

**Research article**

# **A New Sexual Education Program: Evaluation of Effectiveness**

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## **Abstract**

According to the Center for Disease Control, the rate of adolescent's premature sexual activity has been decreasing, most years, since 1988 (CDC, 2011). One possible reason for this decrease is the sexual education courses taught to elementary and high school students throughout the country. Yet, the rates of Sexually Transmitted Infections among adolescents have been steadily increasing each year (Weinstock, Berman, & Cates, 2004), the teen birth rate is still high; 42.5 births per 1,000 females (Abma, Martinez, & Copen, 2010), and 63.1% of teens have engaged in sexual intercourse by the 12<sup>th</sup> grade (CDC, 2011). So, adolescent sexual activity is still a problem. Research (e.g., Carroll, 2013; Jeffries, Dodge, Bandiera, & Reece, 2010) shows that regardless of the type of sex education course, it is still unclear as to whether teens' actual behavior changes. Because of the ineffectiveness of current sex education courses and the limited data on the effectiveness in relation to actual behavior changes, new courses need to be developed and quantitatively evaluated. One such class, 'Character, Relationships, and Education,' designed by The Women's Resource Center was assessed. The effectiveness of the program was evaluated by comparing students' answers to questions regarding thoughts and actual behaviors of sexual activity before and after the sexual education program. Participants' ( $N = 1,428$ ) pre- and posttests were also compared to the current statistics of national averages, of various sexual behaviors and consequences of sexual behaviors, provided by the CDC. Results show that this program was highly successful. **Copyright © AJSSAL, all rights reserved.**

**Keywords:** sex education courses, adolescence, sexual behavior, risky sexual behavior, sexual education programs, effectiveness of sex education

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## **A New Sexual Education Program: Evaluation of Effectiveness**

According to the Center for Disease Control (2011), statistics collected from high school students show that premarital sex has been, on average, decreasing since 1988 (Abma, Martinez, & Copen, 2010; CDC, 2011). Yet, the rates of Sexually Transmitted Infections (STI) among adolescents have been steadily increasing each year (Weinstock, Berman, & Cates, 2004), 42.5 births per 1,000 females in 2007 were from teen-age mothers (Abma et al., 2010; Brugman, Caron, & Rademakers, 2010), and 63.1% of teens have engaged in sexual intercourse by the 12<sup>th</sup> grade (CDC, 2011). Adolescent sexual activity is still a problem. Although more federal funding goes towards supporting abstinence education than all the other types of sex education put together, teaching abstinence-only has repeatedly been found to be non-effective (e.g., Bruckner & Bearman, 2005; Hampton, 2008; Kirby, 2007; Kohler, Manhart, & Lafferty, 2008; Trenholm, Devaney, Fortson, Quay, Wheeler, & Clark, 2007; Weed, 2008). But, teaching sex education without teaching abstinence is typically controversial (McKeon, 2006). Programs combining abstinence and comprehensive sexual education have emerged in recent years and have been found to be the most effective (Realini, Buzi, Smith, & Martinez, 2010). But, research (Carroll, 2013) shows that regardless of even these ‘combined’ sex education courses, teens’ actual behavioral changes related to sexual behaviors are either limited. Because of the limited effectiveness of current sex education courses, new courses need to be developed and properly evaluated.

Even though, on average, the number of high school students participating in sexual activity has been decreasing in the United States since 1988 (with the exception of 2005-2007) (Abma et al., 2010; CDC, 2011), a large percentage of youth under the age of 18 are still engaging in premarital sexual activity. In 1991, 54.1% of those in grades 9 through 12 had participated in sexual intercourse and in 2009 almost half of teens were having sex (46%). According to the Center for Disease Control (CDC), in 2009, 31.6% of those in 9<sup>th</sup> grade had sexual intercourse, 40.9% in 10<sup>th</sup> grade, 53.0% of those in 11<sup>th</sup>, and 62.3% of students had practiced sexual intercourse by the time they reached 12<sup>th</sup> grade. The prevalence also increases for certain ethnicity where, on average, more Black (65%) and Hispanic (49%) teens are engaging in sex than White (42%) youth (CDC, 2011; Eaton et al., 2006).

Further, although the overall numbers of youth that are participating in sexual activity are decreasing, risky sexual behavior among those that are having sex may be increasing. For instance, Sexually Transmitted Infections (STI) among adolescents have been steadily increasing each year (Weinstock, Berman, & Cates, 2004) and the teen birth rate in 2008 was 42.5 births per 1,000 females (Abma, Martinez, & Copen, 2010; Brugman, Caron, & Rademakers, 2010). The CDC found similar numbers based on birth certificate data collected by NCHS’ National Vital Statistics in 2009; in the U.S., the birth rate for 15-19 year-olds was reported to be 39.1 births per 1,000. But, the CDC estimates that even these high numbers are a misrepresentation of the actual amount of teens getting pregnant. These statistics are typically reported from live births. Based on the National Survey of Family Growth (NSFG), when adjustments are made for miscarriage, still births, and abortions, national estimates from the Guttmacher Institute report numbers more like 71 per 1,000 females aged 15-19 in 2005 got pregnant (NSFG; CDC, 2011). Also based on the findings from the NSFG, the CDC reports that between 2006-2010 females aged 15-19 continue to have the highest rates of STD’s such as Chlamydia and Gonorrhea. And, the incidence of Syphilis

among teenagers has increased every year since the early 2000s. Further, even though teenagers only represent a quarter of sexually active individuals, they account for one-half of all new STDs (p. 3). This same survey, based on 22,682 face-to-face interviews, found that 34% of adolescents aged 15-19 did not use a condom during their first sexual experience and 30% of females and 44% of males had sex for the first time with someone they were not 'going steady' with (i.e., someone they had just met, were just friends with, or strangers). Also, the age at first sexual experience is decreasing and the number of partners adolescents have had sex with seem to be increasing; 14% of those in high school reported having had sex with four or more partners (CDC, 2011).

With statistics as concerning as these, it is important to conduct studies in effort to understand why some students value abstinence. Abbot and Dalla (2008) conducted a study on primarily Caucasian participants ranging from 16 to 18 years of age ( $N = 102$ ) in which some were not sexually active ( $n = 60$ ) and others were sexually active ( $n = 42$ ). Survey results revealed that those who were sexually abstinent tended to be more religious than those who were not. Also, the most common benefit test subjects gave for remaining sexually abstinent was to avoid pregnancy and STDs ( $f = 47$ , 78%). Participants that remained abstinent also had less positive feelings regarding information related to sex given from the media and from peers than participants who had already had sexual intercourse. Haglund (2008) supported Abbot and Dalla's results with their analysis of a sexual education program that stressed abstinence but also talked about contraceptives and ways to prevent pregnancy. After the last session, a majority of the subjects (85%) that had not been sexually active (21%) said that a reason for not having sex was because they did not want contract AIDS.

It is also important to understand why some adolescents have chosen to have sex. In Abbot and Dalla's (2008) study, over half of ( $f = 25$ , 58%) sexually active participants reported that their reason for having sex was because, to them, sex was as an expression of love, commitment, and devotion. Participants also described sex as a personal choice and as enjoyable. Other reasons sexually active teens gave for having sex included: they saw sex as a way to strengthen the relationship, to gain sexual knowledge and experience, and test sexual compatibility with their partner. Haglund (2008) found that lack of religious beliefs also may be contributing to teens' decisions to have sex. Only four students (12%) stated that they understood that their religion thought that engaging in sexual activity was wrong and only 18% said that they refrained from sexual intercourse because of their religious belief that waiting until marriage to have sex was important.

Marston and King (2006) reviewed 268 qualitative studies of adolescent's sexual behavior published between 1990 and 2004 to assess the main reasons teens gave for choosing both when and when not to have sex and why, those that do, engage in risky sexual behavior. From the 5,452 reports on the effects of sexual education programs world-wide, only 246 journal articles and 22 books were selected for analysis; 5,184 were not analyzed due to the low quality, including not containing empirical data. Marston and King's systematic review identified seven key themes, which were present in all countries and cultural backgrounds: 1) young people immediately assess potential sexual partners as 'clean' or 'unclean'; 2) partners have an important influence on sexual behavior in general; 3) condoms are stigmatizing and associated with lack of trust; 4) gender stereotypes determine social expectations and behavior; 5) social expectations also hinder communication about sex; 6) fear of penalties and rewards for sex; and 7) reputations (for sexual activity or inactivity). Understanding why teens do or do not engage

in sexual behaviors is necessary when developing the curricula for sexual education courses. Because so many teens are having sex for their own reasons, if sexual education curricula are developed based on ‘other’ reasons such as religious beliefs, parental expectations, federal funding requirements, etc., these courses will not be as effective.

Two types of sexual education courses have been implemented in the United States; abstinence only and comprehensive sexual education. Abstinence-only programs “emphasize teaching abstinence from all sexual activity except within the context of marriage” (Young & Penhollow, 2006, p. 195). Very few studies have scientifically examined the effects of abstinence-only programs on sexual behavior; those that have, have either not been able to show significant differences ( $p < .05$ ) in behavioral changes in teen’s sexual behavior or had design flaws that made it impossible to evaluate the effects of the curriculum. Yet, substantial amounts of federal dollars have consistently been spent on abstinence-only programs (Hampton, 2008; Young & Penhollow, 2006). Abstinence-only methods have been the most widely funded sexuality education programs; a federal provision from 1996 “provides up to \$50 million annually in grants to states for abstinence-only programs” (Hampton, 2008, p. 2013) and “Congress increased funding for federal abstinence programs in fiscal year 2002, and has been asked by the President to increase it by another \$33 million in fiscal year 2003” (Collins, Alagiri, Summers, & Morin, 2002).

Further, critics have had several concerns regarding the dangers of abstinence programs due to provision of inaccurate information (Young & Penhollow, 2006). Young and Penhollow (2006) reviewed all 16 published scientific studies, dating from 1990-2006, that evaluated abstinence-only programs (i.e., curricula teaching nothing other than not having sex until marriage) on teen sexual behavior. Several of these 16 studies had serious design flaws that made the results non-interpretable. Flaws included: no control groups, comparing two different treatment group surveys, non-random assignment to treatment, and short programs where researchers did not assign classes to treatment or control conditions themselves (e.g., Barnett & Hurst, 2003; Borawski, Trapel, Lovegreen, Colabianchi, & Block, 2005; Lerner, 2005).

Well-designed research evaluating abstinence-only programs using designs such as quasi-experimental with a pre- and posttest design (e.g., Kirby, 2007) show no significant differences between the treatment and control groups on the initiation of sexual intercourse, number of sexual partners, use of condoms or birth control pills, pregnancy, recency and/or frequency of intercourse. Interestingly, the one abstinence program (CDC, ‘Program that Works’) that did show effectiveness, evaluated by Jemmott, Jemmott, and Fong (1998), was not a true abstinence-only program. Differences in the use of condoms between the treatment and control group were found at a 12-month follow-up. But, even though this program fell under the “abstinence-only” criteria for evaluation purposes, the curriculum also involved safer-sex teachings. For instance, the facilitator’s manual stated that “facilitators are encouraged to praise students’ answers when HIV pregnancy prevention efforts are raised, even if they include suggestions other than abstinence. Facilitators should not denigrate condoms, speak of them only in terms of failure rates, or exaggerate condom failure (p. 3)” (Young & Penhollow, 2006, p. 196). Further, this program did discuss abstinence, but mainly abstinence from risky behavior (specifically HIV risk reduction)-not abstinence from all sexual activity. Also unlike the other abstinence-only programs, this statistically effective program told facilitators to clearly define and discuss all forms of sexual intercourse with the students, not just heterosexual vaginal intercourse; “be sure participants understand the definition of vaginal intercourse, oral sex, anal sex, and

masturbation (p. 63)” (Young & Penhollow, 2006, p. 197). Therefore, effective sex education in that measurable behavior differences are found, most likely will not occur with abstinence-*only* curriculum.

The controversy, though, is that many parents and Christian advocate groups throughout the country feel that schools should only teach teens to abstain from all sexuality activity until marriage. “According to the 2003 Zogby poll, 22 percent of adults believe that sex education should focus only on abstinence” (Kirby, 2007, p. 104). Those against comprehensive sexual education typically worry that teaching adolescent’s about sex would be like giving teens permission to have sex and would make them more likely to participate in sexual activities. But, well-designed quantitative evaluations of comprehensive sex education report this not being the case. In fact, out of the 56 programs Kirby (2007) reviewed, not only did 35 of the programs (or 63%) find a significant positive impact on teens’ sexual behaviors but none of them increased sexual activity. None of the comprehensive plus abstinence programs showed any negative effect. For example, they did not: 1) hasten the onset of sex, 2) increase the frequency of sex, or 3) increase the number of sexual partners. So, even though the vocal minority fears that teaching about sex will increase sexual behaviors, research has never supported this view.

These individuals’ fears might also stem from their misconception about what ‘comprehensive’ programs actually teach. Although programs do differ in content, and some are more *comprehensive* than others, most comprehensive courses teach basic sexual safety such as STIs and condoms, other consequences of premature sexual behavior, relationship issues, and they teach abstinence. These programs teach developmentally appropriate concepts and answer questions that adolescents have regarding sex. This way, teens get factual information that will not only help them make better decisions, but they will not rely on the vast amount of erroneous sexual information from friends and media.

To date, programs combining abstinence and comprehensive sexual education are the most effective programs. Haglund (2008) studied teens in a sexual education program that stressed abstinence but also talked about contraceptives and ways to prevent pregnancy. The program defined terminology, gave tactics for choosing and maintaining abstinence, and even taught the parents ways to help teens maintain abstinence. All of the participants ( $N = 33$ ) were women and seventy-nine percent ( $n = 26$ ) had already given birth. After the last session, a majority of the subjects that had not engaged in sexual activity for the duration of the study stated that one of the main reasons for not having sex was because they did not want to contract AIDS ( $n = 28, 85\%$ ). Very few ( $n = 4, 12\%$ ) stated that their religion said that engaging in sexual activity was wrong and only 18% said that they refrained from sexual intercourse because they were waiting until marriage to have sex. These numbers rose to 24% by the last session. At the 7 month follow-up, in which 76% of the original participants were surveyed, 20% said that they did not want to have sex until marriage. One reason for this success may be because the program (like most comprehensive courses) combined abstinence (and discussed not having sex even if the teen had already had sex previously) and contraceptive options. They also discussed the importance of students making short-term goals of abstinence, so their goals could be more realistic.

Another example of a sexuality curriculum developed to promote abstinence as well as condom and contraceptive use, Realini, Buzi, Smith, and Martinez (2010) studied the effectiveness of ‘Big Decisions.’ Although actual behavior regarding sexual intercourse was not measured in this assessment, the pre- and posttest survey

measured changes in attitudes, self-efficacy, and behavioral intentions regarding sex, pregnancy, sexually transmitted diseases, and condom use. Statistically significant changes were found for 11 of the 12 items measured for this sample of 788 inner-city 9th-grade students.

One positive effect of sexual education programs is that they educate teens about sexual issues and this knowledge helps them make better decisions. Song, Pruitt, McNamara, and Colwell (2000) conducted a meta-analysis of 67 studies, conducted between 1960 and 1997, reviewing their findings regarding the effects of school sexuality education on adolescents' sexual knowledge. The weighted average effect size of 0.41 on sexual knowledge across all studies was statistically significant, indicating that a significant difference occurred between the control and experimental groups' mastery of objectives related to sexual knowledge. Several specific studies have demonstrated similar positive outcomes from comprehensive sex education curricula. For example, Ekstrand and colleagues (as cited in Collins et al., 2002) studied the effects of an intervention titled 'Healthy Oakland Teens' in Oakland, California. The program involved 7<sup>th</sup> graders in five adult - led and eight peer - led sessions. Students were provided with information on HIV and STIs, sub-stance abuse and preventive behaviors (e.g., perception of personal risk, possible consequences, benefits of preventive behaviors, refusal skills, and condom use). The researchers found that students who were taught about sexuality delayed initiation of sexual activity, increased condom use, and had a decreased number of sexual partners significantly more so than the group of students who were not taught the information.

Information campaigns and condom distribution programs alone are often not enough to change adolescent sexual behaviors (Marston & King, 2006) and abstinence-only programs are ineffective in changing actual behaviors leading to sexual activity, pregnancy prevention, and STD rates in teenagers (Hampton, 2008). Evaluation research analyzing abstinence plus comprehensive sex education courses, sometimes referred to as 'Abstinence Plus Education' in order to prevent the misconception of what is and is not being taught to students, demonstrate the necessity to teach adolescents information about sex. But, because many youth are still having premarital sex and engaging in risky sexual behavior, perhaps there is still an even better way to modify teens' sexual behavior. It seems plausible that sex education courses need to include specific curriculum in order to be more successful in effecting behavioral change at a higher level; although what exactly should be taught is currently not well known.

Poobalan et al. (2009) conducted a review of 30 literature reviews by searching six bibliographic databases from 1986 to 2006. The characteristics of effective sex and relationship education programs for adolescents were assessed and found to include: 1) programs that targeted younger age groups before they become sexually active, 2) focused interventions that were tailored to the physical and biological development stages, 3) those that were theory and research-based, and 4) those that were abstinence programs that also incorporated values of relationships and provided skill training and information about contraceptive resources. Curriculum that were given by trained personnel and that was culturally sensitive also seemed to be important facilitators of effectiveness.

Haglund (2008) theorized from her findings that another possible important component to sexual education programs may be goal completion. The program that she evaluated created short-term, periodic goals for abstinence. The program consistently worked with the teens on these goals, goals that adolescents could view as obtainable.

Even though some of these teens had had sex before, after the course abstinence was viewed more favorably and abstinence behaviors increased with the largest change being from the first to the last session.

The current researchers evaluated a sexual education program that utilized all of these important components, basing the curriculum off of theory and previous research. The goal of the Character and Relationship Education (C.A.R.E.) program was to build character, discuss issues pertaining to sex that teens generally have questions about, give information about contraceptives, set and achieve personal goals, and emphasize important relationship issues in relation to teaching teens why they should remain abstinent. In addition, the curriculum was tailored to the physical and biological developmental stages—with more information given at each grade level.

The R.I.D.G.E. Project was a preliminary analysis conducted by Campbell and Seufert (2009) on six sex education programs throughout ten counties in Ohio, including Hancock County's C.A.R.E. Program. The county with the highest behavioral intentions regarding abstinence was Hancock County ( $N = 1478$ , pre-test  $M = 3.24$ , post-test  $M = 3.75$ ,  $t = -25.65$ ,  $p < .001$ , Cohen's  $d = .57$ ). The C.A.R.E. program was the only program with a medium effect, while all others were low. Further, the C.A.R.E. program showed the highest percent of change in actual behavior (10.08%). The current researchers then conducted a quantitative analysis on the specific questions from the pre-test and post-test questionnaire to determine specific areas of program effectiveness.

## Methods

### Participants

Participants were students enrolled in public middle and high schools in one county in the rural Midwest. Participant drop out caused the number of participants at the beginning of the study ( $N = 1,428$ ) to decrease by 202, leaving a total of 1,226 participants. The mean age was 14.15 years old ( $SD = 1.53$ ). Ages ranged from 11 to 21. Participants' ethnicity included 71% White, 16.4% Black, Hispanic 3%, and 9.6% stated "other."

### Measures

The pre- and post-questionnaire were identical. Background questions were asked at the beginning of the questionnaire. The students were asked what school they were currently attending, date the survey was completed, ethnicity according to biological parents, grade level, age, and gender.

Following the background questions, opinion statements were asked regarding how students felt about various issues regarding sexual activity. The students were to respond according to whether they agreed or not with each of the statements. Students were given the options of *Yes*, *Not Sure*, and *No*. Questions included:

- 1: "The best way to avoid a teen pregnancy is to wait until marriage to have sex"
- 2: "I think it's okay to have sex with someone you love even if you're not married"
- 3: "I can see that saying 'no' to sex before marriage could help me reach my goals as an adult"
- 4: "I think remaining abstinent until marriage shows respect for myself"
- 5: "It is my responsibility to set boundaries for relationships in which I am involved"
- 6: "The best time to become a parent is when I am married"
- 7: "I think alcohol and drugs make teens more likely to have sex"

- 8: "Sex outside of marriage can results in regret and/or depression"
- 9: "The best way to avoid an STD or an unplanned pregnancy is to wait until marriage to have sex"
- 10: "I can say 'no' to other behaviors such as alcohol and drug use"

Lastly, the questions asked about actual behaviors/past actions in regards to sexual activity and other negative or risky behaviors. The students were given the option to respond with *Yes* or *No*. Questions related to sexual intercourse, pregnancy, STD's, tobacco use, alcohol use, illegal drug use, sending and receiving sexting messages, and pornography use.

## **Procedure**

A refusal form was handed out to the students prior to the start of the program. The students were required to give the form to their parents. A brief description of the program as well as the programs anticipated impact was stated. If the parents *did not* want their child to participate in the C.A.R.E. program, parents were asked to sign the refusal form and return it to their child's school. A phone number was also given in case parents had any questions or concerns.

The pre-questionnaire was given to the students at the beginning of the introductory sexual education class. A standardized set of instructions were given to each teacher to be read aloud to the students. For example, the students were given an explanation and an example question, and were then told to answer honestly and interpret each question on the survey the best that they could according to their own personal beliefs and behaviors. The post-questionnaire, was given at the end of the final sexual education class.

There was a standardized curriculum for each grade which lasted between five to ten days. The curriculum consisted of abstinence education, goal setting for specific ways to remain abstinent, and information regarding the risks of premature sexual acts. The instructor also covered topics such as sexually transmitted diseases, condoms, sexting, sexual acts, pregnancy, and pornography. Work sheets were given out as homework. The higher the grade, the more comprehensive sexual education information was given.

## **Results**

Frequency data was compared to current national averages provided by the CDC. Next, descriptive analyses and paired-samples *t*-tests allowed for comparison between students' perceptions and actual behavior before the sex education course and after the course. Analyses show that the C.A.R.E. program was effective in not only changing perceptions regarding sexual behavior, but also in teens' actual behavior.

The overall percentages for students who had graduated from the C.A.R.E. program when compared to the national percentages provided by the CDC revealed that a smaller percentage of students who graduated from the C.A.R.E. were having sex. The total percentage of ninth grade students nationwide who reported having had sex in 2009 was 31.6%. In contrast, the graduates of the C.A.R.E. program's percentage of ninth grade students who reported having sex was only 14%. The total average percentage of tenth grade students across the nation that had sex was 40.9% as compared to only 31% of tenth grade C.A.R.E. graduates. The total average percentage of 12<sup>th</sup>

grade students was 62.3%, in contrast to the C.A.R.E. program's 42% of 12<sup>th</sup> grade seniors. The only grade level in the program that had higher percentage of students that reported having sex than the CDC's national averages was among the 11<sup>th</sup> grade students (11<sup>th</sup> grade national average was 53.0%, 67% of 11<sup>th</sup> grade graduates of the C.A.R.E. program).

The answers to the 'character building' questions were assessed by paired-samples *t*-tests and revealed statistically significant differences between pre- and post-questionnaire answers on eight out of the ten character/value-related questions relating to adolescents' perceptions about sexual activities. Students' overall 'goal-related' pre- questionnaire answer ( $M = 1.26$   $SD = .54$ ) was statistically significantly higher than post-survey answer ( $M = 1.17$   $SD = .43$ ), meaning that more students after they took the course believed that "waiting until marriage to have sex can help the student reach his or her goals,"  $t(1552) = 5.34$ ,  $p < .001$ . Statistically significantly more students said 'no' that they did not have the perception that "the best way to avoid teen pregnancy is to wait until marriage to have sex" before the sexual education course ( $M = 2.79$ ,  $SD = .32$ ), than after the program ( $M = 1.11$ ,  $SD = .23$ ),  $t(26) = 70.47$ ,  $p < .001$ , indicating that the course changed students' belief and more students started recognizing, after the program, that the best way to avoid a pregnancy was to wait until marriage to have sex. Students perceptions also positively changed from before ( $M = 2.15$ ,  $SD = .81$ ) the course to after ( $M = 2.40$ ,  $SD = .72$ ) about whether they "think it's ok to have sex with someone you love even if you're not married," with more students after the program saying 'no' it's not okay,  $t(1552) = -8.93$ ,  $p < .001$ . "I think remaining abstinent until marriage shows respect for myself" was perceived as being true more so after the program ( $M = 1.24$ ,  $SD = .49$ ) than before ( $M = 1.40$ ,  $SD = .63$ ),  $t(1552) = 8.24$ ,  $p < .001$ . For the question "the best time to become a parent is when I am married," students, on average, answered 'no' (i.e., they did not agree with this question) more before the program ( $M = 1.17$ ,  $SD = .45$ ) than they did after the sexual education program ( $M = 1.12$ ,  $SD = .38$ ),  $t(1552) = 3.08$ ,  $p = .002$ . Students also changed their perception regarding whether alcohol and drugs make teens more likely to have sex. After the program, teens agreed more that "alcohol and drugs make teens more likely to have sex ( $M = 1.23$ ,  $SD = .48$ ) than they did before the program ( $M = 1.38$ ,  $SD = .63$ ),  $t(1552) = 7.21$ ,  $p < .001$ . "Sex outside of marriage can result in regret and/or depression" was perceived as being true (answering "yes") significantly more after the program ( $M = 1.24$ ,  $SD = .48$ ) than before ( $M = 1.42$ ,  $SD = .61$ ),  $t(1552) = 9.02$ ,  $p < .001$ . Lastly, adolescents' perceptions that it is "the best way to avoid an STD or unplanned pregnancy is to wait until marriage to have sex" statistically significantly changed from the pre-test ( $M = 1.32$ ,  $SD = .59$ ) to the post-test ( $M = 1.18$ ,  $SD = .45$ ),  $t(1552) = 7.23$ ,  $p < .001$ . In that their perceptions, on average, changed from "no," not agreeing with this statement, to "yes" I agree with this statement.

These results show that the students made statistically significant changes in their thinking and perceptions about these sexual topics in the right direction. The answers on the post-questionnaire reflected that the students better understood the importance of remaining abstinent until marriage and the risks associated with premature sexual activity. Out of the two perception questions where adolescent's did not significantly differ in perceptions from before to after the program, one almost reached significance, "It is my responsibility to set boundaries for relationships in which I am involved,"  $t(1552) = 1.91$ ,  $p = .056$ , and the other question was specifically related to

alcohol and drug use, not sexual behavior; “I can say “no” to other behaviors such as alcohol and drug use,”  $t(1552) = .81, p = .81$ .

Actual behavior related to sex also statistically significantly changed after the sex education course. All of the ‘behavior’ questions showed a statistically significant change in actual sexual behavior. Less students were having sexual intercourse after the program than before; the paired-samples  $t$ -test paired difference ( $M = -.19, SD = 1.49$ ) was significant,  $t(1552) = -4.90, p < .001$ . After the program, less teens had gotten pregnant or gotten someone pregnant than before the program; the paired-samples  $t$ -test paired difference ( $M = -.10, SD = .96$ ) was significant,  $t(1552) = -4.14, p < .001$ . After the program, less teens had been diagnosed with an STD than had been diagnosed before the program; the paired-samples  $t$ -test paired difference ( $M = -.10, SD = .89$ ) was significant,  $t(1552) = -4.42, p < .001$ . Significantly less teens were also receiving sexting messages (paired difference,  $M = -.07, SD = 1.12$ ) after the program than before the program,  $t(1547) = -2.42, p = .02$ . And, less teens said they were watching pornography than they had prior to the program; the paired difference ( $M = -.13, SD = 1.22$ ) was significant,  $t(1552) = -4.30, p < .001$ .

Teens actual behavior with alcohol and illegal drug use, only in relation to sex, had also changed in that less teens were participating in this risky behavior after they had graduated from the sex education course than before they took the course. The paired difference with alcohol use, ( $M = -.10, SD = 1.08$ ) was significant,  $t(1552) = -3.72, p < .001$ . The paired difference with illegal drug use, ( $M = -.06, SD = .77$ ) was also significant,  $t(1539) = -2.81, p = .005$ .

## Discussion

Based on the results between students’ views and actual behaviors from the pre- to the post- tests, this sexual education course was effective. Students’ views about sexual intercourse changed at some point between the beginning and end of participation in the C.A.R.E. program. This study was also one of the first to show that students’ actual behaviors in regards to sexual activity, and not just perceptions about sexual activity, changed after participation in the program.

After the program, the percentage of teens in Hancock County, Ohio were overall, lower than the national average, for the same year, when compared to the statistics provided by the CDC. When separated by year in school, still in most cases, the percentage of high school students in Hancock County, Ohio that reported having had sex was lower than the national percentages, with the only class that differentiated from this trend being the 11<sup>th</sup> grade students.

Although these results suggest that sexual education courses that include abstinence information, as well as comprehensive information based on developmental age and goal-orientation are effective in reducing unhealthy views regarding sexual behaviors as well as actual behaviors, these results need to be interpreted with some caution. The study had limitations that should be taken into consideration in any future studies. In this county, high school students only had to take the C.A.R.E. program course one time. Some researchers’ work has suggested the need for longer courses that are also assessed longitudinally to assure that the positive changes in perceptions and behaviors endure (Young & Penhollow, 2006).

Both comprehensive programs and abstinence programs have been researched in the past, but unique programs such as the C.A.R.E. program, whose curriculum is based on theory and research, focusing on a multitude of factors such as aspects of the adolescents' character and goal-building in addition to using abstinence and comprehensive sexual education information, have not been widely implemented and appropriately analyzed. The effectiveness of the C.A.R.E. program should set the standard for future courses and suggests the importance of implementing similar programs in other areas of the country.

## References

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