ORIGINAL ARTICLES

Satisfaction with Sex Education in New Mexico High Schools

A Survey of College Students

Meredith Barlow, M.D., Eve Espey, M.D., M.P.H., Lawrence Leeman, M.D., M.P.H., Ariel Scott, M.D., Tony Ogburn, M.D., and Rameet Singh, M.D., M.P.H.

OBJECTIVE: To evaluate the perceived quality of and satisfaction with sex education among University of New Mexico (UNM) college students.

STUDY DESIGN: Survey methods utilized with 18–21-year-old UNM freshmen and sophomores who graduated from a New Mexico high school. The survey included questions about type of sex education, satisfaction with sex education (on a 5-point Likert scale), and impact on sexual decision-making and was emailed to participants.

RESULTS: A total of 9,866 surveys were emailed; 2,441 were returned (response rate=24.7%); 415 did not attend high school in New Mexico, leaving 2,024 surveys in the analytic sample. Comprehensive sex education received higher ratings than abstinence-only or no sex education (3.29±0.03 vs. 2.53±0.07 vs. 1.87±0.08, respectively, $p<0.0001$). More students receiving comprehensive sex education than abstinence-only education reported improved ability to make decisions about sexual initiation (66.6% vs. 54.0%; $p=0.0005$), pregnancy prevention (92.7% vs. 72.9%; $p<0.0001$), sexually transmitted infection prevention (92.5% vs. 70.4%; $p<0.0001$), and avoidance of unwanted sex (77.6% vs. 65.8%; $p=0.0003$).

CONCLUSION: New Mexico college students were more satisfied with comprehensive sex education in high school. New Mexico should consider establishing a state requirement for comprehensive sex education. (J Reprod Med 2016;61:95–100)

Given the large numbers of unintended pregnancies and STIs, states and the country should consider requirements for comprehensive sex education.

Keywords: birth control; contraception; pregnancy in adolescence; schools, secondary; sex education; sexual abstinence; teenage pregnancy.

Pregnancy and sexually transmitted infections (STIs) exact a high price on adolescents, leading to outcomes of abortion, teen childbearing, and infectious morbidity. Teen pregnancy rates in the United States (U.S.) are among the highest of all developed countries.[1,2] Although the problem of teen pregnancy is complex and multifactorial, comprehensive sex education is a component of the solution. In 2011 47.4% of U.S. high school students had engaged in sexual intercourse.[3] Approximately 750,000 U.S. teenagers aged 15–19 become pregnant each year; approximately 400,000 give birth.[1,4] In addition, youth aged 15–24 account for nearly

From the Departments of Obstetrics and Gynecology and of Family and Community Medicine, University of New Mexico School of Medicine, Albuquerque, and the Department of Obstetrics and Gynecology, University of Texas Rio Grande Valley School of Medicine.

Address correspondence to: Lawrence Leeman, M.D., M.P.H., Department of Family and Community Medicine, University of New Mexico School of Medicine, 2400 Tucker N.E., MSC09 5040, Albuquerque, NM 87131 (lleeman@salud.unm.edu).

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half of the 18.9 million new cases of STIs each year. In 2008 New Mexico had the highest teen pregnancy rate in the country and in 2011 STI rates well above the national average.[4-6]

Comprehensive sex education includes instruction on abstinence, contraception, and STI prevention. Abstinence-only sex education mandates instruction that abstinence until marriage is the only acceptable standard of behavior and that contraceptives cannot be discussed except to emphasize their failure rates. Abstinence-only programs often use biased language about abortion and discuss non-evidence-based risks.[7] New Mexico state law requires that elementary, middle, and high schools provide instruction about "HIV and related issues," including ways to reduce the risk of acquiring HIV, and must "stress abstinence."[8] These vague guidelines mean that individual school boards, principals, and teachers determine the actual content of the sex education curriculum, leading to wide variations among schools and school districts.

The aim of this study was to determine whether University of New Mexico (UNM) college students received abstinence-only or comprehensive sex education in high school and to evaluate their satisfaction with their sex education. The survey also assessed whether or not students found their sex education valuable in sexual decision-making and in preparing them for family planning and prevention of STIs. We hypothesized that students who received abstinence-only sex education prior to college would be less satisfied with their sex education as compared to peers who received comprehensive sex education.

Materials and Methods

This study used survey methods focused on New Mexico college students' knowledge and satisfaction with their high school sex education. Participants were New Mexico high school graduates aged 18–21 who were enrolled as freshmen or sophomores at UNM. Exclusion criteria were home-schooled students or those who attended high school outside New Mexico. Eligible students who agreed to participate completed an online survey; ineligible students were directed to the final page of the survey, which included a link to a sex education website.

A 26-item confidential online questionnaire was adapted from a prior undergraduate survey[9] and was pilot-tested and modified to produce a final survey designed with Opinio web-based survey software.[10] The survey was emailed to all freshmen and sophomores attending UNM in the fall of 2011 during the first month of school. Campuses included the main campus in Albuquerque and branch campuses in Gallup, Los Alamos, Taos, and Los Lunas. Students' email addresses were obtained from the UNM Office of the Registrar in Albuquerque. The initial email was followed by weekly reminder emails for the subsequent 3 weeks. If no response was obtained after 4 contacts, participants were considered nonrespondents and were not contacted again. To encourage participation in the study, the first 300 students to complete the survey were offered a discount coupon for a local coffee shop.

Demographic information including gender, ethnicity, age, and high school attended was collected. High schools were classified as urban if they were located in Albuquerque/Rio Rancho, Santa Fe, or Las Cruces, NM, the only NM cities with a population >50,000[11]; all other high schools were classified as rural. Participants indicated whether they received comprehensive versus abstinence-only education as follows: "A comprehensive class which taught abstinence and also taught other methods of contraception including condoms, pills, etc." versus "An abstinence-only class which taught abstinence from all sexual activity as the only option for unmarried people, where other methods of contraception were not taught." Students were asked to rate, on a 5-point Likert scale (anchors 1=worst, 5=best), their satisfaction with the type of sex education they received. The survey also included questions with the following stem: "The sex ed I got in school up until finishing high school helped me" followed by "make decisions about when to start having sex," "understand how to prevent pregnancy," "prevent STIs," and "avoid unwanted sex." These questions were answered on a 4-point Likert scale (strongly agree, somewhat agree, somewhat disagree, strongly disagree). For the analysis the scale was dichotomized, combining "agree" and "somewhat agree" and "somewhat disagree" and "disagree." The survey also included questions about sources of information about sexuality and desire for further information about sexuality topics.

Statistical analysis was completed using SAS statistical software (Version 9.3).[12] A one-way ANOVA power analysis was performed for the ability to detect a difference in the perceived quality of the

type of sex education received. A sample size calculation was completed: based on an anticipated distribution, an estimated sample size of 1,500 would consist of 1,200 who received comprehensive sex education, 200 who received abstinence-only sex education, and 100 who received an unidentified or unknown type of sex education. The means of these 3 groups were compared. A total sample of 1,500 subjects achieves 80% power to detect a difference in the means ≥0.14 on a 5-point Likert scale. The UNM Human Research Protection Office approved the study.

Results

In the fall of 2011 20,935 students were enrolled as undergraduates at UNM, including 7,686 students attending branch campuses. A total of 9,866 surveys were emailed to UNM freshmen and sophomores aged 18-21; of those, 2,441 students completed the survey, resulting in a 24.7% response rate. The final analytic sample of 2,024 surveys excluded 417 respondents who did not attend a New Mexico High school. Our sample did not differ from the overall student population in age, gender, or ethnicity.

Prior to graduating from high school, 79.8% of respondents received comprehensive sex education, 12.3% of respondents received abstinence-only sex education, and 7.9% received no sex education (Table I). Demographic characteristics revealed that 72.1% percent of respondents were female, almost half were Hispanic, and the majority graduated from an urban high school. There was no difference in gender and ethnicity between students who received comprehensive versus abstinence-only sex education. A higher proportion of students who did not receive sex education attended rural high schools (43.4%) than the proportion of those who received comprehensive (24.8%) or abstinence-only (22.4%) sex education ($p<0.0001$).

The average rating of quality of sex education was higher among students reporting comprehensive sex education as compared to abstinence-only or no education (3.29 ± 0.03 vs. 2.53 ± 0.07 vs. 1.87 ± 0.08, respectively; $p<0.0001$) (Table II). Men rated the quality of sex education higher as compared to women (3.08 ± 0.04 vs. 2.94 ± 0.03, respectively; $p=0.01$), and urban students rated the quality of sex education higher as compared to rural students (3.06 ± 0.03 vs. 2.82 ± 0.05, respectively; $p<0.0001$). There were no differences in ratings based on ethnicity ($p=0.56$).

Topics covered in the sex education class varied by type of sex education. Birth control methods were discussed in 94.8% of comprehensive sex education classes and, surprisingly, in 47.6% of abstinence-only classes ($p<0.0001$) (Table III). Refusal skills (how to say no to sex) were discussed in 87.0% of comprehensive classes as compared to 82.1% of abstinence-only classes ($p=0.06$), and the topic of abortion was discussed in 58.5% of comprehensive classes as compared to 51.0% of

Table I *Demographic Characteristics by Type of Sex Education (N=2,024)*

Characteristic	Comprehensive sex education No. (%)	Abstinence-only sex education No. (%)	None No. (%)	Total No. (%)	p Value
Gender					0.66
Female	945 (71.6)	149 (73.4)	98 (74.8)	1,192 (72.1)	
Male	375 (26.4)	54 (26.6)	33 (25.2)	462 (27.9)	
				*n=370 missing values	
Location					<0.0001*
Rural	324 (24.8)	45 (22.4)	53 (43.4)	422 (25.9)	
Urban	983 (76.2)	156 (77.6)	69 (56.6)	1,208 (74.1)	
				*n=394 missing values	
Ethnicity					0.49
Hispanic	604 (46.0)	91 (45.1)	51 (39.2)	746 (45.3)	
Native American	61 (4.6)	9 (4.5)	9 (6.9)	79 (4.8)	
White	514 (39.1)	84 (41.6)	51 (39.2)	649 (39.4)	
Other	135 (10.3)	18 (8.9)	19 (14.6)	172 (10.4)	
				*n=378 missing values	

*The p value for comparing comprehensive with abstinence for location (24.8% cf. 22.4%) is 0.46. The p values are <0.001 when comparing each of these groups with none.

Table II *Rating of the Quality of Sex Education by Demographic Characteristics and by Type of Sex Education (5-Point Likert scale, Anchors 1=Worst, 5=Best)*

Characteristic	Overall rating of quality of sex education in high school (Mean±SE)	p Value
Gender		0.01
Male	3.08±0.04	
Female	2.94±0.03	
Race/ethnicity		0.56
Hispanic	2.99±0.04	
Native American	2.90±0.11	
White	3.00±0.04	
Other	2.91±0.07	
Location		<0.0001
Urban	3.06±0.03	
Rural	2.82±0.05	
Type of sex education		<0.0001
Comprehensive	3.29±0.03	
Abstinence	2.53±0.07	
None	1.87±0.08	

abstinence-only classes (p=0.0466). There was no difference in the percentages of both comprehensive and abstinence-only sex education classes that covered the topic of abstinence (95.9% vs. 97.0%, respectively; p=0.46).

Students who reported comprehensive education versus those who received abstinence-only education were more likely to report that their education helped them to make decisions about sexual debut (66.6% vs. 54.0%, respectively; p=0.0005), to prevent pregnancy (92.7% vs. 72.9%, respectively; p<0.0001), and to prevent sexually transmitted infections (92.5% vs. 70.4%, respectively; p<0.0001). In addition, students who received comprehensive sex education versus those who received abstinence-only education felt that their sex education better helped them avoid unwanted sex (77.6% vs. 65.8%, respectively; p=0.0003) (Table III).

When asked whether the amount of sex education they received was adequate, 53.1% reported "just right," 2.6% reported "too much," and 820 (40.5%) reported "not enough."

Among students reporting not enough sex education, those who received abstinence-only sex education desired more information about birth control methods as compared to students who received comprehensive sex education (85.6% vs. 68.2%, respectively; p=0.001) (Table IV).

Students who received comprehensive sex education more frequently reported that the most useful sex education was from a school class, such as biology or health, than students who received abstinence-only sex education (36.0% vs. 17.3%, respectively; p<0.0001). In addition, students receiving abstinence-only education were more likely to state that they did not receive useful information at all than students who received comprehensive sex education (7.9% vs. 2.9%, respectively; p<0.0001).

Discussion

New Mexico students who received comprehensive high school sex education were more likely to be satisfied with their sex education than were students who received abstinence-only or no sex education. The higher approval rating for comprehensive sex education likely reflects the improved self-

Table III *Content and Value of Sex Education*

Content/value	Comprehensive sex education No. (%)	Abstinence-only sex education No. (%)	p Value
Topic areas covered			
Birth control methods	1,228 (94.8)	90 (47.6)	<0.0001
Refusal skills (how to say no to sex)	1,090 (87.0)	160 (82.1)	0.06
Abortion	716 (58.5)	101 (51.0)	0.0466
Abstinence	1,246 (95.9)	195 (97.0)	0.46
"Sex education helped with"			
Making decisions about when to start having sex	876 (66.6)*	109 (54.0)*	0.0005
How to prevent pregnancy	1,220 (92.7)	148 (72.9)	<0.0001
How to prevent STIs	1,212 (92.5)	143 (70.4)	<0.0001
Avoiding unwanted sex	1,016 (77.6)	133 (65.8)	0.0003

*These columns combine "agree" and "somewhat agree."

Table IV *Topic Areas Desired Among Students Reporting Not Enough Sex Education*

Topic area needed for additional sex education	Comprehensive sex education N=427 No. (%)	Abstinence-only sex education N=111 No. (%)	None N=101	p Value
Pregnancy	214 (50.1%)	55 (49.6%)	56 (55.5%)	0.6
Birth control	291 (68.2%)	95 (85.6%)	70 (69.3%)	0.001
STI prevention	226 (52.9%)	68 (61.3%)	59 (58.4%)	0.227

efficacy and better preparation for sexual decision-making experienced by students who received comprehensive education: students who received comprehensive sex education reported they were more knowledgeable about how to prevent pregnancy and how to prevent STIs. Additionally, students who were less satisfied with abstinence-only education desired more information on birth control.

Particularly concerning is that graduates of rural high schools were more likely to receive no sex education at all. Access to health services, including reproductive health services, is more limited in rural areas,[13] potentially compounding the problem of inadequate sex education. Determining reasons for this lack of education were beyond the scope of this study but might include lack of resources, attitudes of teachers or administrators, or local policies.

The Sexuality Information and Education Council of the United States (SIECUS) study of abstinence-only until marriage programs demonstrated that abstinence-only education does not appear to reduce age of first intercourse, number of sexual partners, or the incidence of abstinence.[14] Additionally, a review of the impact of abstinence-only education, funded by Title V, section 510, established no differences in the likelihood of sexual abstinence, condom use, or knowledge of risks of STI and pregnancy with unprotected sex in teens who received abstinence-only education versus those who received comprehensive education.[15]

Our data of improved self-efficacy and satisfaction with comprehensive sex education as well as the evidence of the superiority of comprehensive sex education have implications for policy. Given the large numbers of unintended pregnancies and STIs, states and the country should consider requirements for comprehensive sex education.

A limitation of our study was the low response rate of 24.7%. Consistent with other surveys, more women responded than men. In addition, our study included only college students; results may not be generalizable to other groups. Twenty-two percent of our respondents were unable to categorize their high school sex education as comprehensive or abstinence and chose "other," which may have decreased our ability to detect differences in the effects of the 2 types of sex education. Despite the low response rate, study numbers are large. The majority (74%) of participants reported being sexually active, underlining the importance of useful and factual sex education.

In the words of a current undergraduate student at UNM, "The only form of sex-ed that I received from the public school system was a one-day abstinence-only class which taught us that we should abstain from sex until we are married and in an exclusively monogamous relationship. During that class we were also told about STDs and how they are a danger once you become sexually active, but nothing about how to use a condom or birth control. To me, these are the two most important sex-related topics that need to be discussed when teaching sex-ed and currently are not being covered at all." Given students' preference for and perception of improved reproductive health decision-making with comprehensive sex education, New Mexico middle and high schools should improve and expand the sex education curriculum.

In conclusion, New Mexico college students were more satisfied with comprehensive sex education in high school. New Mexico should consider establishing a state requirement for comprehensive sex education.

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