

Long-Term Effects of a U.S. University Human Sexuality Course on Use of Contraception

Courtney E. Sciarro, Shelby L. Mozingo, Elenah B. Rosopa and Bruce M. King *

Department of Psychology, Clemson University, Clemson, SC 29634, USA

* Correspondence: bking2@clemson.edu

Abstract: This study examined long-term effects of taking a university sexuality course on use of contraception. A questionnaire was given to two groups of students: 602 students enrolled in the first week of a comprehensive sexuality course, and 352 students who had completed the course 1–1.5 years earlier. A significantly smaller percentage of former students had used no contraception at last sexual intercourse ($p < 0.005$). Former students were less likely to have used a dual method, and favored either IUDs, implants, or birth control pills used alone. There was no notable change in the percentage of former students using withdrawal or condoms. Former students showed evidence of better communication about sex with their partners. The effect size for use of contraception was small, but if this result is true of other college sexuality courses, nationwide it translates into thousands of students who may have avoided unintentional pregnancies.

Keywords: human sexuality; sexuality education; college students; contraception

1. Introduction

The proportion of U.S. high school students who have had sexual intercourse has decreased significantly since 1995 [1]. Nevertheless, the adolescent pregnancy rate remains one of the highest in the world [2]. Nearly half of pregnancies in the U.S. are unintended [3].

At least 85% of Americans support the teaching of sexuality education in public high schools [4], yet only 22 states currently require that students receive accurate information about contraception [5]. Today, over 80% of U.S. public colleges and universities and 61% of private institutions offer a human sexuality course, with 60% of public institutions and over 36% of private institutions offering comprehensive courses [6]. Thus, for many young people living in the U.S., higher education is the last opportunity for formal sexuality education. College students who enroll in a human sexuality course want comprehensive sexuality education [7,8].

The debate surrounding high school sexuality education has focused on condoms and other contraception to prevent pregnancy and sexually transmitted infections [9,10]. However, the most recent review of high school sex education programs concluded that they were “not effective in promoting healthy sexual behaviors” [9]. Several studies have found that many U.S. adolescents lack communication skills about sexuality [11,12]. Better communication between sexual partners results in increased use of contraception [11–13].

Numerous studies have reported that taking a college-level sexuality course results in students becoming more comfortable with their own sexuality, more understanding and tolerant of the sexuality of others, and more egalitarian in attitudes [14]. These are notable achievements. However, while nearly all higher education comprehensive sexuality courses include lectures on contraception and sexually transmitted infections [15], no previous study of sexuality courses in higher education reported whether the courses resulted in better use of effective contraceptive methods. This remains an important issue among college students. Nearly 10% of dropouts in community colleges are the result of unplanned pregnancies [16]. The present study examined whether college students who had completed



Citation: Sciarro, C.E.; Mozingo, S.L.; Rosopa, E.B.; King, B.M. Long-Term Effects of a U.S. University Human Sexuality Course on Use of Contraception. *Sexes* **2023**, *4*, 1–6. <https://doi.org/10.3390/sexes4010001>

Academic Editor: David L. Rowland

Received: 26 October 2022

Revised: 29 November 2022

Accepted: 18 December 2022

Published: 22 December 2022



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

a comprehensive human sexuality course displayed a long-term increase in use of effective methods of contraception. An indicator of the course's effect on communication skills was included in the questionnaire.

2. Methods

Participants were 954 undergraduate students who were enrolled in, or who had previously taken, an upper-level comprehensive human sexuality course in the Department of Psychology at Clemson University. The sexuality course was comprehensive, with twenty-five 75-min in-person lectures covering history and cross-cultural perspectives, anatomy (3 lectures), hormones, physiological responses, sexually transmitted infections (3.5 lectures), birth control (3 lectures), pregnancy and childbirth, gender identity and gender roles, sexual orientation, development, sexual behaviors, sexual problems, paraphilias, sexual abuse, and commercial sex. Two chapters in the textbook included sections educating students how to communicate with others about sexuality. The course had one instructor and all participants used the same textbook.

Two groups of students were studied using an independent-groups design: (1) Current students—166 men and 436 women enrolled in the first week of the course, and (2) Former students—87 men and 265 women who had completed the course with a grade of "C" or better 1 to 1.5 years earlier. The reason newly enrolled students were used as the control group is explained in the Discussion section.

Attempts to contact former students (list supplied by the university) were made via their last known university e-mail address, but some may not have received it because they had graduated and no longer checked their university e-mail (it was not possible to determine this number).

For the two semesters from which former students were recruited, 80% of the students earned a final grade of "A" or "B." Another 12% earned a "C." In the semester from which current students were recruited, 88% eventually earned an "A" or "B." In both cases, the majority of the "D" and "F" grades were due to nonparticipation (attendance, assignments). Thus, former students who earned lower than "C" may not have acquired sufficient knowledge to result in change.

The on-line questionnaire, taken anonymously, included four demographic questions and a question about use of contraception taken from the CDC's Youth Risk Behavior Survey [17]: "The last time you had sex with an opposite-sex partner, what method(s) did you or your partner use to prevent pregnancy?" The results were analyzed with chi-square. A second question, modified from King, Parisi, and O'Dwyer [18], addressed communication skills: "When speaking with your partner, how often do you use proper (not slang) terms for body parts and behaviors? 1 = never to 7 = always." The results were analyzed with 2 (course experience) \times 2 (gender) ANOVA. The students were urged to answer questions honestly, but there was concern that some students might answer questions in the direction of the instructor's expectations [19]. Thus, these questions were followed by the short version of the Marlowe-Crowne scale to test for social desirability biased responding [20].

3. Results

Among current students, 84.5% identified as Caucasian/white, 3.4% as African American, 3.3% as Hispanic, 3.6% as other, and 5.2% identified as two or more ethnicities. Ninety-two percent identified as heterosexual, 2.9% as homosexual, and 4.7% as bisexual. Among former students, 86.2% identified as Caucasian/white, 3.7% as African American, 3.4% as Hispanic, 1.4% as Asian, and 3.1% identified as two or more ethnicities. With regard to sexual orientation, 86.2% identified as heterosexual, 3.1% as homosexual, and 9.9% as bisexual. The large female/male ratio in both groups (see Methods) is typical for college sexuality courses [21]. The mean age for current students was 19.5 years for current students, and 20.8 years for former students. Among the 954 participants, only one former student and three current students were married.

In the sample, 27.1% of current men, 33.7% of current women, 25.3% of former men, and 25.3% of former women reported never having had sexual intercourse with an opposite-sex partner. Among unmarried students who had engaged in sexual intercourse, 96.2% of former students had used an effective method of contraception at last intercourse (this excludes withdrawal) compared to 91.8% of current students (see Table 1). Significantly fewer former students had used no contraceptive method the last time they had sex than current students: 4.39% for current students and 0.76% for former students ($\chi^2 = 7.88$, $df = 1$, $p < 0.005$, $\phi = 0.10$). All of the women who had previously taken the course reported using some method of contraception.

Table 1. Contraceptive methods used by unmarried current and former students in a U.S. university comprehensive sexuality course.

	Current Men (<i>n</i> = 166)	Current Women (<i>n</i> = 436)	Former Men (<i>n</i> = 87)	Former Women (<i>n</i> = 265)
I have never had sexual intercourse with an opposite sex partner	45 (27.1%)	147 (33.7%)	22(25.3%)	67 (25.3%)
Students who have had sexual intercourse	<i>n</i> = 121	<i>n</i> = 289	<i>n</i> = 65	<i>n</i> = 198
No method was used	10 (8.3%)	8 (2.8%)	2 (3.1%)	0 (0.0%)
Withdrawal only	9 (7.4%)	6 (2.1%)	2 (3.1%)	6 (3.0%)
Condoms only	15 (12.4%)	31 (10.7%)	11 (16.9%)	24 (12.1%)
Birth control pills only	13 (10.7%)	36 (12.5%)	9 (13.8%)	44 (22.2%)
IUD or implant only	8 (6.6%)	22 (7.6%)	10 (15.4%)	24 (12.1%)
Shot, patch, or ring only	1 (0.8%)	4 (1.4%)	0 (0.0%)	3 (1.5%)
Birth control pills plus withdrawal	10 (8.3%)	52 (18.0%)	8 (12.3%)	25 (12.6%)
Shot, patch, ring plus withdrawal	0 (0.0%)	3 (1.0%)	0 (0.0%)	3 (1.5%)
IUD plus withdrawal	0 (0.0%)	8 (2.8%)	2 (3.1%)	8 (4.0%)
Condoms plus withdrawal	4 (3.3%)	22 (7.6%)	1 (1.5%)	5 (2.5%)
Birth control pills plus condoms	44 (36.4%)	87 (30.1%)	15 (23.1%)	43 (21.7%)
Shot, patch, ring plus condoms	2 (1.7%)	0 (0.0%)	2 (3.1%)	0 (0.0%)
IUD plus condoms	5 (4.1%)	10 (3.5%)	3 (4.6%)	13 (6.6%)

Among students who had used a contraceptive method, 63% of current students had used a dual method of contraception at last intercourse, compared to 49% of former students ($\chi^2 = 12.51$, $df = 1$, $p < 0.005$, $\phi = 0.14$). The change was due largely to an increased use by former students of birth control pills or IUD/implants as a sole method ($\chi^2 = 14.36$, $df = 1$, $p < 0.005$, $\phi = 0.15$). There was no notable change in the use of withdrawal or condoms, either as a stand-alone method or as part of a dual method.

The course resulted in better use of proper terms when speaking with one's partner. There was a significant main effect for groups [$F(1, 960) = 16.14$, $p < 0.001$, $\omega^2 = 0.02$], as well as a significant main effect for gender (women gave higher ratings in both groups; $F(1, 960) = 3.94$, $p < 0.05$, $\omega^2 = 0.003$), but not for the interaction [$F(1, 960) = 0.15$, $p = 0.701$]. There was no evidence that students had responded in a socially desirable manner.

4. Discussion

The present results indicate that the comprehensive university sexuality course had effects on some students' use of contraception that were maintained for at least 1 to 1.5 years after completion of the course. High school sex education programs result in adolescents becoming more knowledgeable about STIs and contraception, but numerous studies have found little or no relationship between level of knowledge and safer-sex behaviors [9,22]. The present study found that college students formerly enrolled in a sexuality course were significantly less likely to have used no contraception during last sexual intercourse. The effect size was small [$\phi = 0.10$, [23]], but if other college sexuality courses have similar effects this translates into tens of thousands of students previously enrolled in sexuality

courses who may have avoided unintentional pregnancies, which often results in students dropping out of college [16].

The failure of high school programs to change safer-sex behaviors has been attributed to many things, including that young teenagers lack communication skills about sex [11,12]. We hypothesize that the increase in use of contraception found in the present study are the result of increased communication skills (and comfort talking about sex) that is achieved by taking a sexuality course. Porter et al. [24] found that a sexuality course resulted in increased communication with peers about sexuality topics, while Henry [25] reported increased communication with partners, including talking about topics covered in class. Fischer [26] reported that a university sexuality course resulted in increased use of proper words by students when talking to others about sex, and the present study showed that this was maintained beyond the end of the course. More frequent use of proper terms was previously found for former students' talks with their children as well [18]. More open communication about sex is associated with increased use of contraception [11–13].

As has been found in other recent studies, many students in both groups had used dual methods of contraception [27]. Former students were more likely to have used an IUD or birth control pills alone rather than a dual method. In lecture (and textbook), it was stressed that experts today regard the IUD to be a very safe form of contraception (in addition to being long-acting with a low failure rate). On the other hand, the failure to find an increase in the percentage of former students using condoms (as a primary or secondary technique) is disappointing. In lecture and the book, condoms were stressed as the only contraceptive technique that helps prevent the spread of bacteria and viruses that cause sexually transmitted infections. Some researchers have concluded that one reason high school sexuality programs have not changed teenagers' use of condoms is that many young people may lack the personal salience to practice safer sex [28]. The same may be true of many young college students.

The present study used an independent-groups design. An early review of sexuality courses in higher education found that many of the studies had not used any control group or an inappropriate control group [29]. They concluded that the proper control group should be students enrolled, or those who wish to enroll, in the sexuality course because of important differences with students in the general population of college students. Students who enroll in college sexuality courses are generally more sexually experienced and have more permissive attitudes than the general population of students [30]. Using students enrolled in the same course maximizes similarities among participants. That was especially true for the present study, for which the course was an elective that students chose to enroll in (the course was not required by any major). The students who enrolled likely had an interest in topics related to sexuality that differed from the general population of students [31].

4.1. Conclusions

The present study examined only a small aspect of what is covered in most university comprehensive sexuality courses. College students want “more discussion of the social, emotional and relational aspects of sex” [7]. Many studies have demonstrated that university courses are successful in achieving those goals [14]. The present study adds to that literature by showing some long-term improvement in use of effective contraception. The effect size was small. Previous research of university sexuality course's effects on attitudes found that teaching format (e.g., lecture versus discussion) was less important than the amount of work addressing a topic [32,33]. Former students in the present study attended three 75-min lectures on birth control but this included one lecture on sterilization procedures and abortion. Future research should address the amount of lecture time devoted to contraception necessary to affect greater change (e.g., increased use of condoms), as well as assess the possible benefit of simultaneously including communication about contraception.

4.2. Limitations

The present results are from one university. The large enrollment in the course did not allow for discussion of topics and different results may occur in small enrollment courses that allow for discussion. The number of ethnic minorities was too small for meaningful comparisons. It is not possible to determine if influences after completion of the course contributed to changes in use of contraception observed with former students.

Author Contributions: Conceptualization: C.E.S., S.L.M. and B.M.K.; methodology: C.E.S., S.L.M. and B.M.K.; investigation: C.E.S., S.L.M. and B.M.K.; writing: C.E.S., S.L.M. and B.M.K.; formal analysis: E.B.R. and B.M.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the university's Institutional Review Board with exempt status (IRB2021-0261).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The raw data may be found in a data repository at Open Science Framework (osf.io/j8rbd/).

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Ethier, K.A.; Kann, L.; McManus, T. Sexual intercourse among high school students—29 States and United States overall, 2005–2015. *MMWR Morb. Mortal. Wkly. Rep.* **2018**, *66*, 1393–1397. [[CrossRef](#)] [[PubMed](#)]
2. Sedgh, G.; Finer, L.B.; Bankole, A.; Eilers, M.A.; Singh, S. Adolescent pregnancy, birth, and abortion rates across countries: Levels and recent trends. *J. Adolesc. Health* **2015**, *56*, 223–230. [[CrossRef](#)]
3. Finer, L.B.; Zolna, M.R. Declines in unintended pregnancy in the United States, 2008–2011. *N. Engl. J. Med.* **2016**, *374*, 843–852. [[CrossRef](#)] [[PubMed](#)]
4. Kantor, L.; Levitz, N.; Holstrom, A. Support for sex education and teenage pregnancy programmes in the USA: Results from a national survey of likely voters. *Sex Educ.* **2020**, *20*, 239–251. [[CrossRef](#)]
5. Guttmacher Institute. Sex and HIV Education. 2022. Available online: <https://www.guttmacher.org/state-policy/explore/sex-and-hiv-education> (accessed on 1 October 2022).
6. King, B.M.; Parker, K.L.; Hill, K.A.; Kelly, M.J.; Eason, B.L. Promoting sexual health: Sexuality and Gender/Women's Studies courses in US higher education. *Health Behav. Policy Rev.* **2017**, *4*, 213–223. [[CrossRef](#)]
7. Astle, S.; McAllister, P.; Emanuels, S.; Rogers, J.; Toews, M.; Yazedjian, A. College students' suggestions for improving sex education in schools beyond 'blah blah blah condoms and STDS. *Sex Educ.* **2021**, *21*, 91–105. [[CrossRef](#)]
8. Goldfarb, E.S. What is comprehensive sexuality education all about? Perceptions of students enrolled in an undergraduate human sexuality course. *Am. J. Sex. Educ.* **2005**, *1*, 85–102. [[CrossRef](#)]
9. Lameiras-Fernández, M.; Martínez-Román, R.; Carrera-Fernández, M.C.; Rodríguez-Castro, Y. Sex education in the spotlight: What is working? Systematic review. *Int. J. Environ. Res. Public Health* **2021**, *18*, 2555. [[CrossRef](#)]
10. Santelli, J.S.; Bell, D.L.; Trent, M.; Klein, J.D.; Grubb, L.; Barondeau, J.; Stager, M.; North, S. School-based sex education in the U.S. at a crossroads: Taking the right path. *J. Adolesc. Health* **2021**, *69*, 886–890. [[CrossRef](#)]
11. Noar, S.M.; Carlyle, K.; Cole, C. Why communication is crucial: Meta-analysis of the relationship between safer sexual communication and condom use. *J. Health Commun.* **2006**, *11*, 365–390. [[CrossRef](#)]
12. Widman, L.; Welsh, D.; McNulty, J.K.; Little, K.C. Sexual communication and contraceptive use in adolescent dating couples. *J. Adolesc. Health* **2006**, *39*, 893–899. [[CrossRef](#)] [[PubMed](#)]
13. Lalas, J.; Garbers, S.; Gold, M.A.; Allegrante, J.P.; Bell, D.L. Young men's communication with partners and contraception use: A systematic review. *J. Adolesc. Health* **2020**, *67*, 342–353. [[CrossRef](#)] [[PubMed](#)]
14. King, B.M. Sexuality education in colleges and universities. In *The Palgrave Encyclopedia of Sexuality*; Allen, L., Rasmussen, M.-L., Eds.; Springer Nature: Cham, Switzerland, 2022.
15. Oswald, S.B.; Wagner, L.M.; Eastman-Mueller, H.P.; Nevers, J.M. Pedagogy and content in sexuality education courses in US colleges and universities. *Sex Educ.* **2015**, *15*, 172–187. [[CrossRef](#)]
16. Prentice, M.; Storin, C.; Robinson, G. *Make It Personal: How Pregnancy Planning and Prevention Help Students Complete College*; American Association of Community Colleges: Washington, DC, USA, 2012.
17. Centers for Disease Control and Prevention. Youth Risk Behavior Survey. 2021. Available online: <https://www.dshs.texas.gov/chs/yrbs/attachments/2021-YRBS-Standard-Questions.pdf> (accessed on 1 October 2022).

18. King, B.M.; Parisi, L.S.; O'Dwyer, K.R. College sexuality education promotes future discussions about sexuality between former students and their children. *J. Sex Educ. Ther.* **1993**, *19*, 285–293. [[CrossRef](#)]
19. King, B.M. The influence of social desirability on sexual behavior surveys: A review. *Arch. Sex. Behav.* **2022**, *51*, 1495–1501. [[CrossRef](#)] [[PubMed](#)]
20. Reynolds, W.M. Development of reliable and valid short forms of the Marlowe-Crowne social desirability scale. *J. Clin. Psychol.* **1982**, *38*, 119–125. [[CrossRef](#)]
21. King, B.M.; Burke, S.R.; Gates, T.M. Is there a gender difference in US college students' desire for school-based sexuality education? *Sex Educ.* **2020**, *20*, 350–359. [[CrossRef](#)]
22. Sheeran, P.; Abraham, C.; Orbell, S. Psychosocial correlates of heterosexual condom use: A meta-analysis. *Psychol. Bull.* **1999**, *12*, 90–132. [[CrossRef](#)]
23. Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed.; Lawrence Erlbaum Associates: Hillsdale, NJ, USA, 1988.
24. Porter, A.; Cooper, S.; Henry, M.; Gallo, J.; Graefe, B. The nature of peer sexual health communication among college students enrolled in a human sexuality course. *Am. J. Sex. Educ.* **2019**, *14*, 139–151. [[CrossRef](#)]
25. Henry, D.S. Couple reports of the perceived influences of a college human sexuality course: An exploratory study. *Sex Educ.* **2013**, *13*, 509–521. [[CrossRef](#)]
26. Fischer, G.J. Sex words used by partners in a relationship. *J. Sex Educ. Ther.* **1989**, *15*, 50–58. [[CrossRef](#)]
27. Chinopfukutwa, V.S.; Salafia, E.H.B. Investigating college women's contraceptive choices and sexuality. *Int. J. Sex. Health* **2021**, *33*, 268–282. [[CrossRef](#)]
28. DiClemente, R.J.; Brown, L.K.; Beausoleil, N.I.; Lodico, M. Comparison of AIDS knowledge and HIV-related sexual risk behaviors among adolescents in low and high AIDS prevalence communities. *J. Adolesc. Health* **1993**, *14*, 231–236. [[CrossRef](#)] [[PubMed](#)]
29. Kilmann, P.R.; Wanlass, R.L.; Sabalas, R.F.; Sullivan, B. Sex education: A review of its effects. *Arch. Sex. Behav.* **1981**, *10*, 177–205. [[CrossRef](#)] [[PubMed](#)]
30. Zuckerman, M.; Tushup, R.; Finner, S. Sexual attitudes and experience: Attitude and personality correlates and changes produced by a course in sexuality. *J. Consult. Clin. Psychol.* **1976**, *44*, 7–19. [[CrossRef](#)] [[PubMed](#)]
31. King, B.M.; Scott, A.E.; Van Doorn, E.M.; Abele, E.E.; McDevitt, M.E. Reasons students at a US university do or do not enroll in a human sexuality course. *Sex Educ.* **2020**, *20*, 101–109. [[CrossRef](#)]
32. Sevecke, J.; Rhymer, K.; Almazan, E.; Jacob, S. Effects of interaction experiences and undergraduate coursework on attitudes toward gay and lesbian issues. *J. Homosex.* **2015**, *62*, 821–840. [[CrossRef](#)]
33. Wanlass, R.L.; Kilmann, P.R.; Bella, B.S.; Tarnowski, K.J. Effects of sex education on sexual guilt, anxiety, and attitudes: A comparison of instruction formats. *Arch. Sex. Behav.* **1983**, *12*, 487–502. [[CrossRef](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.