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RESEARCH ARTICLE

The Effects of the *Yes You Can!* Curriculum on the Sexual Knowledge and Intent of Middle School Students

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ABSTRACT

BACKGROUND: The purpose of the study was to examine the effects of the “*Yes You Can!*” (YYC) curriculum on sexual knowledge and behavioral intent of program participants.

METHODS: Participants included students ages 10-14 from schools in a northeast US urban area. *Yes You Can!* program lessons were designed to support healthy relationships. The curriculum was taught by trained instructors. The testing instrument was a 30-item questionnaire, which included sexual knowledge and intent items. Students completed the questionnaire before program implementation, immediately following intervention, and a third time at follow-up. Data were analyzed using analysis of covariance. Pretest knowledge scores were used as the covariate for the knowledge analyses. Pretest intent scores were used as the covariate for the intent analyses.

RESULTS: Results showed the intervention group had less intent to engage in sexual intercourse than the control group at post-test ($p < .001$) and at follow-up ($p < .001$). Similarly, the intervention group had higher knowledge scores than the control group at post-test ($p < .001$) and at follow-up ($p < .001$).

CONCLUSIONS: Results indicate that the YYC program had a statistically significant, positive impact on knowledge and sexual intent. These variables are important precursors to actual behavior. Future research should examine the effects of the program on changes in sexual behavior.

Keywords: child and adolescent health; human sexuality; reproductive health; school health instruction.

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In spite of calls for schools to adopt comprehensive sexuality education, most school-based sexuality education course work tends to focus on encouraging young people to abstain from sexual activity.¹ Clearly, abstinence is an important value for both Abstinence Education and Comprehensive Sexuality Education, depending on the age of those participating in the program, and preference of the academic institution. There are potentially a number of negative consequences associated with teenage sexual intercourse.²⁻⁴ Additionally, evidence shows that the younger individuals are when they begin engaging

in sex, the more lifetime partners they will have and greater are the chances that negative consequences will be experienced. The impact of these negative experiences is also potentially greater for young teens/preteens. Thus, one of the legitimate goals of sexuality education, especially for younger adolescents, is to encourage students to postpone sexual involvement. For example, both the American Academy of Pediatrics and the National Sexuality Education Standards, though advocating for a comprehensive approach to sexuality education, are also supportive of adolescent abstinence.^{5,6}

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Experts have concluded that education about sexuality, including abstinence, should begin at an early age, prior to young people initiating sexual activity.^{5,6} In fact, 1 national study that argued for early education demonstrated that girls who later bore children while in high school could be identified using eighth grade data.⁷ Thus, the authors concluded that education to prevent teen pregnancy must begin prior to the eighth grade.

It is important that programs that are used with young people, whether they are characterized as comprehensive or abstinence, be appropriately evaluated. Kirby⁸ provided a summary report of a number of programs to reduce teen pregnancy and sexually transmitted disease. He did not, however, include in his report all programs for which there were existing published evaluations. For example, Sulak et al⁹ reported the results of a large scale test of the Worth the Wait program. The 2-week program was found to increase reproductive health knowledge and produce attitudes more supportive of postponing sexual involvement. There was no control group, no follow-up beyond the post-test that immediately followed the conclusion of the program, and there were no behavioral measures.

Kirby's report⁸ included a focus on behavior effects of programs; yet, it is not always possible for researchers to collect data concerning adolescent behavior. Some researchers have used a measure of behavioral intent in addition to,¹⁰ or as a substitute for,¹¹ measures of sexual behavior. Though not a perfect predictor of behavior, behavioral intention has been shown to be the most proximate predictor of actual behavior.¹² There is also literature specific to sexual intent and sexual behavior. For example, Buhi and Goodson's¹³ systematic review examined intent to engage in sex and 7 other key elements that comprised an integrative theoretical framework designed to understand why young people begin engaging in sexual behavior at an early age. They found sexual intention to be the most stable predictor of sexual behavior. All 8 studies the researchers reviewed that had examined the relationship between sexual intent and sexual behavior found a statistically significant relationship between the 2 variables.

Since Kirby's⁸ report, several additional evaluations of abstinence education and comprehensive sexuality education have been published. For example, Tortolero et al¹⁴ examined the effects of "It's Your Game: Keep It Real (KIR)" on several behavioral measures including "initiated sex," and "3 specific types of sex." Among students who reported no sexual experience at seventh grade baseline, intervention students were less likely to have initiated sex, or participated in oral or anal sex by ninth grade follow-up than comparison group students. There was no

difference between the intervention and comparison group, however, relative to participation in vaginal sex. Other follow-up studies involving the comparison of KIR and a parallel risk avoidance curriculum with a control curriculum have also been conducted.^{15,16} The first of these followed seventh graders into the ninth grade and found the program delayed any type of sexual initiation in the overall sample and also within specific groups, while a sexual risk avoidance program delayed any type of sexual initiation among Hispanics and reduced unprotected sex at last intercourse, but increased the number of recent vaginal sex partners. The researchers also followed the students into the tenth grade. Both programs delayed anal sex initiation into the 10th grade, but effects on the delayed initiation of oral and vaginal sex were not sustained.¹⁶ Additionally, Erkut et al¹⁷ tested the effects of the Get Real curriculum. The program was taught to sixth graders. All participants, both intervention and control, completed a pretest prior to the start of the curriculum and completed a follow-up test an average of 1 year later. Data were analyzed using logistic regression. In 3 of the 5 regression models that were used, the results indicated that when the other predictor variables were held constant the intervention did make a statistically significant difference in delaying sexual initiation.

All of these interventions included a long-term follow-up. For an effective program to show effects on actual behavior, it is generally necessary to conduct a long-term follow-up. The researchers have to follow the participants long enough so a substantial number of participants in the control group are engaging in the behavior. If the program is effective, then significantly fewer intervention students will be engaging in the behavior. Kirby used a minimum criterion of a 6 months follow-up for an evaluation article to be considered for inclusion in his report.⁸ It should be noted that in his own evaluation of the Reducing the Risk curriculum, there were nonsignificant results for sexual behavior at 12 months, and only at the 18-month follow-up did the curriculum show a statistically significant impact on sexual behavior.¹⁸ Denny and Young also showed the upper elementary and middle school components of the Sex Can Wait curriculum did not have an immediate behavioral impact, but did show differences in sexual behavior at the 18-month follow-up.¹⁰ Other researchers have shown positive behavioral effects at 12 months, but it is unusual for an intervention to show positive behavioral effects with a shorter follow-up period. Thus, program evaluations that cannot include a follow-up, or a follow-up of less than 12 months, might consider omitting measures of actual behavior.

It is important to acknowledge that a recent study¹⁹ did find small but statistically significant positive

behavior differences from pretest to post-test, in both abstinence decisions in the last 3 months and in current sexual behavior, among seventh graders participating in a comprehensive teen pregnancy program. In the same study, an abstinence-only teen pregnancy prevention program also showed positive changes from pretest to post-test in current sexual behavior, but negative change in abstinence decisions in the last 3 months. When the 2 programs were compared, there was a difference between the 2 programs, in favor of the comprehensive program, relative to abstinence decisions in the last 3 months, but no difference between the 2 groups relative to current sexual behavior. Because of the large sample size ($N=6416$), even extremely small differences were statistically significant. For example, the statistically significant negative pretest to post-test change in abstinence decisions in the last 3 months for the abstinence-only group was based on a score .91 at pretest and a score of .90 at post-test, with possible scores ranging from 0 to 1. Thus, this study does not seem to negate the importance of conducting a long-term follow-up when determining whether a program produces meaningful behavioral effects.

Although additional evaluations have been published since Kirby's 2007 report,⁸ there continues to be a need to identify effective curricula. In early 2015, the Office of Adolescent Health (OAH) reinforced this in a call for program evaluation in a new Funding Opportunity Announcement (FOA). The agency solicited proposals for projects that would rigorously evaluate new or innovative approaches to preventing teen pregnancy and related risk behaviors. The funding opportunity was designed to increase the number of evidence-based teen pregnancy prevention interventions.²⁰ One program that has been used extensively in programming for young people (approximately 6500 students in New Jersey), but had not been previously evaluated is the curriculum *Yes You Can! (YYC)*²¹ The curriculum was designed to help adolescents (1) think through the high-risk nature of teen sexual activity and (2) understand the benefits of waiting for sexual involvement or returning to inactivity. The curriculum facilitates students in gaining a clearer vision of their future, and an understanding of how early sexual activity impacts that future. The lessons are presented in an engaging format that provides a realistic application to one's life. To date, however, no evaluations have been published regarding the effectiveness of this program.

The purpose of this study was to evaluate the effectiveness of the *YYC* curriculum. Specifically, the study examined the effects of the program on knowledge and behavioral intent of preteens/young teens relative to sexual activity.

METHODS

Participants

Participants for the study were 6th-8th grade students from 14 schools recruited to participate in the project. This included 7 schools that were recruited as intervention schools and 7 schools that were recruited as control schools. All schools were located in a highly urbanized area in northern New Jersey. Only students who had active parental consent participated in the project. To be included in these analyses, participants had to have a completed pretest and a matching post-test and/or follow-up test. Of the 1990 participants who completed the pretest questionnaire, 1829 also completed the post-test questionnaire, and 1179 participants completed the follow-up questionnaire.

Intervention/Curriculum

The *YYC* Curriculum²¹ encourages young people to live a healthy, strong, and focused lifestyle; to rethink their intentions; and to postpone sexual involvement. It includes information about the potential risks of early sexual involvement and the benefits of waiting, and both skill building and commitment strengthening activities. Additional topics such as dealing with sexual coercion, setting boundaries, developing healthy relationships, goal setting and decision making, and drug and alcohol use are also included. There are 3 levels of the curriculum, the middle school level used in this study, and 2 high school curricula. The curriculum has a strong theoretical base and is grounded in social-cognitive theory,²² social learning,²³ and protection motivation theory.^{24,25} The curriculum has been previously pilot-tested over a 3-year period in several inner city schools and focus groups were held with program recipients. Based on the experience of instructors teaching the curriculum and feedback from focus groups, several modifications were instituted to make the materials a good cultural and age-appropriate fit for the target audience. The curriculum was written specifically to meet the New Jersey Department of Education's Core Content Curriculum Standards for Human Relationships and Sexuality. The middle school version of *YYC*, used in this study, includes 8 core lessons, typically taught in 2 1-hour class periods per week, over a 4-week period. The curriculum does include an optional ninth lesson that addresses birth control. The optional lesson is a new addition to the curriculum and was not available for this evaluation project.

Instrumentation

The testing instrument was a 30-item self-report questionnaire that included 3 sexual knowledge items, and 3 sexual intent items. The knowledge items

consisted of 3 true statements concerning reproductive health (eg, "It is possible for a girl/woman to become pregnant the first time she has sex"). These items were developed specifically for this evaluation based on the information covered within the curriculum. Students indicated their degree of agreement or disagreement with the statement using a 4-point response option from "strongly disagree" to "strongly agree." Scores potentially ranged from 3 (strongly disagreed with all 3 true statements) to 12 (strongly agreed with all 3 true statements).

Sexual intent was measured using a scale consisting of 3 items that asked students about their chances of having sex in (1) the next 12 months, (2) before finishing high school, and (3) before marriage, using a 4-point response option from "definitely not" to "definitely will" ($\alpha = .722$). This scale was adapted from the one Denny and Young¹⁰ used in their evaluation of the Sex Can Wait series and for which they found an alpha for internal consistency of .82. In their study, the questionnaire asked students "What is the chance you will remain abstinent from sexual intercourse..." instead of the wording used in the present study, "how likely is it that you will have sex..." and used a 5-point response option.

Teacher Training

The *YYC* curriculum was implemented by instructors (not school employees) hired specifically to teach this curriculum and trained by the curriculum developer. All of these instructors had at least 3 years of previous experience, prior to evaluation reported here, in teaching the curriculum. The training consisted of a 2-day intensive training workshop. The workshop training helped instructors understand the rationale for each lesson, allowed them to see lessons from the curriculum modeled by a skilled trainer, provided opportunity to present a lesson themselves, and offered constructive feedback. Each instructor was also provided with a personal training DVD of each lesson created by the curriculum developer. Classroom teachers (school employees who were certified to teach health education), in whose classes the curriculum would be taught, also participated in the training.

Procedure

All students, intervention and control, voluntarily, and with written parental consent, completed the pretest questionnaire in their regular classroom setting, prior to the implementation of the curriculum. Students' optical-scan questionnaires were coded to match an individual student's responses from different testing times. The questionnaire administrator distributed

questionnaires and briefly provided students standardized instructions for completing the questionnaire. Students were reminded that their answers would be kept private, completion of the survey was voluntary, and that if there were any questions they preferred not to answer, they could leave them blank. Students read and responded to questionnaire items at their own pace. Completed questionnaires were placed in an envelope, which was then sealed and sent to project evaluators.

Following the pretest, the *YYC* curriculum was implemented in all intervention schools. At each school, an instructor who had been trained in the use of the curriculum taught the curriculum as part of each school's required health education course. The program director observed each instructor while he/she was teaching the curriculum, and provided constructive feedback to the instructor relative to curriculum fidelity and instructional quality. Classroom teachers also remained in the classroom during the time *YYC* was taught to their students. Participation by classroom teachers ensured that they (as school representatives) knew exactly what material was presented in their classrooms. Additionally, by participating in the training and observing the teaching, these classroom teachers were better positioned to continue the program, once funding for outside instructors to teach the program ended.

Control students also received the schools' existing health education curriculum, which included information about reproductive health. Thus, rather than an intervention group compared to no programming, this study compared intervention students to "current practice" students.

After completion of the program, all students were again surveyed using the same instrument and following the same protocol. Students also completed the questionnaire a third time in a follow-up that at some schools was as short as 3 months following the post-test, and as long as 9 months at other schools. Questionnaires were coded to match a given student's pretest scores with the same student's post-test and follow-up scores.

Data Analysis

Data were analyzed using (1) factor analysis to establish that the intent scale measured a single construct and (2) analysis of covariance to determine whether there were differences at post-test and at follow-up between the intervention group and control group relative to knowledge and intent. Pretest knowledge scores were used as the covariate for the knowledge analysis. Pretest intent scores were used as the covariate for the intent analysis. All analyses were conducted using IBM SPSS Academic Software.

Table 1. Results From Factor Analysis

Item	Factor Loading	Cronbach Alpha
Intent to have sex		
Within the next year	.817	.722
Before high school graduation	.903	
Before marriage	.815	

RESULTS

For the variable sexual knowledge, matched pretest-post-test data were obtained from 1829 students, and matched pretest-follow-up data were obtained from 1179 students. For the variable sexual intent, matched pretest-post-test data were obtained from 1788 students, and matched pretest-follow-up data were obtained from 1124 students.

Demographic data from pretest indicated that there were more girls (53.7%) than boys. Students ranged in age from 10 to 14, with 13-year-old students comprising the largest number (40.9%), followed by 12-year-old students (29.4%), and 14-year-old students (17.5%). Hispanics comprised the largest ethnic group (49.6%) followed by blacks/African Americans (21.5%), and whites (17.1%). Middle Eastern students, students from both East Asia and South Asia, students who identified as Hawaiian/Pacific Islander, and American Indian students also completed the questionnaire. More than half of the students (53.3%) lived with both parents, while a substantial percentage (30.1%) lived with their mother only.

Factor Analysis

A confirmatory factor analysis was conducted for the 3-item sexual intent scale. All items loaded on a single factor at .815 or higher, indicating that as a set the items did appear to measure a single construct. Cronbach alpha was .722. Items and factor loadings are shown in Table 1.

Analysis of Covariance

Results of the analysis of covariance indicated significant post-test differences ($F_{1,1724} = 182.36, p < .001$) and significant follow-up differences ($F_{1,1089} = 38.72, p < .001$) between the intervention group and the comparison group relative to sexual knowledge. At both post-test and at follow-up, the students who had participated in the YYC curriculum had a higher level of sexual knowledge than the comparison group. Means and standard deviations are shown in Table 2. Results of the analysis of covariance are shown in Table 3.

Results also showed significant post-test differences ($F_{1,1785} = 45.12, p < .001$) and significant follow-up differences ($F_{1,1121} = 20.264, p < .001$) between the intervention group and the comparison group ($p < .001$) relative to sexual intent (Table 2 and

Table 2. Means and Standard Deviations for Knowledge and Sexual Intent

Variable	Pretest	Post-Test	Follow-Up
Comparison group			
Knowledge			
Mean	8.71	8.95	9.00
SD	1.84	1.79	1.94
N	784	704	499
Sexual intent			
Mean	6.26	6.69	6.82
SD	2.54	2.75	2.99
N	794	687	478
Intervention group			
Knowledge			
Mean	9.20	10.18	9.84
SD	1.91	1.80	1.85
N	1206	1125	680
Sexual intent			
Mean	5.97	5.84	6.07
SD	2.83	2.85	2.91
N	1276	1101	646

Table 3. Results of Analysis of Covariance Tests

Variable	df	F	p	R ²
Post-test				
Knowledge	1, 1727	182.36	<.001	.235
Sexual intent	1, 1785	45.12	<.001	.518
Follow-up				
Knowledge	1, 1089	38.72	<.001	.139
Sexual intent	1, 1121	45.12	<.001	.367

Table 3). At both post-test and at follow-up, the students who had participated in the YYC curriculum had a lower sexual intent score than did the comparison group. Means and standard deviations are shown in Table 2. Results of the analysis of covariance are shown in Table 3.

DISCUSSION

The purpose of the study was to examine the effects of the YYC curriculum on student sexual knowledge and intentions. The results of the study showed that students who participated in the curriculum intervention had higher knowledge scores and lower intentions to have sex than students who did not participate in the curriculum. Knowledge and behavioral intent are accepted as antecedents of actual behavior, but it cannot be assumed that because the curriculum was effective in changing knowledge and intent, it will also have an impact on sexual behavior.

Previous research has shown mixed results for both comprehensive sexuality education programs and abstinence education programs. Some programs have found positive effects, at least some of the time, with the weight of the evidence favoring more comprehensive approaches. Lack of positive results for

abstinence programs may be due to lack of program effectiveness, but may sometimes be due to program design. For example, the now classic evaluation of Reducing the Risk, a comprehensive sexuality education curriculum, did find that among those students who had not engaged in sex at pretest, those in the intervention group were less likely at the 18-month follow-up to report having engaged in sex, than were students in the control group. At the 12-month follow-up, however, there was no difference between students in the curriculum group and control group.¹⁸ If the researchers had not followed students for an additional 6 months, they would have concluded the program was ineffective at producing behavior change. An evaluation of the Sex Can Wait curriculum series also employed an 18-month follow-up. The program did find immediate behavioral effects for the program at the high school level that were no longer significant at the follow-up, but it was at the 18-month follow-up that behavioral effects were noted for the upper elementary and middle school levels.¹⁰ The follow-up in the Get Real evaluation averaged 12 months.¹³ The KIR evaluations started with seventh graders and followed them through the ninth grade^{10,11} or tenth grade.¹² For programs to show positive behavioral results evaluations have to follow study participants for a long enough period of time that control group participants begin engaging in sex, and at a higher rate than study participants in the intervention group. Most program evaluations have included only a limited follow-up time period.

We knew that compared with programs that have shown positive behavioral results, the schools with which we were working would agree to only a limited follow-up period. Additionally, not all school administrators and not all parents are comfortable with asking preteens and young teens questions about their sexual behavior. Therefore, the focus of this study was on variables believed to be less controversial. In this respect, the evaluation was similar to that used by Sulak et al⁹ in the evaluation of the Worth the Wait program. We strengthened the evaluation design used by Sulak et al⁹ by including a control group and a limited follow-up period. The fact that this evaluation did find statistically significant, positive results for the *YYC* curriculum is encouraging, and should lead researchers to undertake a rigorous evaluation of the curriculum using random assignment of schools to intervention and control conditions, addressing measures of actual behavior and including a long-term follow-up. The positive findings from this study will help researchers make the case with school officials and parents for this type of expanded evaluation.

Importance and Contribution of Findings

Although the US rate of teen child-bearing is far lower today than it was at its peak 25 years ago,²⁶ one

study found it to be the highest of the 21 countries for which complete data were available.²⁷ Additionally, nearly half of all new cases of sexually transmitted diseases occur among teens and young adults in the 15-24 age group.³ The positive impact on knowledge and sexual intent found in this study holds promise that these findings could translate into behavioral change. If the promise of the *YYC* curriculum holds true and the curriculum is found to reduce teen pregnancy and sexual risk taking, then sexuality educators will have another important tool to help enhance the sexual health of young people. Many communities are reluctant to embrace a comprehensive approach to sexuality education, but would consider an abstinence education program. Thus, an evidence-based abstinence program would be particularly appealing to these communities and could potentially make an important contribution to sexual health.

Limitations

Interpretation of study results should take the limitations of the study into account. Participating schools were not randomly assigned to intervention and control conditions. The students were largely members of ethnic minorities attending school in a northeast urban city. The results may not apply to other types of students in other parts of the country. Also, the time from post-test to follow-up varied from 3 months at some schools to as long as 9 months at other schools. Follow-ups of different lengths may have resulted in different effects. Additionally, the testing instrument was a self-report questionnaire. Students read the questions themselves and responded on the same optical-scan questionnaire. As is the case, in general, with self-report questionnaires, the accuracy of the responses students provided depended upon their understanding of the questionnaire items and their motivation to provide truthful responses. Importantly, instructors teaching the curriculum had been specifically hired and trained to implement the *YYC* curriculum. Thus, these results may not generalize to situations in which regular classroom teachers implement *YYC*. The study includes a report of the impact of the intervention on behavioral intention, but not actual behavior. In spite of these limitations, the study does demonstrate the positive impact the *YYC* curriculum had on the sexual knowledge and sexual intentions of young, urban youth.

Conclusions

The results indicate that the *YYC* program had a statistically significant, positive impact on knowledge gain and sexual intent. Knowledge and behavior intent are important precursors to actual behavior. Thus, future research should examine the effects of the program on changes in sexual behavior, including postponing sexual involvement, include a long-term

follow-up period, and determine whether the effects of the program vary by student characteristics, eg, sex and ethnicity.

IMPLICATIONS FOR SCHOOL HEALTH

Promoting the sexual health of young people is an important role for school health programs. In this regard, the results of this study indicate that the *YYC* curriculum may hold future promise. To reach this point required the cooperation of schools, parents, and students. For curriculum developers to have an opportunity to pilot educational programs with young people, whether the programs address sexual health or some other health area, school administrators must be willing to work with them to, in effect, try out a new program. Curriculum developers must be willing to see the situation through the eyes of administrators and parents, and understand their first obligation is not to serve as a testing ground for new programming, but to make decisions they believe will be in the best interests of the students.

We must, however, do more than just give programs a try; we must rigorously evaluate them. This adds another dimension: do these programs produce desired outcomes? Evaluators must know what it will take to conduct a strong evaluation, but also how to work with schools, parents, students, and curriculum evaluators to make that happen.

Human Subjects Approval Statement

This study was approved by the Institutional Review Board at Montclair State University.

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