Abstinence Education: A Policy Analysis

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Spring 2016

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Submitted in partial fulfillment of the

requirements for the degree of Master of Public Health

Feinberg School of Medicine

Program in Public Health

Northwestern University

Chicago, Illinois

Abstract

Background: In recent years, the United States (U.S.) has had the highest rate of adolescent pregnancy of any of the world's developed countries (1). At the same time, the burden of new sexually transmitted infection (STIs) cases in the U.S. has increased disproportionately among the adolescent population: an estimated 50% of new STI cases occur in U.S. in the 15 to 19-year-old adolescent population (2). School-based sexual health education programs have been seen as one avenue to address these issues with two vastly different approaches emerging in recent years: abstinence education and comprehensive sexual education (CSE). The question of how to reduce teen pregnancy and STI rates in the U.S. continues to be debated at federal, state and local levels. The purpose of this policy analysis is to examine sex education policies and compare and contrast the two sexual health education approaches to determine which is more effective in reducing pregnancy and STI rates. I hypothesize that CSE programs will be more effective at reducing teen pregnancy and STI rates with one explanation being the dual foci of CSE programs on abstinence and risk reducing behaviors, such as contraceptive use.

Methods: This analysis was conducted following Collins' (3) "Health policy analysis: a simple tool for policy makers." In short, Collins proposes that policy researchers should: 1) define the context of the problem, 2) state the problem, 3) provide evidence, 4) consider different policy options, 5) project the outcomes, 6) apply an evaluation criterion, 7) weigh the outcomes, and 8) suggest a decision.

Results: Research has shown that CSE programs are effective in delaying the initiation of sexual activity, reducing the number of sexual partners, increasing contraceptive use and reducing the frequency with which adolescents are having sexual intercourse. In addition, CSE programs have long-term effects with some programs showing behavior changes lasting upwards of three years. In comparison, abstinence education programs lack scientific evidence to support their claims of effectiveness.

Conclusion: Results of the policy analysis support the hypothesis that CSE programs are the more effective approach to reducing teen pregnancy and STI rates. Long-term outcomes of CSE programs include delayed initiation of sexual activity, fewer sexual partners, and increased contraceptive use. All of these factors are critical in reducing teen pregnancy and STI rates. The recommendation of this policy analysis is for broader U.S. federal support for CSE programs at national, state and local levels

Implications for Public Health Practice: Sexual health education in the U.S. has been a contentious issue over the past 30 years. The debate has always centered on the role of sexual education: should it only objectively relay the facts about sexual health or simply encourage youth to refrain from sexual activity? There is broad support for abstinence as a necessary and appropriate part of sexuality education in public schools. Controversy over abstinence education arises when it is provided as the sole choice for teens and when health information on other choices is restricted or misrepresented.

Introduction

In the U.S. the debate between abstinence education and comprehensive sex education (CSE) has spanned the past 30 years. Although teen pregnancy rates in the U.S. have continued to drop over the past 20 years, it still has the highest teen pregnancy rate among developed nations (1). The adolescent population is also disproportionately affected by STIs, accounting for 50% of all new STI cases annually (2). Two approaches have emerged within the past 30 years with uniquely different approaches to reducing both teen pregnancy and STI rates: abstinence education and CSE.

Given the rates at which youth are facing pregnancy and STIs, school-based sex education curricula have been identified as one approach to mitigating these adverse health outcomes. The National Center for Education Statistics (4) estimates that in 2015, 50.1 million students attended either public primary or secondary schools with an additional 4.9 million attending private schools. Schools, therefore, provide access to this population and an opportunity to provide sexual health education. The question remains, which intervention is most likely to reduce adverse health outcomes for teens: abstinence education or CSE?

The purpose of this policy analysis is to examine the difference between the abstinence education and CSE approaches to sexual health education. The primary goal is to explore both approaches to sexual health education and to determine the more effective of the two for reducing teen pregnancy and STI rates. I hypothesize that CSE programs will be more effective at reducing teen pregnancy and STI rates because CSE programs have a dual focus on abstinence and risk reducing behaviors such as contraceptive use.

Methods

This policy analysis is based on *Health policy analysis: A simple tool for policy makers* developed by Collins (3). Published in 2004, the Collins model aims to analyze policy content and to offer practical guidance on policy and how to link it to public health topics. To accomplish this analysis, Collins suggests an eight-step approach to studying health policy:

1. **Define the context**: provide the context of the policy issues under debate.
2. **State the problem**: define the healthcare problem.
3. **Search for evidence**: discuss the literature and sources of information pertaining to both intervention approaches.
4. **Consider different policy options**: consider multiple courses of action.
5. **Project the outcomes**: describe potential results.
6. **Apply evaluative criteria**: apply selected criteria against which to measure the projected outcomes.
7. **Weigh the outcomes**: review the projected outcomes based on actual outcomes of abstinence education and CSE programs.
8. **Make the decision**: Recommend a policy option based on factors such as feasibility of the intervention, material, financial and human resources needed for intervention.

The Collins analysis tool has been used on adolescent health topics both nationally and internationally (5,6). By no means a complete list, some of the previous topics that have been studied using Collins' method include: adolescent tobacco use, alcohol use, physical education polices, and infant hearing screenings. Thus, Collins' model appears to be relevant to apply

across a variety of settings, and will be applied here to the topic of provision of sexual health information to adolescents. To the writer's knowledge, the Collins' method has not been used to analyze adolescent sexual health education in the U.S. to date.

Step 1 - Define the Context

There are primarily two competing sexual health education approaches in U.S. schools: abstinence education and CSE. According to the Guttmacher Institute (7), a total of 24 states and the District of Columbia (DC) mandate some form of sexual health education. Twenty-one states and DC require that sexual health education includes human immunodeficiency virus (HIV) education. Two states have a general mandate for sex education that do not specify topics to be covered. Thirty-nine states require that abstinence be included in sexual health education. Of those 39 states, 27 require that abstinence be stressed (7).

Step 1.1 – Abstinence Education

The core message of abstinence education is that a person should abstain from sexual intercourse until he or she is in a committed monogamous marriage (8). According to the federal government's A-H definition of abstinence (full definition available in Appendix A, Table 1), abstinence education is to be taught as the expected sexual norm for adolescents (8). Abstinence education messaging also includes that the only way to absolutely (100%) avoid out-of-wedlock pregnancy, STIs and other adverse health outcomes is to abstain (8) from sexual activity. Under the federal government's abstinence education policy, discussion surrounding condoms and other contraceptives is strictly limited to their failure rates (9).

Social conservatives believe that any discussion of sexuality with youth, especially when discussing topics such as contraception, can led to elevated levels of youth sexual activity, teenage pregnancy, and STIs. Further, it is believed that adults who speak to youth about sex and sexuality should limit their conversations so as not promote destructive or immoral thoughts or behaviors (10). In addition, many social conservatives see abstinence education as a way of restoring "traditional values" of sexuality, gender, and the family (10).

The primary mechanism for measuring the success of abstinence educations is the age of sexual initiation (11). The later sexual initiation takes place, the more successful the abstinence education program is perceived to be (11). Proponents of abstinence education argue that delaying the initiation of sexual activity will reduce the number of years an adolescent is sexually active as well as the potential number of sexual partners, all of which will reduce teen pregnancy and STI cases (12).

The majority of pro-abstinence education studies have shown that students participating in abstinence education programs routinely had lower rates of sexual initiation at follow-up compared to students in control groups (12, 13). "If the program [abstinence education] is designed well, implemented well, has the right kind of teachers, focuses on the right kind of issues…we see impact (11)." Weed describes the impact of a properly designed program as having the ability to cut in half for significant periods of time, teen sexual activity (8). Properly designed and implemented programs can also go beyond the superficial impact and alter the cognitive mediators that bring about behavioral change (13). Abstinence education literature has suggested that abstinence education as a primary prevention method

is a valid one that can fully prevent adverse health outcomes such as teen pregnancy and STIs through delayed sexual initiation (8).

This point of view has been reflected in sex education programs that have been funded by the federal government since the early 1980s. Sexual health education in the U.S. was formally launched at the federal level in 1981 with the passing of the Adolescent Family Life Act (AFLA). The AFLA was designated for programs that promoted premarital abstinence, discouraged abortion, and promoted adoption as an option for pregnant teens (10). There was little initial funding for AFLA but it provided the support needed for the widespread expansion of abstinence education programming that continued through the mid-1990s (14). AFLA grants were awarded not only to states, but also to public or private non-profit organizations, including faith-based organizations or agencies (15).

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (Title V, Section 510) expanded funding opportunities for states to focus on groups of youth who were considered to be most in danger of having children out-of-wedlock. Sexual initiation occurs primarily in the teen years, but earlier initiation (prior to the age of 13) is especially high among minority youth (16). Funding focused on providing mentoring, counseling and adult supervision to promote abstinence from sexual activity (17). Funding levels for Title V, Section 510 programs are allocated based on the ratio of the number of low-income children in a state to the total number of low-income children in all states (15).

In 2000, the Community-Based Abstinence Education (CBAE) projects were earmarked in the maternal-child health block grant for the Special Project of Regional and National Significance (SPRANS) program (18). SPRANS grants were administered by the U.S. Department

of Health and Human Services (HHS) and provided directly to community and faith-based organizations or agencies, bypassing state health departments that were responsible for the Title V, Section 510 grant funds (14 & 18). Funding for the SPRANS program created a more "rigid" and "pure" approach to abstinence education in response to concerns that states were not utilizing funds for direct programming. States were charged with using SPRANS funds for "soft" activities such as media campaigns and programming targeting younger adolescents (18).

Federal funding for abstinence education has continued to grow since its inception. In 1981, AFLA first introduced abstinence funding for states at $7 million (10). Title V, section 510, significantly increased federal funding for abstinence education programs from $75 million in fiscal year (FY) 2001 to $158 million in FY 2005 (15). The FY 2007 budget allocated $13 million to AFLA, $50 million under Title V, Section 510, and $113 million under CBAE bringing the total amount of federal funding for abstinence education programs to $176 million (14).

To receive federal funding for abstinence education programming, recipients have to follow a specific eight-point, A-H definition of abstinence, and limit the information provided about condoms and contraceptives to their failure rates (14). This federal A-H definition does not account for the alternative risky sexual behaviors that many teens participate in while remaining "abstinent." Touching, kissing, mutual masturbation, oral sex, and anal sex are alternative activities that youth can participate in to feel "close (18)." For the purpose of this policy analysis, the author is defining abstinence as not participating in vaginal intercourse.

Abstinence education supporters have often expressed concern over CSE programs and their inclusion of information about condoms and contraceptives in the curricula. Their greatest

concern is that by including information on condoms and contraceptives, CSE programs will increase the frequency of sexual activity and hasten sexual initiation (9).

Step 1.2 – Comprehensive Sex Education

Comprehensive sex education programs teach abstinence as the primary prevention method for teen pregnancy and STIs, but also include information on contraceptives, healthy relationships, human development, and negotiation skills. The core message of CSE programs is to promote healthy decision making while providing youth with the tools and skills necessary to keep themselves safe (19). Public health officials worry that by not including information on condoms or contraceptives, abstinence education places youth at significantly higher risk for pregnancy and STIs (12). Simply put, adolescents would lack basic information on how to keep themselves safe from teen pregnancy and STIs (12). Of additional concern is the idea that abstinence education places the majority of its focus on the sexually uninitiated which could potentially alienate youth who have some sexual experience (20).

Prior to 2010, CSE programs fought an up-hill battle for federal funding. In 2010, for the first time, CSE programs were funded at the federal level (21). President Barack Obama and Congress eliminated funding for the existing AFLA and CBAE programs and created two new sex education initiatives to "support evidence-based programs and innovative approaches to prevent unintended teen pregnancy and STIs, including HIV (21)" in FY 2010.

In the Consolidated Appropriations Act of 2010, President Obama allocated $114.5 million to the President's Teen Pregnancy Prevention Initiative (TPPI) (21). The program is administered through the Office of Adolescent Health in HHS and supports medically accurate

and age appropriate programs that reduce teen pregnancy, behavioral risk underlying teenage pregnancy, or other associated factors (22). The initiative was broken down into three tiers. The first tier is for replication of programs found to be effective based on research evidence, while tier two funds promising new or community-wide initiatives. The third tier funds research, evaluation, and technical assistance for continued research and development in the field of sexual health education (23).

The second program was introduced in the Affordable Care Act (ACA) which allocated $75 million per year in funding for the Personal Responsibility Education Program (PREP). Overseen by the Administration for Children and Families in HHS, the program aims to provide "individual states with grants for comprehensive sex education programs that provided young people with complete, medically accurate, and age-appropriate sex education in order to help them reduce their risk of unintended pregnancy, HIV/AIDS, and other STIs (22)." State grants made up the bulk of the funding, accounting for $55 million of the $75 million available. An additional $6.5 million was allocated to research, training, and technical assistance with the remaining $13.5 split between interventions specifically aimed at tribes and tribal organizations and research and evaluation of innovative approaches and promising models to prevent teen pregnancy (24).

Public opinion suggests that the majority of Americans support CSE programs. Approximately 82% of respondents in an Annenberg National Health Communication Survey (25) indicated that they support sex education programs that teach both abstinence and contraception to prevent pregnancy and STIs. When three types of sex education were placed

side-by-side (abstinence, CSE, condom instruction), abstinence education received the lowest levels of support out of the three at 36% and the highest levels of opposition at 50% (25).

Step 2 – State the Problem

There are multiple adverse health outcomes that are associated with teen sexual activity, including: harmful social, physical and psychological effects; pregnancy; and STIs, to name a few. This policy analysis will focus on two of these adverse health outcomes, pregnancy and STI rates, as these are the two most studied outcomes in abstinence education and CSE literature. In addition, both teen pregnancy and STIs have short and long-term consequences.

By many measures, such as teen pregnancy rates and contraceptive use, teens in the U.S. are making healthier decisions about sex than they were 20 years ago. The vast majority of sexually experienced teens (both male and female) used contraceptives the first time they had intercourse; 78% for females and 85% for males (26). Birth rates for teen mothers has been on the decline for the past 20 years. In 1991, the birth rate was 61.8 per 1,000 adolescent females compared to 24.2 births per 1,000 in 2014 (27).

Although teen pregnancy rates in the U.S. have continued to decline since 1996, the U.S. still has the highest rate of teen pregnancy in comparison to other developed nations (26). While teens in the U.S. and Europe have similar levels of sexual activity, U.S. teens are less likely to use effective contraceptive methods and, therefore, have substantially higher pregnancy rates than European teens (26). Research shows that approximately three out of every 10 young women will become pregnant by the time they turn 20 (28). Also, fewer teens are marrying than were 20 years ago. “With fewer teens entering into marriage, the proportion of

births to unmarried teens, with some variation depending on geography and ethnic group, has increased dramatically – 89% in 2011 versus 29% in 1970 (8)."

A second major trend in the U.S. is the growing rate of STIs among the U.S. adolescent population. While adolescents 10 to 19 make up 12% of the U.S. population (29), the CDC (30) estimates that nearly 20 million new cases of STIs occur annually and half of those are in youth and young adults aged 15-24. This statistic demonstrates the large burden of STIs on the youth population, given that this age group represents only 25% of the sexually active population. Annually, one in four teens will contract a STI and one in two will contract an STI by the age of 25 (30). The STI rate for teens and young adults ages 13-24 is especially poor when it comes to HIV. They accounted for approximately 21% of all HIV diagnoses in the U.S. in 2011. The Kaiser Family Foundation (31) estimates that over 34,000 young people were living with HIV in 2009.).

Research shows that early initiation of sexual activity places youth at even greater risk for adverse health outcomes. Among high school students surveyed by the CDC in 2013, 47% had sexual intercourse (30), and 41% of youth did not use a condom the last time they had sex. When comparing sexually active teens to those with early initiation of sexual intercourse and their use of contraceptive the last time they had sexual intercourse, there is a 37% difference in females and 44% difference in males (26, 30). HHS reports that in 2014, approximately 249,000 babies were born to teens aged 15-19 years of age (27). Nearly 98% of those births happened outside of marriage (27).

Teen pregnancy rates differ significantly by race, ethnicity, age, and region of the country. Birth rates are higher among minority communities such as African Americans and Latinos compared to their Caucasian counterparts. There are substantial geographic variations

in teen pregnancy as well. In 2013, U.S. teen pregnancy rates were the highest in the Southern states while the lowest rates were in the Northeastern part of the country (9).

Teen pregnancy is also associated with negative consequences for both the parents and their offspring. Teen parents are less likely to finish high school and more likely to rely on public assistance in the future; be poor as adults (27); have repeat pregnancies; be single mothers; and experience divorce (8). By age 22, approximately 50% of teen mothers will receive their high school diploma and 30% will earn their general education development (GED) certificate. In comparison, 90% of non-teen mothers will complete high school (32). Only 10% of teen mothers will complete a two or four-year college program. Teen mothers are not the only ones affected by teen pregnancy. Teen fathers are 25-30% less likely to graduate from high school compared to non-teen fathers (32).

Children born to teen parents are also more likely to face adverse experiences when compared to children born to older adults. They have an increased risk of low birth weight and infant mortality. They may receive lower levels of emotional support and cognitive stimulation, have fewer skills and are less prepared to learn when they enter kindergarten (32). Children of teen parents are more at risk for behavioral problems and chronic medical conditions. They rely more heavily on publicly funded healthcare, have higher rates of foster care placement, and are more likely to be incarcerated during their adolescence. In addition, they have lower school achievement and greater high school drop-out rates. Children born to teens are more likely to give birth as a teen. These children are more likely to be unemployed or underemployed as young adults (32).

Step 3 – Search for Evidence

In order to complete this policy analysis a variety of literature, peer-reviewed articles, and reports from public and private non-profit organizations were referenced. While the writer relied primarily on peer-reviewed sources for key scientific information, policy-relevant information and viewpoints about abstinence education were often only available from other sources such as government reports and websites or reports from advocacy organizations. Reports or papers from advocacy organizations have been included as sources when the opinions expressed in them were considered important in the debate or when additional information was not available from peer-reviewed sources.

Sources of information outside of peer-reviewed journal articles included data from the Centers for Disease Control and Prevention (CDC), the National Campaign to Prevent Teen Pregnancy, Guttmacher Institute, the Heritage Foundation, Kaiser Family Foundation (KFF), National Abstinence Education Association (NAEA), the Sexuality Information and Education Council of the United States (SIECUS), and U.S. Congressional Testimony and Public Reports.

Peer-reviewed sources were sought through Google Scholar® and EBSCO Academic Search Complete®. Searches for literature included terms such as: *abstinence, abstinence only, abstinence only sex education, abstinence education, comprehensive sex education, sex education, and sexual health education.* A snowball approach was taken to identifying additional literature resources. Reference lists from the initially returned peer-reviewed articles were used to identify additional sources of reliable information on both abstinence education and CSE programs.

Step 4 - Consider Different Policy Options

Recent years have brought emerging scientific evidence on both abstinence education and CSE programs. The quality and quantity of evaluation research in the field of sexual health education has improved dramatically with more persuasive evidence that a limited number of sex education programs can reduce sexual risk-taking behaviors in youth and, therefore, decrease teen pregnancy and STI rates (9).

Step 4.1 – Abstinence Education

Research supporting abstinence education suggests that this sexual health education approach can delay sexual initiation in youth and, in some cases, postpone future sexual encounters for youth who are sexually experienced. According to the NAEA, abstinence education is a "population-wide approach, communicating the best health messages broadly and in a manner that resonates with a variety of sub-groups of the general population (33, pg. 6)." It is an approach that gives youth the information and skills necessary to help them avoid possible negative consequences of teen sexual activity including teen pregnancy and STIs (33). Although primarily directed at youth who have not engaged in sexual behaviors, abstinence education can also include cessation messaging for those who are sexually active, offering the support and skills necessary for sexually experienced youth to return to an "optimally healthy lifestyle free of all sexual risk (33, pg. 6)."

Abstinence education also utilizes a holistic approach to sexual education. It includes information on the non-physical consequences associated with youth sexual activity, the skills necessary to make healthy decisions, information on healthy relationships, and medically

accurate information on condoms. Abstinence education stresses to youth that the only absolutely (100%) safe method to remain untouched by teen pregnancy and STIs is through abstinence (33).

Step 4.2 – Comprehensive Sexual Education

In contrast to abstinence education, CSE programs have four main goals: "1. to provide accurate information about human sexuality; 2. to provide an opportunity for young people to develop and understand their values, attitudes, and insights about sexuality; 3. to help young people develop relationship and interpersonal skills, and 4; to help young people exercise responsibility regarding sexual relationships which includes addressing abstinence, pressures to become prematurely involved in sexual intercourse, and the use of contraception and other sexual health measures (19)."

Research suggests that CSE programs can reduce teenage pregnancy and STIs by emphasizing abstinence as the core message, but by also offering medically accurate information on contraceptives to teens who are or are not sexually active (34). Similar to abstinence education, CSE proponents support a holistic approach with age-appropriate, medically accurate and complete information that aims to help youth reduce their risk for unintended pregnancy and STIs (35). Programs aim to teach topics and skills related to sexuality in order to assist youth with making heathier decisions when they choose to be sexually active. Human development, relationships, decision making, abstinence, contraception and disease prevention are just a few of the topics that comprise CSE programs (35). In addition, CSE encourages family communication about sexuality; teaches adolescents how to make

responsible decisions about sexuality including how to avoid unwanted verbal, physical and sexual advances; and finally, how alcohol and drugs can affect responsible decision making (35).

Step 5 - Project the Outcomes

One of the most cited sources of documented outcomes of abstinence education is a nine-year experimentally-based study by Mathamatica Policy Research Inc. (36). This report, published in 2007, was commissioned by HHS' Office of the Assistant Secretary for Planning and Evaluation to act as a scientific evaluation of Title V, Section 510, Abstinence Education Program. The study included four abstinence education programs that were considered to be the most promising abstinence education programs across the U.S. Study sites included four different states, Florida (Miami), Wisconsin (Milwaukee), Virginia (Powhatan) and Mississippi (Clarksdale). It included over 2,000 participants with a follow-up response rate of between 80-84% (36). Participants of the study were a mix of races and ethnicities, socioeconomic status, urban and rural, middle and upper elementary grades, and varied in the number of program hours.

Overall, the Mathamatica report (36) found abstinence education programs showed "no overall impact on teen sexual activity, no differences in rates of unprotected sex, and some impacts on knowledge of STIs and perceived effectiveness of condoms and birth control pills (36, pg.59)." In addition, the Mathamatica (36) study found that adolescents who participated in the abstinence education programs were no more likely to abstain from sex than students who had not participated in the programs. In fact, program participants who reported having had sex in follow-up surveys did so at the same age, had a similar number of sexual partners,

and were equally likely to use condoms or other forms of contraception as the non-participants (36).

Although there is evidence to support that abstinence education does delay sexual initiation (9), pro-CSE researchers point out that abstinence education research has been scarce, and suggest that it uses unreliable evaluation methods that often produce mixed results. Abstinence education studies have primarily included white, middle-class, junior and senior high school students, and only assessed students' short-term beliefs, attitudes, and knowledge (37). Sexual behavior has also rarely been tested in abstinence education evaluations. When tested, results have been modest with only a handful of evaluations finding the desired behavioral effect (38). Moreover, when seen, these behavioral effects have only been found in small sample sizes where the students were known to be virgins prior to the start of the program (38).

A 2001 Institute of Medicine (IOM) report found that "two-recent reviews of the literature on abstinence-only education programs concluded that the evidence was insufficient to determine whether abstinence programs decrease sexual activity (39, pg. 118)." The weight of the evidence indicates that abstinence education programs do not delay the onset of intercourse; however, there were significant methodological limitations that could have obscured the impacts of abstinence education interventions (39). The IOM states that investing millions of dollars of federal funding in abstinence education programs is poor fiscal and public health policy due to the lack of evidence supporting them. (39)," In conclusion, the IOM report recommends "eliminating congressional, federal, state, and local requirements that public funds be used for abstinence-only education, and that states and local school districts

implement and continue to support age-appropriate comprehensive sex education and condom availability programs in schools (39, pg. 120)."

The same IOM report concluded that "studies reviewing the scientific literature, as well as expert panels that have studied this issue [sex education], have concluded that comprehensive sex and HIV/AIDS education programs and condom availability programs can be effective in reducing high-risk sexual behaviors among adolescents (39, pg. 117)."

In addition to the IOM report, The Guide to Community Preventive Services finds "insufficient evidence to determine the effectiveness of group-based abstinence education interventions delivered to adolescents to prevent pregnancy, HIV and other [STIs] (40)." This recommendation is made based on evidence being inconsistent across research studies. Of the 21 studies on which the Community Guide based its recommendation, it found that sexual activity did decrease in abstinence education programs by approximately 16%; however, the effect estimates differed by study design with larger effects for nonrandomized controlled trials compared to randomized controlled trials (40). The reviewed studies also suggest that there are statistically insignificant outcomes for reductions in frequency of sex and STIs in abstinence education programs. The Community Guide also found abstinence education to have no meaningful impact on number of sexual partners, use of protection, and unprotected sexual activity (40).

On the other hand, a wide variety of literature supports CSE programs. Research has shown that CSE programs are effective at reducing sexual activity and youth sexual risk-taking behaviors, such as multiple partners, while increasing condom and contraceptive use (9). Comprehensive sex education programs have also been shown to have long-term effects.

Behavior changes have lasted up to three years or to the end of the study (9). In addition, CSE programs have been found to be effective in diverse racial, ethnic and economic communities. Programs that were effective in one state were equally effective in other states, within different communities, among all genders, and with both younger and older students (9). CSE programs cannot be considered a one-size-fits-all approach. Programs must be modified and designed for specific subgroups within the population to make them successful (9).

CSE programs that lower sexual risk-taking behaviors such as increasing condom use and reducing frequency and number of partners by even a third can be considered a successful program because reducing sexual risk taking behaviors will reduce teen pregnancy and STI rates (9). In his 2007 comprehensive review of CSE programs, Kirby (9) found that CSE programs do not increase frequency or hasten sexual initiation. In fact, many CSE programs have proven to delay both of these behaviors. “The results, therefore, provide strong evidence that comprehensive programs [CSE] do not increase sexual behavior (9).” Of the 40 studies that measured delay in initiation of sex, 16 (40%) studies showed a significant delay in initiation of sexual activity for at least six months (9). Of the 27 studies that measured frequency of sex, eight (30%) found that programs reduced the frequency of sexual activity (9). Of the 29 CSE programs that measured the number of sexual partners, 12 (41%) of the programs saw lower reported number of sexual partners (9). Kohler et al. (41) found that adolescents that participate in CSE programs are also 50% less likely to become pregnant than adolescents who participated in an abstinence education program.

Unlike abstinence education, The Guide to Community Preventive Services recommends “group-based comprehensive risk reduction [CSE] interventions delivered to adolescents to

promote behaviors that prevent or reduce the risk of pregnancy, HIV, and other STIs (42)." The Community Guide found sufficient evidence that CSE programs reduce the number of self-reported risk behaviors including: "engagement in any sexual activity, frequency of sexual activity, number of partners, and frequency of unprotected sexual activity (42)." Comprehensive sex education programs were also found to increase the self-reported use of protection against STIs and a reduction in the number of self-reported and clinically-documented STI cases (42).

An international example of a successful national CSE program was conducted in the Netherlands. In 1993, the Netherlands mandated that all students receive some form of sexuality education in schools (43). Some flexibility was built into the mandate allowing schools to determine the materials, methods, approach and time spent on each objective (44). While flexible, the Netherlands mandates that certain core subject be covered, including: pregnancy, STIs, sexual orientation, homophobia, value clarification, respect for differences in attitudes, and skills for healthy sexuality (43). "The underlying principle [in the Netherlands] is straightforward: Sexual development is a normal process that all young people experience, and they have a right to frank, trustworthy information on the subject (45)."

It is clear that the Netherlands' CSE mandate is working: the Dutch have some of the best outcomes in the world when it comes to teen health. Compared to the U.S., teens in the Netherlands have sex at a later age, have increased contraceptive use at sexual initiation (45), higher birth control use (46), and boast one of the lowest teen pregnancy rates in the world (1). In addition, "students who had completed comprehensive sex education in the Netherlands were also found to be more assertive and better communicators… (45)."

The Dutch curriculum, *Long Live Love* (LLL), is a stand-alone, intra-curricular comprehensive program that is taught over a six-week period (47). When developing the curriculum, writers took into consideration students with diverse cultural backgrounds, differences in values and principles relating to sexuality; diversity in the way young people begin relationships; differences between boys and girls; and young people from different regions (47). The overall aim of LLL is to help student learn to enjoy their sexuality and how to remain safe when they are ready. Lessons in LLL include topics that are similar to those covered in U.S. CSE programs: puberty, falling in love, relationships, homosexuality, what students want, drawing the line and assertiveness, the internet, the first time, problems with sex, getting help, safe sex, condoms and contraceptives (47).

Step 6 – Apply an Evaluative Criterion

CSE programs have been shown to be cost effective both within the U.S. and internationally. Demonstrated cost-effectiveness is especially true when the programs are compulsory, adapted from existing models, and integrated into the mainstream curriculum (48). Compulsory programs are most cost-effective because they reap the benefits and greater impact of full coverage of the student population (48). An example of a cost-effective program is LLL in the Netherlands. Kivela (48) estimates that the cost-per-student is U.S. $33. This amount may seem high initially, but if you consider “budget outliers,” which are regular expenses such as teacher salaries, the cost-per-student falls to U.S. $10 (48). Research (49) shows that school health programs that educate students about healthy sexual behaviors that help prevent pregnancy and STIs save money in the long run. Wang et al. (49), found that, on

average, $2.65 is saved in medical costs and lost productivity for every dollar invested in CSE programs. A Brooking Institute brief (50) agreed and found that broader "publicly financed mass media campaigns, comprehensive teen pregnancy prevention programs, and expansions in government subsidized family planning services are estimated to save taxpayers between two and six dollars for every dollar spent on them (50, pg. 6)."

The Guide to Community Preventive Services completed an economic review of CSE programs and found them to be cost effective (42). The review found that school-based and curriculum-based education were the lowest cost programs for implementation. Participation in CSE programs saw a "yield of between $2.70 to $3.70 in returns based on saving in healthcare costs related to pregnancies, HIV and STIs and improvement in income associated with higher educational attainment (42)." In addition, CSE programs resulted in healthcare savings from prevented pregnancies and STIs that ranged from $5.80 per participant per year for those aged 13-14 years and $338 per participant per year for youth aged 18-19 years (42).

Some abstinence education studies found that long-term outcomes, such as delayed sexual initiation required "booster" sessions. In comparison, CSE programs are designed to be provided sequentially in school from kindergarten through grade 12. A scaffolding approach is taken with CSE programs. In theory, students build upon what was taught in previous years, thus providing ongoing "booster" sessions. Comprehensive sex education programs have the long-term potential of being more cost-effective than abstinence education because they do not require additional time besides what is already built into CSE programs.

Step 7 - Weigh the outcomes

Having accurate, research-based information on what works in the field of sexual education is important for communities, practitioners, educators, and parents trying to make informed decisions about preventing teen pregnancy and STIs. Making true and lasting change in teen pregnancy and STI rates requires not only youth education, but also broader efforts to engaged and influence popular culture, parents, schools, and economic incentives that teens face (9).

Outcomes for abstinence education remain largely under debate. Supporters of abstinence education cite studies that show a delay in sexual initiation, reduced levels of sexual activity, and an increase in abstinence until marriage among students (51). At the 2010, 2007 and 2005 HHS Abstinence Education Evaluation Conferences, 43 abstinence education studies were presented as having shown abstinence education programs providing early-stage positive attitudinal impacts that tended to predict lower sexual initiation rates (33).

A handful of abstinence education studies have employed experimental or quasi-experimental designs while the majority of abstinence education studies have been based on census, country, or state level data (9). Surveys have the possibility of introducing recall bias into survey samples. Non-experimental or quasi-experimental studies also have difficulty controlling statistically for other factors that might produce spurious statistical relationships or obscure actual ones (9). Finally, data gathered through the census, country, or state might have difficulty controlling for other factors that could influence relationships and often have very small sample sizes (9).

CSE research has documented long-term, positive outcomes on youth. Outcomes associated with participation in CSE programs include the delay of sexual initiation, reduced frequency of intercourse and number of sexual partners, and increased condom or contraceptive use (19). As we have seen both in the U.S. and in the Netherlands, school-based sexual health education works in reducing teen pregnancy and STI rates. Particularly in the Netherlands, CSE programs have helped with normalizing the idea of sexuality as a natural part of adolescent growth and development. These outcomes have been supported through multiple experimental and quasi-experimental evaluations (9).

Step 8 – Make the Decision

Based on the evidence available today, CSE programs reduce a variety of teen sexual risk-taking behaviors and increase protective behaviors such as contraceptive use. Outcomes of CSE programs have been shown to reduce adverse health effects in youth more so than abstinence education.

Research continue to show that CSE programs have a significant positive impact on sexual risk-taking behaviors among adolescents (52). “There is strong evidence that more comprehensive approaches help young people both withstand the pressure to have sex too soon and learn the skills to build healthy, responsible, and mutually protective relationships when they do become sexually active (21).” These impacts have also been shown to be long-term in nature, lasting up to three years or as long as the behavior was being evaluated (9, 52).

As peer-reviewed support for CSE programs has continued to grow over the past decade, many of the leading U.S. medical and public health associations have come to publicly

support CSE programs, including: the American Medical Association, American Psychological Association, The Institute of Medicine, American Nurses Association, American Academy of Pediatrics, American College of Obstetricians and Gynecologists, Society of Adolescent Medicine and the American Public Health Association (35).

In addition to the supporting research, CSE programs are also known to work in a variety of circumstances and are highly adaptable to different populations and age groups (9). According to an interview with Douglas Kirby, "when some curricula that were found to be effective in one study were implemented by other educators in other states and evaluated by independent research teams, they remained effective if they were implemented with fidelity in the same type of setting and with similar youth (52, pg. 7)."

Based on this information, it is the writer's recommendation that the U.S. Government increases current support for CSE programs through federal funding.

Conclusion

Demonstrated outcomes show that CSE programs reduce sexual risk-taking behaviors in youth including delaying the initiation of sex, reducing the number of partners and frequency of sex, and increasing contraceptive use. CSE programs have also been demonstrated to be cost effective. Individuals that participate in CSE programs are more likely to avoid the negative economic outcomes associated with teen pregnancy and STIs as well as saving in medical costs and lifetime productivity. The data identified in this policy analysis are consistent with the initial hypothesis that CSE programs are more effective at reducing teen pregnancy and STI rates, with the dual foci on abstinence and risk reduction behaviors one possible explanation.

Acknowledgements

I would like to dedicate this paper to my godfather Frederick “Rick” Brock who passed away before seeing me graduate. In addition, I would like to thank my immediate family for their continued support throughout the culminating experience (CE) process. Finally, I would like to give my deepest thanks to my CE advisory committee for the support and guidance they provided during this process.

Appendix A

Table 1: Federal A-H Definition of Abstinence used in federal legislation
A. Have as its exclusive purpose teaching the social, psychological, and health gains to be realized by abstaining from sexual activity
B. Teach abstinence from sexual activity outside of marriage as the expected standard for all school-age children
C. Teach that abstinence from sexual activity is the only certain way to avoid out-of-wedlock pregnancy, sexually transmitted diseases, and other associated health problems
D. Teach that a mutually faithful, monogamous relationship in the context of marriage is the expected standard of sexual activity
E. Teach that sexual activity outside of the context of marriage is likely to have harmful psychological and physical effects
F. Teach that bearing children out of wedlock is likely to have harmful consequences for the child, the child's parents, and society
G. Teach young people how to reject sexual advances and how alcohol and drug use increased vulnerability to sexual advances
H. Teach the importance of attaining self-sufficiency before engaging in sexual activity.

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