities to implement CSE globally, the discrepancy between our findings and those typically reported by these other reviews should be of great interest to policymakers who are concerned with protecting the health and safety of children.

Ironically, the evidence cited by three reputable agencies—UNESCO, CDC, and HHS—to support their assertions that school-based CSE programs are effective actually appears to undermine those claims, which include the following:

• UNESCO states that "Overall, the evidence base for the effectiveness of school-based [CSE] continues to grow and strengthen, with many reviews reporting positive results on a range of outcomes."<sup>29</sup>

- The CDC-sponsored meta-analysis asserted that CSE programs are effective "across a range of populations and settings ... [including] both ... school and community settings."<sup>30</sup>
- The U.S. Teen Pregnancy Prevention website indicates that all of the school-based CSE programs on its list have "shown evidence of effectiveness."<sup>31</sup>

Yet the findings from the 103 school-based CSE studies in their combined databases contradict these assertions. Only seven programs (eight studies) showed evidence of real effectiveness: only one reduced teen pregnancy, one reduced STDs, only three programs delayed teen sexual initiation (increased abstinence) and two increased condom use frequency—at least 12 months after the program for the intended population without producing other negative effects. There was no evidence of success at increasing *consistent* condom use—the behavior required for significant protection from STDs—and no evidence of success at the dual benefit that is the purported advantage of the CSE approach, namely, increasing both teen abstinence and condom use.

Perhaps of greatest concern, the eight studies of school-based CSE that did find some evidence of effectiveness stand in stark contrast to the 15 that reported significant negative effects on teen sexual health and risk behavior—with 13 studies documenting increases in rates of teen sexual activity or risk behavior—notwithstanding UNESCO's assertion that CSE "does not increase sexual activity [or] sexual risk-taking behaviour."<sup>32</sup> This is a concerning number of CSE programs producing harmful effects on program participants. In terms of quantity of evidence (numbers of studies), CSE programs in school classrooms worldwide have produced almost twice as much evidence of harm (15 studies) as of real effectiveness (eight studies). The rate of negative impact was especially high for CSE programs in African schools, where it was nearly one in four studies (7/29). These findings of harm from CSE programs are even more serious in light of the fact that Africa continues to be the continent most impacted by the HIV/AIDS pandemic.

Finally, the scientific evidence reported here directly contradicts the oft-repeated claim that research shows abstinence education is ineffective (see for example, this statement by UNESCO, "Programmes that promote abstinence-only have been found to be ineffective in delaying sexual initiation, reducing the frequency of sex or reducing the number of sexual partners"<sup>33</sup>). Seven out of 17 studies in this authoritative database—studies found to be of adequate scientific rigor by either UNESCO, the CDC, or HHS—demonstrated a long-term delay in sexual initiation, and three of these also produced long-term reductions in sexual activity by sexually experienced teens. Only one AE study out of 17 (6%) found negative effects. Furthermore, the nine studies that tested AE impact on teen condom use found no negative effects. This strong evidence contradicts the charge that AE does harm by reducing teen condom use, a frequent assertion by AE critics.

It will no doubt come as a surprise to many that this credible database produced better evidence for the effectiveness of AE than for CSE in U.S. schools. This is especially noteworthy considering the markedly fewer number of available AE studies, and the fact that the majority of the AE studies were conducted by independent evaluators, whereas about half of the CSE studies were by the programs' developers. The *amount* of AE evidence of effectiveness, in terms of number of studies, was somewhat greater (seven AE studies vs. five CSE studies) and the overall success *rate* for AE programs, at 47%, was much higher than that of school-based CSE in the U.S., at 15%. Moreover, the rate of negative effects appears to be lower for AE (6%) than for CSE in schools (10%).

Finally, the seven AE programs that increased teen abstinence after 12 months provided total protection for those youth during that time, by their avoidance of sexual risk behavior. Only three school-based CSE

programs in this worldwide database met this standard by increasing teen abstinence after 12 months, without other negative effects. Nevertheless, it should be noted that the AE database reviewed was small and limited to studies in the U.S. Additional studies should be done to replicate the positive AE findings reported here in order to confirm and strengthen the AE evidence base.

We end with an observation about program *potential* versus program *effectiveness*. It is not difficult to find sex education programs that have only produced results on less-protective outcomes, or for short durations, or only for subgroups of the intended population. While such outcomes can identify programs that *may have potential*, they do not constitute *sufficient evidence of effectiveness* to justify widespread dissemination in school classrooms, nor financial support using public funds.

Some programs in this database showed evidence of potential by producing effects that approached the cut-off points we established for criteria of effectiveness. (These outcomes are highlighted in blue shading in Tables 1 and 2.) However, better results than these are needed to justify designation as an "effective" program. This assessment is consistent with the findings of *Blueprints for Healthy Youth Development*, a reputable non-partisan registry of evidence-based prevention programs, which has not found that any school-based CSE programs merit designation as "model programs" and lists only five as "promising."<sup>34</sup>

#### V. Conclusions

When measured by meaningful criteria derived from the field of prevention research, a database containing 120 of the strongest and most recent sex education studies, vetted for research quality by three reputed scientific agencies (HHS, CDC and UNESCO), shows very little evidence of CSE effectiveness (protective impact for the intended population 12 months after the program without other harmful effects) on key sexual health outcomes (abstinence, condom use, pregnancy, or STDs) for school-based populations. The research findings demonstrate that CSE has not been an effective public health strategy in schools around the world and that some programs may be doing more harm than good. When applying the same standards of effectiveness to AE in U.S. schools, the evidence—though limited—looks more promising than the results for CSE, enough to justify funding additional AE research.

#### **VI. Recommendations**

- 1. Policymakers should examine the discrepancies between these research findings and widespread claims of comprehensive sex education effectiveness, and rethink the global dissemination of CSE in school settings.
- 2. *Replication studies should be conducted to verify the positive findings for school-based abstinence education, in order to better inform public policy.*

#### **ENDNOTES**

1. U.S. Centers for Disease Control and Prevention. (2016). *Sexually Transmitted Disease Surveillance 2015*. Retrieved from https://www.cdc.gov/std/stats15/STD-Surveillance-2015-print.pdf

**2.** United Nations Educational, Scientific and Cultural Organization. (2009). *International Technical Guidance on Sexuality Education, Volume 1*. Retrieved from <a href="http://unesdoc.unesco.org/images/0018/001832/183281e.pdf">http://unesdoc.unesco.org/images/0018/001832/183281e.pdf</a>

3. Hallfors, D. D., Waller, M. W., & Ford, C. A., et al. (2004). Adolescent depression and suicide risk: association with sex and drug behaviors. *American Journal of Preventive Medicine 27*(3), 224–231; Sabia, J. J., Rees, D. I. (2008). The effect of adolescent virginity status on psychological well-being. *Journal of Health Economics*, *27*(5), 1368–1381; Meier, A. M. (2007). Adolescent First Sex and Subsequent Mental Health. *American Journal of Sociology*, *112*(6), 1811-1847; Else-Quest, N. M., Hyde, J. S., DeLamater, J. D. (2005). Context counts: Long-term sequelae of premarital intercourse or abstinence. *Journal of Sex Research*, *42*, 102e12; Kramer, A. (2014). Virgin Territory: What Young Adults Say About Sex, Love, Relationships, and the First Time. *The National Campaign to Prevent Teen and Unplanned Pregnancy*. Retrieved from <u>https://thenationalcampaign.org/sites/default/files/resource-primary-download/virgin-territory-final.pdf</u>; Silverman, J. G., Raj, A., Clements, K. (2004). Dating violence and associated risk and pregnancy among adolescent girls in the United States. *Pediatrics*, *114*(2), 220–225.

**4.** Wilcox, B. W. (2009, May 22). The Real Pregnancy Crisis. *The Wall Street Journal.*; Ravitz, J. (2009, April 8). Out-of-wedlock births hit record high. Retrieved from http://www.cnn.com/2009/LIVING/wayoflife/04/08/out.of.wedlock.births/index.html

5. United Nations Educational, Scientific and Cultural Organization. (2009). International Technical Guidance on Sexuality Education, Volume 1. p. iii.

6. Comprehensive sexuality education is often promoted under different labels/names. For example, in the Caribbean region, CSE programs are often promoted under the banner of Home and Family Life Education (HFLE). Internationally, CSE is also often promoted under the banners of sexual and reproductive health education or teen pregnancy or HIV prevention education.

7. One popular CSE program, *¡Cuidate!*, uses the following prompt for a discussion with teens as young as 13 years old: "What are some of the things that you should consider to help you decide if you are 'ready' for sex?" (see Villarruel, A. M., Jemmott, L. S., Jemmott, J. B. (n.d.). *Facilitator's Curriculum, Module 2: Building Knowledge About Pregnancy, STDs and HIV*).

8. We identified a curriculum as "abstinence education" (or AE) if it teaches abstinence/sexual risk avoidance as the primary protective behavior and does not promote condom or contraception use as a risk reduction alternative. We applied the "comprehensive sex education" (CSE) label to programs that promote condom and/or other contraceptive use and may also encourage abstinence (to some degree). However, within these two categories of interventions is a spectrum of programs that vary in the relative amount of emphasis given to the respective topics.

**9.** For example, 1) UNFPA's "Tune Me" project illustrates UNFPA's explicit, rights-based CSE approach to sex education that endorses pre-marital intercourse, sexual pleasure-seeking, masturbation and more to young people at age 15 (available online at <a href="https://tuneme.org/sections/sex/">https://tuneme.org/sections/sex/</a>; 2) UNESCO's *Technical Guidance on Sexuality Education* (2018) recommends content for CSE programs worldwide. The document considers children as young as nine years old to be "able to make informed decisions about sexual behaviour, including whether to delay sex or become sexually active" and directs that they be taught to "describe male and female responses to sexual stimulation" and "understand that abstinence means choosing not to have sex, or deciding when to start having sex and with whom ..." (p. 71). It recommends teaching children as young as 12 years old "that non-penetrative sexual behaviours are without risk of unintended pregnancy, offer reduced risk of STIs, including HIV, and can be pleasurable" (p. 72). In a section directed at the same age group, UNESCO discusses "transactional sexual activity"—giving sex in exchange for money or favors—in values-neutral terms. Rather than teaching that paid sex is inherently harmful to them and should be unequivocally avoided, children as young as 12 are merely to be told that paid sex "can pose risks to one's health and well-being ... [and] can increase vulnerability and limit the power to negotiate safer sex" (p. 72); and 3) The CSE curriculum "Making Proud Choices," which targets children ages 11-13 years old, "teaches participants...ways to make condoms pleasurable" (see: <a href="https://tppevidencereview.aspe.hhs.gov/document.aspx?rid=3&sid=102&mid=2">https://tppevidencereview.aspe.hhs.gov/document.aspx?rid=3&sid=102&mid=2</a>).

**10.** United Nations Educational, Scientific and Cultural Organization. (2018). *International Technical Guidance on Sexuality Education: An Evidence-Informed Approach*, p. 18. Retrieved from <a href="http://www.unaids.org/sites/default/files/media\_asset/ITGSE\_en.pdf">http://www.unaids.org/sites/default/files/media\_asset/ITGSE\_en.pdf</a>.

**11.** United Nations Educational, Scientific and Cultural Organization. (2009). *International Technical Guidance on Sexuality Education, Volume 1.* p. iii; United Nations Educational, Scientific and Cultural Organization. (2018). *International Technical Guidance on Sexuality Education: An Evidence-Informed Approach*, p. 12, 28. Retrieved from <a href="http://www.unaids.org/sites/default/files/media">http://www.unaids.org/sites/default/files/media</a> asset/ITGSE en.pdf.

**12.** For example, *The\_National Campaign Teen and Unplanned Pregnancy, Child Trends*, the U.S. DHHS Teen Pregnancy Prevention Program, the Centers for Disease Control and Prevention, and UNESCO.

13. Teen Pregnancy Prevention Evidence Review. (n.d.). Retrieved from https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx

14. Villarruel, A. M., Jemmott, J. B., & Jemmott, L. S. (2006). A randomized controlled trial testing an HIV prevention intervention for Latino youth. *Archives of Pediatrics & Adolescent Medicine*, *160*(8), 772–777; Kelsey, M., Layzer, C., Layzer, J., Price, C., Juras, R., et. al. (2016). Replicating ¡Cuídate!: 6-Month Impact Findings of a Randomized Controlled Trial. *American Journal of Public Health*, *106*(S1), S70–S77; Abt Associates. ¡Cuídate!: Interim Impact Report, Teen Pregnancy Prevention Replication Study, Report prepared for the Office of Adolescent Health and the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, September 2015; Tortolero, S., Markham, C., Fleslcher, M., Shegog, R., Addy, R., et al. (2010). It's Your Game: Keep It Real: Delaying Sexual Behavior with an Effective Middle School Program. *Journal of Adolescent Health*, *46*(2), 169–179; Markham, C. M., Tortolero, S. R., Peskin, M. F., Shegog, R., Thiel, M., Baumler, E. R.,

Addy, R. C., Escobar-Chaves, S. L., Reininger, B., & Robin, L. (2012). Sexual risk avoidance and sexual risk reduction interventions for middle school youth: A randomized controlled trial. *Journal of Adolescent Health*, *50*(3), 279–288; Markham, C. M., Peskin, M. F., Shegog, R., Baumler, E. R., Addy, R. C., Thiel, M., Escobar-Chaves, S. L., Robin, L., & Tortolero, S. R. (2014). Behavioral and psychosocial effects of two middle school sexual health education programs at tenth-grade follow-up. *Journal of Adolescent Health*, *54*(2), 151–159; Potter, S., Coyle, K., Glassman, J., Kershner, S., & Prince, M. (2016). It's Your Game ... Keep It Real in South Carolina: A Group Randomized Trial Evaluating the Replication of an Evidence-Based Adolescent Pregnancy and Sexually Transmitted Infection Prevention Program. *American Journal of Public Health*, *106*(S1), S60–S69; Coyle, K., Anderson, P., Laris, B. A., Unti, T., Franks, H., & Glassman, J. (2015). Evaluation of It's Your Game: Keep It Real in Houston, TX: Final report.

15. For example, the Society for Prevention Research reports that "the past decade has … witnessed a disturbingly high rate of failures to replicate when independent evaluation teams conduct studies of prevention interventions" and that "effect sizes from trials conducted by program developers/creators were more than twice the size of effect sizes from trials conducted by others" (see Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et. al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. Prevention Science, 16 (7), 893–926. Retrieved from <a href="http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence 2015.pdf">http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence 2015.pdf</a>). This concern was also raised by the review team for the U.S. Department of Health and Human Services Teen Pregnancy Prevention (*TPP*) Program: "[a]]I but one of the [original] program models meeting the standards of research quality demonstrated evidence of effectiveness through a single study, often conducted by the developer of the program. The review team noted the lack of replication studies as a gap in the evidence base and called for subsequent, independent evaluations to determine the effectiveness of the programs" (See: Farb, A. & Margolis, A. (2016). The Teen Pregnancy Prevention Program (2010–2015): Synthesis of Impact Findings. American Journal of Public Health, 106 (Suppl 1)).

16. The designation of a prevention program as "effective" should take into account the preponderance of evidence about that program's impact. The program should produce "consistent positive effects ... [and] no serious negative (iatrogenic) effects on important outcomes" both within the same study and across multiple evaluation studies (see: Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et. al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, *16*(7), 893–926. Retrieved from <a href="http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence\_2015.pdf">http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence\_2015.pdf</a>, p. 910).; the *Blueprints for Healthy Youth Development* website stipulates that to be considered even a "Promising Program" (the less-stringent label a step below their "Model Program" designation) there should be "no evidence of harmful [program] effects" (See: <a href="https://www.blueprintsprograms.org/criteria">https://www.blueprintsprograms.org/criteria</a>).

17. The development of standards for scientific evidence of program effectiveness has been undertaken by national entities like *The Society for Prevention Research (SPR)* and *Blueprints for Healthy Youth Development* (https://www.blueprintsprograms.org/criteria). A consensus has been proposed by *SPR*'s Standards of Evidence Committee in their publication, "Standards of Evidence: Criteria for Efficacy, Effectiveness, and Dissemination" (Flay, B. R., Biglan, A., Boruch, R. F., Castro, F. G., Gottfredson, D. (2005). Standards of Evidence: Criteria for Efficacy, Effectiveness and Dissemination. *Prevention Science, 6*(3), 151–175), and recently updated (Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et. al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science, 16* (7), 893–926. Retrieved from http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence\_2015.pdf). These standards include a requirement of long-term post-program effects as well as a concern about main effects vs. subgroup effects, the importance of evidence from multiple studies, including those by independent evaluators (not the program developers), and the stipulation that significant negative program effects disqualifies an intervention from designation as "effective." For a more complete discussion/documentation of these standards, see the full report of our review of U.S. studies: Weed, S., & Ericksen, I. (2018). Re-examining the Evidence for Comprehensive Sex Education in Schools: Part One – Research Findings in the United States. Salt Lake City: *The Institute for Research & Evaluation*. Retrieved from http://www.institute-research.com/CSEReport/Reexamining the Evidence-CSE in USA\_5-29-18FINAL.pdf

**18.** In the body of evidence reviewed here, quite a few studies did not even measure condom use, or they only measured "contraception," which can mean *either* condom use *or* other birth control methods (birth control pills, LARCs, etc.). Unfortunately, these latter pregnancy prevention methods provide no protection from STDs or HIV, and some may even cause harm (see Ralph, L. J., et al., 2015; Li, C. I., et al., 2012). Another commonly used program outcome measure is to ask teens if they have had "unprotected sex," where a "no" response means they have either used any one of many contraceptive methods *or* have been abstinent, without specifying whether the protective behavior employed was abstinence, use of condoms, or use of other types of contraception. Combining these three very different behaviors into one measure by asking students if they have had unprotected sex obscures what the program's protective effect really was, especially whether it protected teens from STDs and HIV through increased abstinence or consistent condom use. For this reason, neither the outcome "increased contraception," nor the outcome "[reduction in] unprotected sex" are considered by this review to be adequate measure for condom use. With regard to measures of sexual activity/abstinence, the primary goal for program strageting youth populations should be to delay the initiation or onset of sexual activity; thus, this measure was considered a key indicator of abstinence. However, if there was no program impact on sexual initiation, then an effect on recent sex—especially for such a brief time span—while certainly desirable, was not considered sufficient evidence of program effectiveness. The same argument was applied to measures of frequency of sex or number of sex partners, both of which—while they may *reduce* risk—still leave youth at substantial risk for STDs and pregnancy.

#### 19. See Endnote #16.

**20.** Centers for Disease Control and Prevention. *Condoms and STDs: Fact Sheet for Public Health Personnel.* Retrieved from <a href="https://www.cdc.gov/condomeffectiveness/latex.html">https://www.cdc.gov/condomeffectiveness/latex.html</a>

**21**. Crosby, R. A., DiClemente, R. J., Wingood, G. M., Lang, D., Harrington, K. F. (2003). Value of consistent condom use: A study of sexually transmitted disease prevention among African American adolescent females. *American Journal of Public Health*; *93*(6), 901–902.

22. A study in the journal *AIDS* (N=17,264) found "Irregular condom use was not protective against HIV or STD and was associated with increased gonorrhea/Chlamydia risk" as compared to non-use (Ahmed, S., Lutalo, T., Wawer, M., et al. (2001). HIV incidence and sexually transmitted disease prevalence associated with condom use: a population study in Rakai, Uganda. *AIDS*, *15*(16), 2171–2179). A Denver study (N=26,291) reported that

"Among the total population, rates of STD were higher among inconsistent [condom] users than nonusers ... However, STD rates were significantly lower among consistent than inconsistent users" (Shlay, J. C., McCung, M. W., Patnaik, J. L., et al. (2004). Comparison of sexually transmitted disease prevalence by reported level of condom use among patients attending an urban sexually transmitted disease clinic. *Sexually Transmitted Diseases*, *31*(3), 154–160). And a study in Brazil found that condom use at last intercourse was independently and positively related to infection with a high-risk HPV type as compared to non-use (OR 1.3, p<.05) (see: Grinsztejn, B., Veloso, V., Levi, J., Velasque, L., Luz, P., et al. (2009). Factors associated with increased prevalence of human papillomavirus infection in a cohort of HIV-infected Brazilian women. *International Journal of Infectious Diseases*, *13*(1), 72–80.

**23.** Consistent condom use is the behavior upon which most estimates of the condom's protective capacity are based. The level of STD protection provided by consistent condom use ranges from a 30% risk reduction for genital herpes to 80% risk reduction for HIV transmission (see Martin, E. T., Krantz, E., Gottlieb, S. L., Magaret, A. S., Langenberg, A., et al. (2009). A Pooled Analysis of the Effect of Condoms in Preventing HSV-2 Acquisition. *Archives of Internal Medicine, 169*(13), 1233–1240; Weller, S. & Davis, K. (2002). Condom effectiveness in reducing heterosexual HIV transmission. *The Cochrane Database of Systemic Reviews, 1*; Sanchez, J., Campos, P., Courtois, B., Gutierrez, L., Carrillo, C., Alarcon, J., et al. (2003). Prevention of sexually transmitted diseases (STDs) in female sex workers: Prospective evaluation of condom promotion and strengthened STD services. *Sexually Transmitted Diseases, 30*(4), 273–279; Holmes, K. K., Levine, R., Weaver, M. (2004). Effectiveness of condoms in preventing sexually transmitted infections. *Bulletin of the World Health Organization, 82*(6), 454–461.)

24. See Endnote #3.

25. Teen Pregnancy Prevention Evidence Review. (n.d.). Retrieved from https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx

**26.** The *Community Preventive Services Task Force* was established by the U.S. Department of Health and Human Services (DHHS) in 1996 and operates under its auspices with support from the Centers for Disease Control and Prevention (CDC). In 2008, the *Task Force* initiated a study of "The Effectiveness of Group-Based Comprehensive Risk Reduction and Abstinence Education Interventions to Prevent or Reduce the Risk of Adolescent Pregnancy, HIV, and STIs." The database included outcome studies from the prior 20 years that met the *Task Force's* standards for research quality, and included 24 studies of school-based CSE interventions. For a report of the study findings, see Chin H. B., Sipe, T. A., Elder, R., Mercer, S. L., Chattopadhyay, S., et al. (2012). The Effectiveness of Group-Based Comprehensive Risk Reduction and Abstinence Education Interventions to Prevent or Reduce the Risk of Adolescent Pregnancy, HIV, and STIs: Two Systematic Reviews for the Guide to Community Preventive Services. *American Journal of Preventive Medicine, 42*(3), 272–294; Weed, S. E. (2012). Sex Education Programs for Schools Still in Question: A Commentary on Meta-Analysis, *American Journal of Preventive Medicine, 42*(3), 313–315; Community Preventive Services Task Force. (2011). Recommendations for Group-Based Behavioral Interventions to Prevent Adolescent Pregnancy, Human Immunodeficiency Virus, and Other Sexually Transmitted Infections: Comprehensive Risk Reduction and Abstinence Education. *American Journal of Preventive Medicine, 42*(3), 304–307.

27. United Nations Educational, Scientific and Cultural Organization. (2009). *International Technical Guidance on Sexuality Education, Volume 1*, see pp.15-17. Retrieved from <a href="http://unesdoc.unesco.org/images/0018/001832/183281e.pdf">http://unesdoc.unesco.org/images/0018/001832/183281e.pdf</a>; United Nations Educational, Scientific and Cultural Organization. (2018). *International Technical Guidance on Sexuality Education: An Evidence-Informed Approach*. Retrieved from <a href="http://www.unaids.org/sites/default/files/media\_asset/ITGSE\_en.pdf">http://www.unaids.org/sites/default/files/media\_asset/ITGSE\_en.pdf</a>

28. For the reference list of all studies reviewed for this analysis, see: Institute-Research.com.

**29.** United Nations Educational, Scientific and Cultural Organization. (2018). *International Technical Guidance on Sexuality Education: An Evidence-Informed Approach*, p. 12, 28. Retrieved from <a href="http://www.unaids.org/sites/default/files/media\_asset/ITGSE\_en.pdf">http://www.unaids.org/sites/default/files/media\_asset/ITGSE\_en.pdf</a>

**30.** Community Preventive Services Task Force. (2011). Recommendations for Group-Based Behavioral Interventions to Prevent Adolescent Pregnancy, Human Immunodeficiency Virus, and Other Sexually Transmitted Infections: Comprehensive Risk Reduction and Abstinence Education. *American Journal of Preventive Medicine*, 42(3), 304–307, see p.305.

31. Teen Pregnancy Prevention Evidence Review. (n.d.). Retrieved from https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx

**32.** United Nations Educational, Scientific and Cultural Organization. (2018). *International Technical Guidance on Sexuality Education: An Evidence-Informed Approach*, p. 29. Retrieved from <a href="http://www.unaids.org/sites/default/files/media\_asset/ITGSE\_en.pdf">http://www.unaids.org/sites/default/files/media\_asset/ITGSE\_en.pdf</a>

33. Ibid.

34. Blueprints Programs. Retrieved from https://www.blueprintsprograms.org/programs.

PRO	GRAM & STUDY CHAR.	ACTERISTI	S		.s. school-based	vicilariandmo	ה אבא במתרמווטוו וי	ייד הי אומוני הי		DGRAM OUTCO	MES				
PROGRAM NAME	STUDY 1st AUTHOR	Database	Independent	PROGRAM TYPE	Post-ProgramFollow-up	Negative Effect	Impact on Most-	Protective Indicators for	Intended Population		Less-Protec	ive Indicators		Dual Benefit: Abstir	ence + Condom Use
	& YEAR		Evaluator?		Time (in Months)	in the second se	Sexual Initiation	<b>Consistent Condom Use</b>	Pregnancy S1	Ds CondomFrequei	1cy Recent Sex	UnProtectedSex	# Sex Partners 1	2mo. After Program	ny Duration or Measure
1.Aban Aya (Curriculum Version Only)	Flay, 2004	дd	No C	SE + Risk Behavior	<9(Endof4YearProg)	No	MN	MN	MM MN	No No	No	MN	MM	MM	No
2.AIDSPrevention Program	Siegel, 1995	CDC/UN	2	CSE	4	No	MM	MM	4 WN	A No	NN	NN	No	MM	No
3.Ali4 You	Coyle, 2006	TPP/CDC/UN	9V	CSE + Service-Learning	6, 12, 18	No	No	MM	2 92	A 6 months Only	6 months Only	6 months Only	No	No	6 months
Ald You	Coyle, 2013	TPP	No.	CSE + Service-Learning	4, 16	No	No	WN	A MM	A No	MN	No	MN	No	No
Alt You2 (Curriculum Only)	Coyle, 2013	TPP	No No	CSE Only	4, 16	No	No	NM	A MN	A No	NM	4 months Only	MM	No	No
4.Be Proud Be Res ponsible (School-Recruited, held on Saturday)	Jemmott, 1999	TPP/CDC/UN	8	CSE	3,6	No	NM	NM	MM NN	A NM	No	6 months	No	MM	MM
Re Proud Re Recoonsible (School Dav/Classroom Version)	Borawski, 2009	ТРР	Yes	S	4.12	No	No	NO	MN	A NM	No	No	MM	NN	NM
5 [Bin to] HIV/CTD Descention Curriedum	Riake 2000 fumuth 1	NII	Vat	5	y	NN	- VI	No	NIM N	A NM	W	MM	NM	MM	Mn
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o Joo yer) http://www.com.com/com/	electration and and and	the best		5 8		2						Concerning of the			
7.Crossroads Program (adaptation BPBR)	blater & Mitscree, 2015	21-441	\$	ŏ	3, 0, 12	92	WN	WN	9			6 months Univ	WN	WN	WN
8. (Cuidatel (School-Recruited, held on Saturday)	Villaruel, 2006	TPP/CDC/UN	9N	ğ	12	No	No	12 months	MM MN	No No	12 months	12 months	12 months	No	12moRecent5x/CCU
ICuidate! (School Day/Classroom Version)	Kelsey, 2016; Abt.Assoc, 2015	ТРР	Yes	CSE	6,18	Oral & Recent Sex	6mo(OralSex)Subgroup	MM	2	0 No	6mo-Subgroup	No	NM	MN	No
9.Draw the Line/Respect the Line	Coyle, 2004	TPP/CDC/UN	No	S	at Prog.End(3YrProg), 12	No	No (Boys Only, 12 mo)	NM	4 MN	A No	No (BoysO, 12 m	WN N	No	No	8
10.Encus on Kide/West Viminin	Stanton. 2005	CD C/UN	W	CSE	3.6.9	No	MM	NM	NM N	A No	No	MN	NM	MM	NM
14 Candar Martters	Smith If in at al 2015 Matheni	TDD.T7	AA	JOE	6	W	MA	MAN	A MM	A MM	MA	MA	NMA	MM	NN
		4			, ,										
12.Get Real About AIDS	Main, 1994	mba	~	Ö	9	No	No	MM	WN	A 6 months	No	WN	6 months	WN	6 months
13.Get Real - 7th & 8th Grade Only	Grossman, 2014	дd	~	CSE	<9(End of 3 Year Prog)	٥N	<9 months	NM	MN	WN N	MN	WN	WN	MN	MN
14.H.A.R.T. (adaptation of B.A.R.T.)	Boston Medical Center	TPP-T2	~	CSE	9	No	No	NN	MN	WN V	No	No	NM	MN	No
15.Health Teacher	M a thmatica	TPP-T2	9N	Š	12	٥N	No	NIN	A MN	MN NM	MN	WN	MM	MN	WN
16 Horithy & Alhel	Middlestadt. [Unpub]]	CIN	No	ž	ø	No	No	No	MM NM	MM NM	No	NN	No	NM	No
	Mathematical Condition			CE - Diet Bahardar	04 26 46	1				1		1		-	
17. Healiny for Life-Version 1 (Age-based)	M00818, 1938/2000	Ĭ		COE + NOK BERAVIOL	24, 30, 45	2	8	ov.	u WN		02	M.	WW	ou ou	00
18.Healthy for Life Version 2 (7th Grintensive)	Moberg, 1998/2000	ĕ	~	CSE + Risk Behavior	24, 36, 48	Recent Sex	No	No	MM	WN	24 months	WN	WN	No	No
19.Healthy Oakland Teens	Ekstrand, 1996(AIDSConf)	NN	5	CSE	8 to 11	No	8 to 11 months	MM	NM NN	MN N	NN	NN	NM	NN	NM
20.HIV Prevention Interventions	Fisher, 2002	CDC/UN	No.	CSE	12	No	No	MM	4 MN	A 12 months	MN ~	WN	NM	No	No
21.tt's Your Game: Keep it Real - Risk Reduction	Tortolero, 2010	TPP	8	CSE	12	No	12 months	NM	A MN	A No	12 months	MN	No	No	No
NG . Bick Beduction	Markham. 2012 & 2014	TPP	N	ž	10.24	# of Sex Partners	10 months Only	10 months 02**	NIM N	MM N	10 months 0	10 months 0	24 months	No	10mont hs Only
	Contract Party Party Contract	uu.				Construction of the last of th									
ITG - KISK Reduction	Protter, Auto ( a. Sociar.)	441	165	CT.	77	Sexual Initiation	12 months	NN	MM	www.	00	W	WW	W	W
IYG - Risk Reduction	Coyle, 2016 ("b" Texas)	ТРР	Yes	ß	n n	No	No	MN	MN	WN	MN	WN	WN	WN	MN
22. Making Proud Choices !(School-Recruited, held on Saturday)	lemmott, 1998	TPP/CDC/UN	No	CSE	3, 6, 12	No	No	3 months Only	MM MN	A 3, 6, 12 months	No	No	NM	No	No
23.Need To Know	Uof TX-HithSciCtrSanAntonio	TPP-T2	6	CSE?	at Program End	No	No	WN	WN WN	WN V	MN	NN	MN	MM	No
24. Positive Prevention	LaChausse, 2006	apc/un	Yes	CSE	9	No	6 months	MN	MN NN	A No	6 months	WN	NN	NM	No
25. Positive Prevention PLUS	LaChausse, 2015/2016	TPP	Yes	CSE	9	No	6 months	NM	No No	MN NM	MM	6 mont hs	NN	MM	NM
26. Postnonina Sexual Involvement PSII	Howard&McCabe, 1990	N	9N	CE	12	oN	12 months	NN	MM	MN N	N	WN	MM	MM	NM
Postnoning General Involvement	Aarons. 2000	IN	Yes	Ž	9	No	No	NM	MM MN	MM N	NM	MM	NM	NM	NM
DEL D. Human Controlling advantad	litette B. Bandele unende	101		745	2.6	ALC.	and a	NN .	A MM	THE P	A.	TW1	No.	THE PARTY	THE STREET
pat door Automatic autor and the	unture ex remain, unputs.	5		5	21.0	2	2	MM					2		MM
27. Project IMPPACT inwood House	Lieberman, 2000	mbm	90	ö	at Prog.End, 12	No	NO	MN	2	V NO	MN	WN	WN	NO	No
28.ProjectLIGHT	Light foot, 2007	ĕ	No No	CSE	8	No	MM	MN	MM MN	A No	3 months	No	3 months	MM	No
29. Project SNAPP	Kirby et al, 1997	CDC/UN	Yes	CSE	5,17	Contraceptive Use	No	NN	- 9	o Contraception-17r	No No	WN	MM	No	No
30.Promoting Health Among Teens!/CSE	Jemmott, 2010	TPP	No	CSE	24	No	No	No	MN NN	WN V	No	No	24 months	No	No Mo
31.Reach for Health	O'Donnell, 1999	ЭŬ	2	CSE (CSE (CSE (CSE (CSE (CSE))))	9	No	No	NM	A MN	MN NM	No	WN	MN	MM	NN
32. Reducing the Rick (RTR)	Kirbv et al. 1991	TPP/UN	9N	S	18	No	No	NMN	e Q	A No	NM	No	MM	MM	NM
8118 1118	Barth. 1992	TPP/CDC	en e	Ž	9	No	No	NM	A A	A No	No	WW	NM	NM	No
	Humbury 1908	CDC/IN	Vas	2d	81	ALC.	10 months	NM	A MM	100	100	and the second sec	NN	( NN	NN.
ANN.	Walton IAbs Access 2016	uur		300	1 5	1					-	-	1	-	-
	of of Thorew low Assaw		0	5	4	2	2					2			2
RTR	Z immer man, 2008a	ND/ad1	ov.	ö	71<	9N	NO	WN	WN	NO	MN	MN	MN	WN	No
33. RTR-modified1	Zimmer man, 2008b	NU/441	QN N	CS	>12	No	NO	MN	MN	No No	MN	WN	WN	WN	No
RTR	Reyna & Mills, 2014a	TPP	Yes	CSE	3, 6, 12	No	No	NM	MM MN	N No	NM	No	No	No	No
34. RTR-modified2	Reyna & Mills, 2014b	ТРР	N	CSE	3, 6, 12	No	12 months	MM	MN	No	MN	No	12 months	No	No
35.Rochester AIDS Prevention Project[RAPP]	Siegel, 2001	apc/un	2	CSE	12	No	No	MN	MN	WN V	NM	NN	NM	NM	NM
Rochester AIDS Prevention Project (RAPP)	Aten, 2002	ğ	~~ 2	S	12	No	No	NN	NM MN	MN N	NM	WN	NM	MM	NM
36.Safer Choices	Coyle, 2001	TPP/CDC/UN	No	CSE	at Prog.End(2Yr Prg), 12	No	No	NM	MM	A 12 months	No	NN	No	No	No
37.Teen Outreach Program (TOP)	All en 1997/Philliber 1992	TPP	Yes	Service-Learning+CSE	at ProgEnd(9moPrg)	No	NM	MN	at Program End(FO) N	WN V	NM	NN	MM	MM	NM
10P	Daley, 2015 (Florida)	TPP	Yes	Service-Learning+CSE	at ProgEnd(9moPrg), 10	No	at Prog. End O	MN	at Program End O N	MN N	NM	NN	MM	NM	NM
TDP	Francis (Hennepin,MN), 2015	TPP	Yes	Service-Learning+CSE	3,15	No	No	MN	MM MN	MN N	No	No	MM	NM	NM
70P	Seshadri, et al 2015 (Chicago)	TPP	Yes	Service-Learning+CSE	at ProgEnd(9moPrg)	No	WN	MM	4 WN	WN V	No	No	NN	NM	MM
70P	Philliber, et al 2016 (GNWPP)	TPP	Yes	Service-Learning+CSE	at Prog.End(9moPrg), 12	Pregnancy-Females	NM	MM	at Prog. End (F) h	WN V	No	WN	NN	NM	MM
10P	Robinson, et al, 2016 (NY&LA)	TPP	Yes	Service-Learning+CSE	at ProgEnd(9moPrg)	No	No	MM	MM MN	MN N	MM	No	MM	MM	NM
38.[Walter&Vaughn]AIDS Prevention	Walter & Vaughn, 1993	CDC/UN	2	S	3	No	No	3 months	MN	o NM	MN	WN	3 mont hs	MM	3 manths
39. Wise Guys	Gottsegen & Philliber 2001	N	8	CSE	9	٥N	No	NM	MM MN	MN N	MN	WN	MN	MN	MN
40.Youth AIDS Prevention Project (YAPP)	Levy, 1995	CDC/UN	9V	CSE	at Prog.End, 12	No	No	NN	WN WN	A No	No	WN	No	No	W
# Three governmental agencies (TPP, CDC, & UN-see Key below) conducted rev	ews of all credible studies of CSE in the	US and claimed t	o have found evide	nce of CSE effectiveness.	We examined the studies of sch	od-based CSE included in	a these reviews & entered their	results in this table.							

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Light Grey = No evidence of negative impact. Dark Grey = No evidence of negative impact. Dark Grey = a Loc of Fridence: did not measure the outcome, or only measure da a short term for great the same program has produced negative effects in this or other studies. Correst = Loc of Fridence: did not measure the outcome, or only measure da a short term feet (less than 6 months port-program) with significant results. Velow = Lock of Independent Schularce: The study was conducted by the program's developer Light Purgle = This program is on the TPP Ri of programs provents.

	PROGRAM CHARAC	TERISTICS							PROGRAM OUTC	OMES			
DCCD ANA NA ME		Database	Independent		Follow-up Time	Impact on Most-P	rotective Indicators for Inten	ded Population	Less-P	rotective Indicat	ors	Dua	Benefits
		natabase	Evaluator?		in Months	Sexual Initiation	<b>Consistent Condom Use</b>	Pregnancy STD:	5 CondomFrequency	Re cent Sex	#Sex Partners	12 moAbst+Cuse	Any Duration or Measure
CHOOL CLAS SROOM/SCHOOL DAY PROGRAMS:													
hoosing the Best	Weed, 2008	CDC	Yes	Abstinence-only	12	12 months	NN	MN MN	MN	MN	MN	MN	MN
Choosing the Best	Lieberman, 2012	ТРР	Yes	Abstinence-only	3, 6	3 monthsonly	WN	MM MN	MN	No	MN	MN	MM
or Keeps	Borawski, 2005	CD C/UN	Yes	Abstinence-only	5	8	No	MN	MN	MZ	5 months	MN	No
îet Real-6th Grade Only	Erkut, 2012	ТРР	Yes	6thGrdAbstinence-only	12	12 months	MN	MM MN	MN	MN	MN	MN	MM
leritage Keepers	Weed, 2011	TPP	Yes	Abstinence-only	12	12 months	MN	NN NN	MN	MN	MN	MN	MN
ts Your Game (IYG) Abstinence-Only	Markham, 2012 & 2014	TPP	No	Abstinence-only	10, 24	Q	UnprotectedSex 10 & 24 mo.	MM MN	MN	MM	10, 24 months	No	No
Ay Choice, My Future	Trenholm, et al, 2007	CDC/UN	Yes	Abstinence-only	4 to 6 Years	8	MM	NO NO	S	No	٥N	Q	No
ositive Potential - 6th Grade	Piotrowski, 2016	TPP-2	Yes	Youth Development + AE	12 (4mPostBooster)	12 months	No	MN	M	12 months	MN	N	No
ostponing Sexual Involvement-Abst -Only	Kirby, 1997	CDC/UN	Yes	Abstinence-only	3, 17	8	MN	No No	8	MN	٩	Q	No
easons of the Heart	Weed, 2008	CDC	Yes	Abstinence-only	12	12 months	WN	MM MN	MN	MN	MN	MN	MM
e Capturing the Vision	Trenholm, 2007	CD C/UN	Yes	Abstinence-only	4 to 6 Years	8	MN	No No	8	٥N	No	9N N	No
ex Can Wait	Demy & Young, 2006	CDC/UN	No	Abstinence-only	18	18 months	NN	NN NN	MN	18 months	MN	MN	MN
eens In Control	Trenholm, 2007	CD C/UN	Yes	Abstinence-only	4 to 6 Years	N N	WN	No No	N	No	No	No	No
ex Respect, Teen-Aid, Values and Choices	Weed, 1992	CDC	Yes	Abstinence-only	12	<b>N</b>	MM	MN	MN	MN	MN	MN	MM
VAIT Training	Rue, 2005	NN	Yes	Abstinence-only	12	No	NM	NM NM	NM	NM	NM	NM	NM
CHOOL-RECRUITED/AFTER SCHOOL or SATURDAY:													
1ak ing a Difference! An Abstinence Program	Jemmott, 1998	TPP/CDC/UN	No	Abstinence-only	3, 6, 12	3 monthsonly	No	MN MN	12 months	MN	MN	No	Abst(3mo)+C-use(12mo)
romoting Health Among Teens!/Abst-Only	Jemmott, 2010	трр	No	Abstinence-only	24	24months	No	NM NM	NM	24months	NM	No	No
Three governmental agencies (TPP, CDC, & UN-see Key below) vette	d U.S. studies of abstinence education (A	<li>KE) for research quality</li>	by. We examined t	he studies of <i>school-based</i> AE	included in these reviews &	entered their results in this	table.						

KT: TPP/CD/UN = U.S. Teen Programy Prevention program/Centers for Disease Control & Provention/UNESCO-These were the three government agencies whose databases we examined. TPP/CD/UN = U.S. Teen Programy Prevention program/Centers for Disease Control & Provention/UNESCO-These were the three government agencies whose databases we examined. Not = Mosture the outcome but the effect, was not significant To a mosture the not come but the effect was not significant Geen = Evidence of Success: A significant man effect at least 12 months post-program, on the intended target population (a "main effect"), not just a subgroup. Geen = Evidence of Potential A significant man effect at least 12 months post-program, a subgroup. Blue = Evidence of Potential A significant man effect at least 12 months and sus-protective indicator, a significant fielder. Blue = Evidence of Falue: massured any dual benefit (a fabrience & content) but both where not Significant the falue. Date REROW = Evidence of Falue: massured any dual benefit (a fabrience & content) but both where not Significant the falue. Date REROW = Evidence of Falue: massured any dual benefit (a binance & content to the falue.

Red = Evidence of Harm: a significant increase in some sexual risk behaviors or sexual health indicators David Grey = a significant main effects it east 12 months postsprogram, for the intended population, but the same program has produced negative effects in this or other studies. Care = Lak of independent evidence of the massure at least 12 months after the program. Velow = Lak of independent Evialuators study was not conduced by an independent researcher, i.e., someone other than the program developer or implementer Purp is = Lak of independent Evialuators study was not conduced by an independent researcher, i.e., someone other than the program developer or implementer Purp is = This program is on the TPP list of programs law or genee of effectiveness.

lable 2. School-B			-U.S. Countine	S: 45 Juule	S OT 39 Prevenue	un riugiai	su	DROGRAM OUTCO	DMFS				
			Negative	Impact on M	ost-Protective Indicators fo	or Intended Pop	ulation		Less-Protective	Indicators		Dual Benefit Abstine	nce & Condom Use
Study 1st Author, Year	Program Name	Country	Effects	Sex ual Initiation	Consistent Condom Use	Pregnancy	STDs	Any Condom Use	RecentSex	Unprotected Sex	# Sex Partners	12moAbst&Condom s	AnyDuration/Me asure
. Ajuwon & Brieger, 2007	Reproductive Health Education	Nigeria, Africa	No	MN	MN	MN	WN	End Of Program	NS	MN	MN	MN	NS
. Aderibigbe & Araoye, 2008	He alth Education On Risky Behavior	Nigeria, Africa	No	MZ	M	ž	MN	3 months	NS	MN	3 months	WN	3 months
. Agha, 2004	Peer-ledHN/AIDSPrevention	Zambia, Africa	No	MN	MN	MN	MN	NS	6 months	MN	6 months	MN	NS
. Borgia, 2005	Peer-ledHN/AIDSPrevention	Rome, Italy	No	MN	MN	MN	MN	NS	NN	MN	NS	NN	NS
. Cartagena, 2006	Peer-ledHIV/AIDSPrevention	Mongolia	No	MN	3yr-PostBaseline Subgroup	M	MZ	WN	WN	WN	MN	WN	MM
i. Daboer, 2008	HIV/AIDS Health Education	Nigeria, Africa	No	6 months	MN	M	MZ	WN	NS	MN	MN	MN	NS
. Dente, 2005	HIV Education & Couns eling	Uganda, Africa	No	N	NS	ž	MZ	M	WN	MN	NS	NS	NS
3. Diaz, 2005 (1)	ED UCARTE	RioDeJaneiro,Brazil	No	MN	WN	M	WN	NS	NS	WN	MN	MN	NS
1.Diaz, 2005 (2)	Education: An ExerciseInG tize nship	Salvador, Brazil	No	WN	WN	M	WN	NS	NS	MN	MN	MN	NS
0.Diaz, 2005 (3)	Sexuality&A flectivityE ducation	Belo Horizonte, Braz il	RecentSex	MN	MN	M	MN	NS	Main Effect	WN	MN	WN	NS
1.Diop, 2004	Accompanying The Future	Sen egal, Africa	S & Coerced Sex	Subgroup(F)	MN	M	MZ	WN	NS	15 mo PostBaseline	NS	NS	NM
2.Doyle, 2010	MEMA kwa Vijana	Tanzania, Africa	No	SN	MN	SN	NS	NS	NS	MN	NS	NS	NS
3.Duflo, 2006	Critical Thinking	Kenya, Africa	No	NS	MM	ž	M	6 mo Subgroup (M)	Ŵ	MN	NS	WN	NS
4. Duflo, 2015	Critical Thinking	Kenya, Africa	No	MN	MN	NS	NS	ΜN	WN	MN	NN	MN	MM
.5.Dupas, 2011	Relative Risk Info Campaign	Kenya, Africa	SI & #Partners	Main Effect	MM	1 year	M	NS	Ŵ	MN	Subgroup(M)	NS	NS
6.Fawole, 1999	SchBsdHIV/AIDS EducationProg	Nigeria, Africa	No	M	NS	M	NS	NS .	6 months	MN	6 months	MN	NS
7. Fitzgerald, 1999	My Future is My Choice(MFMC)	Namibia, Africa	Condom Use	NS	MM	M	Σ	Subgroup(M)	NS	MN	NS	MN	NS
8.Harvey, 2000	DramAide	South Africa	No	NS	NM	MN	NS	6 months	MN	MN	NS	NM	NS
9.Henderson, 2007	SHARE	Scotland, UK	No	MN	MN	NS	MN	ΜN	WN	MN	NN	MN	MM
0.James, 2006	HIV LifeSkillsProg	KZN, SoAfrica	No	4mo Subgroup		M	ΨZ	End Of Program-Subgroup	EndOfProgram-Subgroup	MN	MN	WN	Short-term/Subgroup
1.Jemmott, 2015	Let Us Protect Our Future	South Africa	No	NS	NS	M	42 mo Subgroup	NS	NS	12 months	12 months	NS	NS
2.Jewkes, 2008	SteppingStones	South Africa	Paid Sex	MN	WN	NS	12 months	NS	Paid Sex (Subgroup-F)	WN	NS	NS	NS
3.Karnell, 2006	Our Times Our Choices (RTR ada pted)	South Africa	No	NS		M	ΨZ	NS	Ŵ	ŴN	MM	WN	NS
4.Li, 2008	Focus On Kids adapted	Nanjing,China	No	NS	MN	M	MN	NS	WN	MN	NM	MN	NS
5. Magnini, 2005	HIV LifeSkillsProgram	South Africa	No	NS	NS	Σ	M	2 yr Post-Baseline	NS	MN	NS	NS	NS
6. Martinez-Donate, 2004	CSE + Condom Distribution	Tijuana, Mexico	No	6 months	MN	M	MN	NS	SN	NS	MN	WN	NS
'7. Maticka-Tyndale , 2010	PSABH	Kenya, Africa	No	18 mo Subgroup(F)	M	Σ	MN	30 mo Subgroup(F)	18 months	MN	MN	NS	18 mo Subgroup(F)
'8. Matthews, 2010 - Site 1	SATZ HIV Prevention Program	Cape Town, So Africa	No	NS	MN	ž	M	NS	Ŵ	MN	MN	NS	MN
9. Matthews, 2010 - Site 2	SATZ HIV PreventionProgram	Mankweng, So Africa	No	NS	MN	MN	ΨZ	NS	WN	WN	MM	NS	MN
0. Matthews, 2010 - Site 3	SATZ HIV Prevention Program	Dar es Salaam,Tanzania	No	12 mo Subgroup(M)	M	M	MN	NS	WN	WN	MN	NS	MM
:1. Merakou, 2006	Peer-led HIV/AIDS Prevention	Athens, Greece	Sex ual Initiation	Main Effect	MN	M	M	6mo Post-Baseline	MN	MN	MM	MN	NS
2.Okonofua, 2003	WomenHith&ActionResourceCtr	Nigeria, Africa	No	WN	MN	 M	<b>1</b> yrPostBsline	1yrPostBsI/Subgroup(F)	WN	WN	MM	WN	NS
3.Ross, 2007	MEMA kwa Vijana	Tanzania, Africa	STDS	NS	MN	SN	Subgroup(F)	3 yr Post-Baseline	Ŵ	WN	3yrPostBsI/Subgrp(M)	NS	3y rPost-Bsl / Subg roup(M)
4.Smith, 2008	Health Wise SoAfrica	South Africa	Sex ual Initiation	Subgroup(F)	NS	M	ΨZ	WN	NS	ŴN	MM	WN	NS
5.Stanton, 1998	My Future is My Choice(MFMC)	Namibia, Africa	No	12 mo Subgroup(F)	WN	M	ΨZ	6mo Subgroup	NS	WN	NS	NS	6 mo Subgroup
6.Shuey, 1999	School Health Education	Uganda, Africa	No	2 yr Post-Baseline		M	Σ	WN	NS	WN	NS	NS	NS
7. Stephenson, 2008	STID PLE	England, UK	No	NS		54 months	M	NS	WN	NS	MM	NS	NS
t8. Taylor, 2014	Teen Pregnancy Prevention Progr	KZN, SoAfrica	No	NS	NS	NS	Σ	5 months	WN	WN	MM	WN	NS
19. Thato, 2008	BeforeYouKnow/SmartLove	Thailand	No	MN	NS	MN	WZ	MM	6 months	MN	NM	MN	NS
0. Visser, 2007	Peer-led HIV/AIDS Prevention	South Africa	ForœdSex&#Partners</td><td>18mo Post-Baseline</td><td>NS</td><td>M</td><td>Σ</td><td>WN</td><td>18mo Post-Baseline</td><td>MN</td><td>Main Effect</td><td>NS</td><td>NS</td></tr><tr><td>:1. Walker, 2006</td><td>HIVP rev+Emerge ncyContracptn</td><td>Mexico</td><td>No</td><td>M</td><td>WN</td><td>M</td><td>Σ</td><td>NS</td><td>WN</td><td>WN</td><td>MM</td><td>MN</td><td>MM</td></tr><tr><td>12. Wight, 2002</td><td>SHARE-Interim Evaluation</td><td>Scotland, UK</td><td>No</td><td>NS</td><td>M</td><td>NS</td><td>M</td><td>NS</td><td>WN</td><td>NS</td><td>MN</td><td>WN</td><td>NS</td></tr><tr><td>3.Ye, 2009</td><td>HIV Education</td><td>China</td><td>No</td><td>MN</td><td></td><td>MN</td><td>MN</td><td>NS</td><td>NN</td><td>MN</td><td>NM</td><td>NN</td><td>NM</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>										

KE: NM = Did not measure this outcome; NS = Nota statistically significant effect at p<-C0; F = Females; M = Males; SI = Sexual Initiation NM = Did not measure this outcome; NS = Nota statistically significant effect at p<-C0; F = Females; M = Males; SI = Sexual Initiation NM = Did not measure this outcome; NS = Nota statistically significant effect at p<-C0; F = Females; M = Males; SI = Sexual Initiation NM = Did not segmificant reflect an a key protective indicator, a significant main effect 3 months post-program, a subgroup effect 3 months, or a dual benefit <22 months or on biss-protective indicator. Bits = Foldence of Pregram Falure: The program measured the outcome but failed to find a significant main effect. Nown = Evidence of Pregram Falure: The program measured the outcome but failed to find a significant effect. Bits Ger = significant main effect at tast 12 months post-program, for the main population or a substantial subgroup, of any duration. Light Ger = significant main effect at least 12 months post-program, for the intended population, but the same program has produced megative effects in this or other at fact at fact at fact at a traited outcomes for the main population or a substantial subgroup. Light Ger = significant main effect at least 12 months post-program, se end unless it says "Post-Baseline" which means effect in this or other studies. Note: Follow-up time produce on freque duration of effect after the program, se and unless it says "Post-Baseline" which means effect in mice at program. Note: Follow-up time program, inter et is indicated and on the related population (UNSCO). 2018. International Technical Guidence on Sexuality Eduction. An Evidence-informed Approach, p.129.

Table 3: Schoo	ol-Based Sex Educ	cation Impacts or	Youth Particip	ants
	EVIDENCE O	<b>JEFFECTIVENESS</b>	-	
		School-Based		Abstinence-only
	Compreh	iensive Sex Educatio	n (CSE)	Education (AE)
		<b>103 Studies</b>		<b>17 Studies</b>
<b>Effectiveness:</b> a significant	Combined	Non-U.S.	U.S.	U.S.
improvement for the intended	Non-U.S. & U.S.	39 programs	40 programs	16 programs
population, on key protective	79 programs	(43 studies)	(60 studies)	(17 studies)
indicators, at least 12 months	(103 studies)			
post-program, without other				
negative outcomes				
Reduced Pregnancy	1 program	1 program	0	0
Reduced STDs	1 program	1 program	0	0
Increased Abstinence (Delay Sexual Initiation)	3 programs	1 program	2 programs (3 studies)	7 programs
Increased Consistent Condom Use (CCU)	0	0	0	N.A.
Increased Condom Use (Frequency, Use at Last Sex)	2 programs	0	2 programs	N.A.
<b>Dual Benefit</b> (Increased Abstinence & Condom Use in	0	0	0	N.A.
same population)				
Total #Programs with	7 programs	3 programs	4 programs	7 programs
<b>Evidence of Effectiveness</b>	(8 studies)	(3 studies)	(5 studies)	(7studies)

School-Based       School-Based         Image: Sex Education (CSE)       103 Studies         Image: Sex Education (CSE)       100 Studies         Image: Sex Education (CSE)       39 programs         Image: Sex Education (CSE)       100 Studies         Image: Sex Education (CSE)       39 programs         Image: Sex Education (CSE)       39 programs         Image: Sex Education (CSE)       100 Studies         Image: Sex Education (CSE)       11%         Imag	Table 4: Sch	ool-Based Sex E EVIDENCE	ducation Im of SUCCESS v	oacts on Youth Part s. FAILURE	icipants	
Comprehensive Sex Education (CSE)         ID3 Studies         ID3 Studies         Combined       Non-U.S.       Africa       U         Non-U.S. & U.S.       39 programs       (Sub-set of non-U.S.)       40 pro         Studies showing evidence of effectiveness as a proportion of #studies that measured long-term       8/62       3/28       2/19       5/         Africa       Non-U.S.       Non-U.S.       Non-U.S.       Non-U.S.       Non-U.S.       Non-U.S.         Success Ratio       Combined       Non-U.S.       Non-U.S.       Non-U.S.       Non-U.S.       Non-U.S.       Non-U.S.       Non-U.S.         Success Ratio       Retudies showing evidence of effects on key indicators       Non-U.S.			Scho	ool-Based		Abstinence-only
Integration     Inte		-	Comprehensive	Sex Education (CSE)		Education (AE)
Combined     Non-U.S.     Africa     U       Non-U.S. & U.S.     39 programs     (Sub-set of non-U.S.)     40 pro       79 programs     79 programs     (43 studies)     26 programs     40 pro       70 studies)     (103 studies)     (43 studies)     (29 studies)     40 pro       Success Ratio     (103 studies)     (3/19     5/19     5/       effectiveness as a proportion of #studies     13%     11%     11%     11%			10	3 Studies		<b>17 Studies</b>
Non-U.S. & U.S.       39 programs       (Sub-set of non-U.S.)       40 pro         79 programs       79 programs       (43 studies)       26 programs       40 pro         Success Ratio       (103 studies)       (43 studies)       26 programs       (60 st         Success Ratio       (103 studies)       (43 studies)       26 programs       (60 st         studies showing evidence of effectiveness as a proportion of #studies that measured long-term       8/62       3/28       2/19       5/         effects on key indicators       13%       11%       11%       11%       11       11		Combined	Non-U.S.	Africa	U.S.	U.S.
79 programs     79 programs     (43 studies)     26 programs     (60 st       Success Ratio     (103 studies)     (103 studies)     (29 studies)     (51 studies)       Success Ratio     8/62     3/28     2/19     5/       • #Studies showing evidence of effectiveness as a proportion of #studies that measured long-term     13%     11%     11%     11%		Non-U.S. & U.S.	39 programs	(Sub-set of non-U.S.)	40 programs	16 programs
Success Ratio     Success Ratio       • #Studies showing evidence of effectiveness as a proportion of #studies that measured long-term     8/62     3/28     2/19     5/       • #Studies that measured long-term     13%     11%     11%     11		79 programs (103 studies)	(43 studies)	26 programs (29 studies)	(60 studies)	(17 studies)
#Studies showing evidence of 8/62 3/28 2/19 5/     effectiveness as a proportion of     #studies that measured long-term     ffects on key indicators     effects on key indicators	Success Ratio					
#studies that measured long-term 13% 11% 11% 11% 11% 11% 11%	#Studies showing evidence of	8/62	3/28	2/19	5/34	7/15
	enectiveness as a proportion of #studies that measured long-term effects on key indicators	13%	11%	11%	15%	47%
	Failure Rate					
Ercent of studies that measured <b>87% 89% 89% 89% 81</b> and found none	<ul> <li>Percent of studies that measured long-term effects on key indicators and found none</li> </ul>	87%	89%	89%	85%	53%

Table 5: 3	School-Based Sex	Education Impacts	s on Youth Particip	ants
	EVIDENC	E of HARMFUL EFF	ECTS	
		School-Based		Abstinence-only
	Compr	ehensive Sex Educati	on (CSE)	Education (AE)
		<b>103 Studies</b>		<b>17 Studies</b>
Negative Effects (a decrease	Combined	Non-U.S.	N.S.U	N.S.U
in sexual health or protective	Non-U.S. & U.S.	39 programs	40 programs	16 programs
behavior of any duration for the intended population or a substantial subgroup)	79 programs (103 studies)	(43 studies)	(60 studies)	(17 studies)
Increased Pregnancy	1	0	1	0
Increased STDs	1	1	0	0
Increased Sexual Activity (Initiation/Frequency of Sex)	7	5	2	0
Decreased Condom Use	с	1	1	0
Increased Oral Sex	1	0	1	0
Increased #Sex Partners	2	2	1	1
Forced or Coerced Sex	1	2	0	0
Increase in Paid Sex	1	1	0	0
Net #Programs/Studies	14 programs	9 programs	5 programs	1 program
with Negative Effects (some	18%	23%	13%	6%
programs/studies found more	15 studies	9 studies	6 studies	1 study
than one harmful effect)	15%	21%	10%	6%

Table 6: Sch	nool-Based Sex E RATE of EFI	Education Imp FECTIVENESS*	acts on Youth Parti vs. HARM	cipants	
		Schoo	ol-Based		Abstinence-only
		Comprehensive :	Sex Education (CSE)		Education (AE)
		103	Studies		<b>17 Studies</b>
<b>Effectiveness:</b> a significant improvement for	Combined	Non-U.S.	Africa	U.S.	U.S.
the intended population, on sexual initiation,	Non-U.S. & U.S.	39 programs	(Sub-set of non-U.S.)	40 programs	16 programs
condom use, pregnancy or STDs, at least 12	79 programs	(43 studies)	26 programs	(60 studies)	(17 studies)
months post-program, without other negative	(103 studies)		(29 studies)		
Bate of Effectiveness					
<ul> <li>#Studies showing evidence of</li> </ul>	8/62 studies	3/28 studies	2/19 studies	5/34 studies	7/15 studies
effectiveness as a proportion of					
#studies that measured long-term	12%	11%	11%	15%	702.1
effects on key indicators	0/01	0/ <b>TT</b>	0/11	2/01	0/1+
Rate of Harm					
<ul> <li>a significant decrease in sexual</li> </ul>					
health or protective behavior	15 Studioc	0 Studiac	7 Studiec	6 Studios	1 Study
<ul> <li>of any duration</li> </ul>		a Judico		0 2100163	т эгииу
<ul> <li>for the intended population or a</li> </ul>	7 1 0/	70 F C		<b>1 O</b> D/	207
substantial subgroup	%CT	0/17	24%	×01	0%0
<ul> <li>some programs/studies found more</li> </ul>					
than one harmful effect					
* It should be noted that estimating a rate of success	s/effectiveness is limited	by the number of stuc	lies that actually measured at	least a 12-month pos	t-program effect, as well

as the high number of studies that did not make it into the database because of poor scientific quality. So the true effectiveness rate is unknown and these estimates should not be considered as absolute. But they do represent the credible *available* evidence.