RISK FACTORS FOR UNPLANNED PREGNANCY

AT A LARGE, PUBLIC UNIVERSITY

THESIS

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Teresa Jane Miller, B.A.

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DEDICATION

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CHAPTER I

INTRODUCTION

The purpose of this research was to determine risk factors for unwanted pregnancies in college-age women who utilize student health services. A life event such as an unintended pregnancy may affect a student's academic performance as well as retention in the student's academic program. As Glei (1999) noted, women in the 20-24 year age group "have a higher rate of unintended pregnancy than do women in any other age group" (p. 73).

This study examined several potential risk factors. First of all, were women who had received Papanicolaou (Pap) smears less likely to utilize emergency contraception (EC) or pregnancy testing services than women had not received Pap smears? Secondly, were women who perceived that they had received quality sexuality education (sex education) less likely to utilize EC or pregnancy testing services than women who perceived the quality of their sex education as poor? Third, were women who reported recent binge drinking more likely to utilize EC or pregnancy

testing services than women who did not report recent binge drinking? Finally, did women who utilized EC or pregnancy testing services report nonuse or inconsistent use of a birth control method, or did they report consistent use of a birth control method, which may indicate failure of the method? The following review of literature discusses previous findings that relate to these research questions.

Papanicolaou Smears

The Papanicolaou (Pap) test, also known as a Pap smear, is "one of the most effective tools available for the early detection of cancer" (Norman, Talbott, Kuller, Krampe, & Stolley, 1991, p. 219). The American Cancer Society recommends regular Pap testing starting at age 18 or at the initiation of sexual intercourse, whichever is first (as cited in Norman et al., 1991).

Simoes et al. (1999) reviewed literature that supported a positive association between other screening tests and having obtained a Pap smear. Simoes et al. also found an inverse relationship between cigarette smoking and obtaining Pap smears. They stated that this might be indicative of "the clustering of risky behaviors, including lack of health screening" (1999, p. 127). Hayward, Shapiro, Freeman, and Corey (1988) found that lack of having obtained a Pap smear was often predictive of lack of

other care. If risky behaviors do tend to cluster together, then it is plausible that women who had not obtained Pap smears may have engaged in higher rates of risky sexual behavior than women who had obtained Pap smears, putting them at greater risk for an unintended pregnancy.

Likewise, healthy behaviors may cluster together. For example, Hofer and Katz (1996) found the odds of getting a Pap smear increased by 24% for each healthy behavior reported. In this study, healthy behaviors included not smoking, avoiding obesity, exercising (aerobic activity at least once weekly), and using seatbelts.

Other factors may also be associated with obtaining Pap smears. National figures showed Hispanic women accessed reproductive health care less and needed it more ("Meeting the Challenge," 1999). In a Kaiser Family Foundation (1999) survey, over one-third of Hispanic women reported they had a routine gynecological exam in the last year, almost one-fourth had not had one in at least two years, and more than one in ten had never had one (as cited in "Meeting the Challenge," 1999).

These findings agreed with Harlan, Bernstein, and Kessler (1991) who found that Hispanics were less likely than Blacks or Whites to have received a Pap smear. The

most common reasons given by all groups combined for not having had a Pap smear were: "it was unnecessary," "had no problems," or "had been procrastinating" (Harlan et al., 1991). Women in the youngest, as well as oldest, two age groups more frequently reported that a provider had not recommended the screening. Women in the youngest two age groups were most likely to have reported embarrassment or fear as their reason for non-compliance (Harlan et al., 1991, p. 888). Norman et al. (1991) posited that one way providers could be more effective would be to schedule Pap smears when a client is in the office for another reason.

Sexuality Education

Proponents of sex education have purported that sex education courses can reduce social problems such as unwanted pregnancy by enhancing students' decision-making skills, decreasing their risk-taking behaviors, and increasing their problem-solving strategies (Feigenbaum, Weinstein, & Rosen, 1995, p. 112). Feigenbaum et al. (1995) found that students who had enrolled in a human sexuality course versus a general health course were more likely to report that they would choose condoms and spermicides to prevent a pregnancy. These students also reported that they would be more likely to frequently use birth control. Feigenbaum et al. found this sample of

college students to be similar to other national samples in that the respondents were sexually active, but not effective in their use of birth control methods.

Similarly, Pearman et al. (1997) concluded that a required college course contributed to "selected health-related knowledge, attitudes, and behavior of alumni" (p. 77). Pearman et al. posited required classes at colleges and universities were important due to studies that have suggested, "many adult behaviors are strongly influenced and established during late adolescence" (p. 77). For example, Richie and Getty (1994) studied a small sample of first-year college students and found that students who attended an AIDS Peer Education Program (APEP) were more likely to adopt a behavioral change such as using condoms. Santelli et al. (1997) found youths aged 14 to 22 who had either received HIV education at school or who had talked about HIV with adult relatives were more likely to use condoms.

Kirby (1992) stated that professionals working with schools have different views on the proper role schools should play and what the goals of school-based sexuality programs should be. Kirby gave one example of schools as "the locus of a variety of health and social services…" (1992, p. 280). Kirby stated that adolescents who

benefited from such services were "more likely to remain in school, to perform better academically, and to reduce risk-taking behavior" (1992, p. 280). Kirby suggested that schools' programs should be judged by measurable outcomes, such as reductions in students' risk-taking behaviors. Kirby discussed several theoretically based programs, all of which "provided evidence for behavioral change" (1992, p. 282).

Kirby posited that sex education programs with "multiple components...may have an additive or synergistic effect" (1992, p. 284). In fact, Clearie and Schluchter (1987) found that one such program had significantly reduced the pregnancy rate in females aged 14 to 17 for several years until parts of the program ended (as cited in Kirby, 1992). Similarly, Kirby et al. (1991) found the number of male students who used condoms at their most recent sex encounters increased substantially after a program with multiple components was installed in the school and community (as cited in Kirby, 1992). Another multiple component program evaluated by Kirby et al. (1991) found that students in the school with the multi-component program "were more likely to use both condoms and oral contraceptives than were students in a comparison school" (as cited in Kirby, 1992, p. 285).

Finally, Kirby noted that successful programs had shared common elements. Each one had educational components that were reinforced by a connection with a local reproductive health service; additionally, two of the programs contained strong media elements.

These findings agreed with an earlier study by Eisen, Zellman, and McAlister (1990) of an experimental multi-component program. When the experimental program was compared with standard interventions, Eisen et al. (1990) concluded that for adolescents who were not sexually active at baseline, "the level of sexual knowledge at immediate follow-up affected the young women's contraceptive efficiency and the young men's continued abstinence at the one-year follow-up, even when baseline sexual knowledge was controlled" (p. 268). Eisen et al. stated that this lent empirical support to the notion that increased sexual knowledge can improve teens' sexual decision-making, and that formal sex education "may be a more incremental learning process than we realize, with programs that may have appeared ineffective upon completion or at the time of a short-term follow-up exerting a substantial effect later on, probably in combination with other interventions" (1990, p. 269). Lastly, Eisen et al. noted that clear "differences in program impact related to previous sexual

experience, gender, race and ethnicity and prior experience with sexuality education confirm that intervention programs need to be client specific..." (1990, p. 269). Thus, there is support in the literature for health and sex education and its potential to modify certain behaviors.

Binge Drinking

The association between binge drinking and unplanned or unprotected intercourse has been well established. For example, Higson et al. (1990) reported that college students tended to use alcohol frequently, and alcohol has been associated with lower levels of condom use (as cited in Brien, Thombs, Mahoney, & Wallnau, 1994). Lower levels of condom use, in turn, may contribute to increased risk of unintended pregnancy.

Meilman's (1993) study of alcohol-induced sexual behavior in university students found that, since coming to school, 18% of the respondents had engaged in sexual intercourse and 15% had abandoned safer-sexual practices due to the influence of alcohol. Meilman also found that women were more likely than men to forgo the use of safer-sex techniques. Other research discussed by Meilman supports the relationship between drinking alcohol and sexual activity, between alcohol use and abandonment of safer-sex techniques, and between the use of alcohol with

the failure to use condoms. Additionally, Meilman found an inverse relationship between grade point average (GPA) and engaging in unplanned sex after drinking alcohol. Finally, all of the relationships discussed by Meilman "show a greater relationship with the more-intensive drinking patterns" (p. 30).

Wechsler, Molnar, Davenport, and Baer (1999) defined binge drinking for women as consuming four or more drinks in a row during the two weeks prior to the survey. A frequent binge drinker was defined as someone who binge drank three or more times in the two weeks preceding the survey. In a national sample, Wechsler et al. (1999) found that almost 50% of the frequent binge drinkers had engaged in unplanned sex, and over 52% of the frequent binge drinkers had engaged in unprotected sex.

In a study of Texas college students, Wiley et al. (1996) found that 10% of those sampled reported binge drinking on 3 to 5 of the 30 days preceding the survey, and approximately 30% of them used alcohol or drugs before their last sexual encounter. Wiley et al. reported that 73% of the Texas college women sampled responded that they had never been pregnant, indicating that 27% of the sample had experienced pregnancy.

Results from the national Core Alcohol and Drug Survey conducted by the Alcohol and Drug Resource Center (ADRC) at Southwest Texas State University (SWTSU) showed that 52% of students reported binge drinking in the past two weeks; this was 13% higher than the national average of 39% (as cited in Gordon-Sosby, 1998). The relationship between alcohol use and unplanned or unprotected sex has been well established. Although binge-drinking behavior has been previously studied, this research also examined binge drinking as a potential risk factor for unintended pregnancy.

Use of Birth Control Methods

In 1996, 800,000 pregnancies occurred in women aged 15 to 19 and 62% of those pregnancies were attributed to women aged 18 to 19 ("Teen Pregnancy Rates," 1999). California and Texas recorded the highest numbers of teen pregnancies in 1996, with 126,300 and 80,490, respectively. However, Glei (1999) found that women in the 20-24 year age group were no more likely to use contraceptives than were women in the 18-19 year age group.

A survey conducted by the Kaiser Family Foundation and Princeton Survey Research Associates (1997) found 12% of women at risk for unintended pregnancy had never used a method of contraception, 13% reported having used a method

some times or most of the time, and 73% reported they had used a method every time they had had sexual intercourse (as cited in Peterson, Oakley, Potter, & Darroch, 1998). Of the women who had already experienced an unintended pregnancy, less than 75% reported using contraceptives all the time. Santelli et al. (1997) found that between 13% and 22.7% of youths had used no method of contraception at last intercourse, and that between 9.8% and 15.3% had used withdrawal, deemed an unreliable method.

Although Terry and Manlove (2000) found an increase in the percentage of female teens who reported using any method of contraception at first sex, largely due to increased condom use which tripled from 23% to 63% between 1988 and 1995, there was a decrease in the use of contraception at most recent sex. The 1995 National Survey of Family Growth data reported by Abma (1999) showed a decrease in the number of female teens who used contraception at last intercourse from 77% in 1988 to 69% in 1995 (as cited in Terry & Manlove, 2000). Thus, 31% of female teens reported using no method of contraception during their most recent sex. The proportion of Black female teens that used a contraceptive method at most recent sex increased slightly from 68% to 70% while the proportion of Hispanic female teens who used contraception

at most recent sex declined from 69% to 53%. The proportion of White female teens that used contraception at most recent sex also declined from 80% in 1988 to 71% in 1995.

Terry and Manlove (2000) found condom use at most recent sex remained relatively stable, but birth control pill use at most recent sex had decreased from 42% to 23% between 1988 and 1995. This decrease was only partially accounted for by a small increase in the use of Depo Provera and Norplant. Terry and Manlove concluded that Hispanic teens appeared to be at the greatest risk of unintended pregnancy because the proportion of Hispanic females who were sexually experienced had increased, but Hispanic teens were the least likely to have reported using a method of birth control at first sex or at most recent sex.

Moore, Driscoll, and Lindberg (1998) found that by age 19, 77% of females reported ever having sex (as cited in Terry & Manlove, 2000). This proportion was similar to the proportion of students at Southwest Texas State University (SWTSU) who reported being currently sexually active. In 1996, 70% of SWTSU students reported they were currently sexually active (Gordon-Sosby, n.d.). However, Kusseling, Wenger, and Shapiro (1995) found that 19% of female college

students at risk for unwanted pregnancy were not using reliable methods of birth control. Of those who used reliable methods, many were not using them consistently. For example, 17% of those women using reliable methods at baseline switched to either an unreliable method or no method at follow-up. Moreover, 31% of the women using oral contraceptive pills (OCPs) and 43% of the women using condoms at baseline did not use these methods consistently over the six-month follow-up period. Although some of these women switched to another reliable method, other research discussed by Kusseling et al. showed that switching methods could diminish effectiveness, leading to higher rates of failure and unwanted pregnancy (Kusseling et al., 1995).

Henshaw and Kost (1996) studied a group of women who presented at a clinic to terminate an unintended pregnancy and found that six out of ten of these abortion patients had been using a contraceptive method when they became pregnant (as cited in "Without Consistent Use," 1996). Of these abortion patients, 58% had experienced a contraceptive failure, 31% had used a method in the past but had not been using one when they became pregnant, and 11% had never used a method of birth control. Of those who had been using a method of contraception, the overwhelming

majority had relied on a condom for protection. Most of these condom users had previously used either a different barrier method or no method of contraception. Henshaw and Kost concluded that the contraceptive failures were not failures of the methods, but rather failures to use the methods consistently and correctly (as cited in "Without Consistent Use," 1996). The following subsections will address common user failures with condoms and oral contraceptives (OCs), as these were the methods of birth control used most frequently at SWTSU (Gordon-Sosby, n.d).

Condom use.

"Only 3 of 100 couples who use condoms perfectly for 1 year will experience an unintended pregnancy" (Warner & Hatcher, 1998, p. 328). Condom use is an effective method of birth control. When condom use tripled from 4% to 14% among never-married women it was accompanied by a decreased rate of unwanted pregnancy, according to 1995 National Survey of Family Growth (NSFG) data studied by Abma (1997) (as cited in "Condom Use on the Rise," 1997). About 12% of births between 1984 and 1988 were unwanted compared with 10% between 1990 and 1995. This decrease was even more pronounced in Black women, with unwanted births decreasing from 29% to 21% ("Condom Use on the Rise," 1997).

In a study of a nationally representative sample of youths aged 14 to 22 years, Santelli et al. (1997) found 37% of females and 52% of males reported condom use as "the primary method used to prevent pregnancy at last intercourse..." (p. 261). Although more young men reported using condoms and many teen males felt that preventing pregnancy was a male responsibility, young males still were not using condoms consistently ("Involve Young Men," 1998). The Urban Institute (1995) reported only 32% of sexually experienced teen males and 17% of male virgins surveyed had received contraceptive information from a health care provider (as cited in "Involve Young Men," 1998).

Sparrow (1999) found women who sought first trimester pregnancy terminations frequently reported condom failures. Sparrow identified the major reasons for condom failure as not using condoms every time (49.3%) and leakage of semen (21.5%). Sparrow noted that late application of the condom was also a problem. Sparrow found that women under the age of 25 experienced more condom failures, and agreed that education was an important component of correct condom use.

In a sample of college students, Oswalt and Matsen (1993) found that 79% were sexually experienced, but only 20% used condoms all the time and 44% used condoms less than half the time. Approximately 14% of students reported

condoms were not available at the time of sexual intercourse, 9% reported not using condoms and defined their behavior as "irresponsible" or "just stupid," and 7% reported that the sex had been unplanned (Oswalt & Matsen, 1993, p. 765).

Oswalt and Matsen also found that students with the greatest number of sexual partners reported using condoms the least often. Of the college students surveyed, 53% had one to three partners, 26% had four to six partners, 14% had seven to ten partners, and 8% had more than ten partners (Oswalt & Matsen, 1993, p. 765). Similarly, Soskolne, Aral, Magder, Reed, and Bowen (1991) found only 13% of a large sample of women attending family planning clinics used condoms. 72% of the women from this sample who had casual partners reported never using condoms with them.

Brien et al. (1994) found college students aged 18 to 23 years were likely to use condoms sporadically and have multiple sexual partners (p. 167). Condoms were used regularly by only 8% to 41% of the college students sampled (Brien et al., 1994). A low level of condom use among college students may not be due to lack of knowledge about safer-sex practices but to difficulty translating knowledge into action (Brien et al., 1994). Brien et al. studied

those who always use condoms, those who sometimes use condoms, and those who never use condoms. Brien et al. found that the ritualistic users had the highest self-efficacy ratings — they had more confidence in their ability to use condoms under a variety of conditions (p. 171). Sporadic users were the heaviest drinkers and had the greatest number of sexual partners when compared to the other two groups (Brien et al., 1994, p. 171).

A study by Warner et al. (1998) revealed common problems male college students experienced when using condoms (as cited in "Overcome Barriers," 1999). Common problems included starting intercourse before putting a condom on, starting intercourse with a condom but removing it during intercourse because it was uncomfortable, and having the condom either slip or break.

Spruyt et al. (1998) studied risk factors for condom breakage and slippage and reported that males with a history of having one or more condoms break or slip off experienced almost twice as many condom failures during the study period than did males who had not experienced previous condom failures. This finding agreed with Steiner, Piedrahita, Glover, and Joanis (1993) who found that couples who experienced multiple counts of condom failure made up a larger proportion of the total condom

failures than expected. Steiner et al. (1993) suggested certain couples have characteristics or behaviors that increase their risk of condom failure. For example, couples not living together had higher condom failure rates than those living together.

Spruyt et al. found that "condom failure increased with the number of adverse condom use behaviors reported per participant" (1998, p. 239). For instance, opening condom packages with sharp objects was associated with breakage, unrolling condoms prior to putting them on was associated with both breakage and slippage, and intense or lengthy intercourse was associated with slippage. Spruyt et al. found that the condom failure rate was 3% among men who reported no adverse condom use behaviors, but was close to 10% for the men who reported between seven and ten of the behaviors. Spruyt et al. concluded, "engaging in multiple adverse behaviors is more strongly associated with failure than is any one adverse behavior in particular" (1998, p. 243). Spruyt et al. also noted that condom failure may beget inconsistent use or may stop condom use altogether and thus recommended that providers help clients learn how to use condoms effectively.

Oral contraceptive use.

The birth control pill, the pill, or combined oral contraceptives (OCs) are effective in preventing pregnancy. "Of 1,000 women taking pills perfectly, only 1 will become pregnant within a year" (Hatcher & Guillebaud, 1998, p. 405). However, most pill users take their pills in a typical manner; of 1,000 women who take pills typically, 50 will become pregnant over the course of a year (Hatcher & Guillebaud, 1998, p. 405).

Pregnancy rates for typical users vary according to the "extent and type of imperfect use" (Hatcher & Guillebaud, 1998, p. 406). In opposition to what many women have been taught, it is riskier to miss a birth control pill at the beginning or end of the pill pack rather than during the middle of the pill pack ("When Do Missed Pills," 1995). This risk occurs because missing a pill at the beginning or end of the pack would extend the pill-free interval (PFI). When Tayob et al. (1990) performed ultrasounds on women at the end of their normal seven-day PFI, they found that 25% of the women had preovulatory follicles (as cited in "When Do Missed Pills," 1995). Thus, women who miss one or more pills, especially at the beginning or end of the pill pack, may be at

increased risk of unintended pregnancy. Due to this fact, compliance with OC regimens is important.

However, Oakley, Sereika, and Bogue (1991) found 25% of women in a large study "did not take their pill within the recommended 'window of hormonal safety,' either by taking a pill every day or always remembering to take a missed pill by the end of the next day" (as cited in Rosenberg, Burnhill, Waugh, Grimes, & Hillard, 1995, p. 138). Likewise, the Alan Guttmacher Institute (1994) found roughly 40% of those aged 15 years and older reported taking their pill daily (as cited in Rosenberg, Burnhill, et al., 1995). Rosenberg, Meehan, and Waugh (1994) reported 15% of OC users showed poor compliance, and less consistent users were more than three times as likely as consistent users to experience an unplanned pregnancy (as cited in Rosenberg, Waugh, & Long, 1995).

When Terry and Manlove (2000) studied consistency of use, they found that 70% of sexually active teen females who used birth control pills reported never having missed a pill in the past three months; 13% missed one pill, and 17% missed two or more pills. About 74% of females aged 18 to 19 reported consistent use of birth control pills; 58% of females aged 15 to 17 reported consistent use.

Polaneczky et al. (1994) found that teens were often aware that they were inconsistent users (as cited in "Teens Choose Better," 1995). To prevent unintended pregnancy in these women, a different method of birth control may be more effective. Polaneczky et al. found 95% of teenage girls who chose Norplant implants were still using the same method a year later compared with 33% of the girls who had chosen OCs (as cited in "Teens Choose Better," 1995). Polaneczky et al. reported 71% of the teens that chose Norplant did so because they had "difficulty remembering to take pills" (as cited in "Teens Choose Better," 1995, p. 26)).

Because approximately 1 million unintended pregnancies, related largely to OC misuse or discontinuation, occur in OC users each year (Rosenberg, Waugh, & Long, 1995), many researchers have studied potential predictors of inconsistent OC use. Rosenberg, Waugh, and Long (1995) posited that up to 687,000 unplanned pregnancies could be prevented through improved method use and through a reduced "number of women who discontinue OCs but still do not wish to become pregnant" (1995, p. 355).

Jones and Forrest (1992) found contraceptive failure was generally highest among young women, women of racial or ethnic minority groups, and poor women (as cited in

Peterson et al., 1998, p. 19). Forrest (1994) found that over 50% of women of reproductive age in the United States have had an unplanned pregnancy, and nearly half of those unplanned pregnancies occurred during a month in which women reported having used a reversible method of contraception (as cited in Peterson et al., 1998, p. 19).

Oakley, Sereika, and Bogue (1991) found that 58% of the OC users sampled from clinics did not take their pills every day (as cited in Peterson et al., 1998). Rosenberg, Waugh, and Burnhill (1998) found that 47% of women sampled from physicians' offices missed one or more pills during the next two cycles and 22% missed at least two pills (as cited in Peterson et al., 1998).

Peterson et al. (1998) found that 16% of sexually active women who took OCs took them inconsistently; Hispanic women, Black women, and women who had recently started OCs were significantly more likely to be inconsistent users. Peterson et al. also noted "women who are more successful and satisfied with the method may tend to become longer term users" (1998, p. 22). Although Peterson et al. found significant differences between women who use only OCs and women who use OCs and another method of contraception, "no information is available about the purpose, timing, and other characteristics related to the

use of the second method" (1998, p. 21). Rosenberg, Waugh, and Meehan (1995) found "the strongest single factor related to compliance was whether women had a regular routine for taking their pills..." (as cited in Rosenberg, Burnhill, et al., 1995, p. 139).

Potter, Oakley, de Leon-Wong, and Canamar (1996) researched pill-taking compliance by using electronic monitoring devices. Potter et al. (1996) found that the electronic data and the self-reported data regarding when pills were missed agreed only 45% of the time over a three-month period. The electronic data showed the women missed an average of 2.6 pills per month, and that the women were most likely to have missed pills on Fridays and Saturdays. Furthermore, the electronic data showed "far more episodes of consecutive days of missed pills than did the self-reports" (Potter et al., 1996, p. 156). Rosenberg, Burnhill, et al. (1995) stated that more research is needed on women aged 20 years and older as they make up the majority of birth control pill users.

Pregnancy Testing

Sawyer, Pinciaro, and Anderson-Sawyer (1998) conducted a five-year study on college women seeking pregnancy tests at a university health center because "college students represent a subgroup that demonstrates sexually related

behaviors that clearly place them at risk for unintended pregnancy" (p. 221). One study reviewed by Sawyer et al. (1998) reported pregnancy rates at most college campuses were between 6% and 10%. Sawyer et al. (1998) found that over 37% of the respondents reported using no contraceptive method at the time of pregnancy. Of these nonusers, almost 60% had a regular method of contraception, but failed to use it during the sexual encounter. The most common method students failed to use was the condom. About 29% of the women using condoms as a method of contraception reported that the condom had either broken or slipped off. This high rate of condom failure suggested that students need to be educated about how to use condoms correctly (Sawyer et al., 1998).

Sawyer et al. found that pregnancy testing rates tended to be stable, and suggested that "rates of 'risky' sexual behavior that lead a student to seek a pregnancy test appear to be fairly consistent over time" (1998, p. 224). It was also interesting to note that Sawyer et al. found that upperclassmen sought pregnancy testing through the health center more often than either freshmen or sophomores. This was contrary to "programming efforts...all too often targeted at the stereotypically naive, less experienced, younger student" (p. 224). In

fact, Sawyer et al. found that graduate students had the highest rates of unintended pregnancy.

However, not all students go to their university's health center for pregnancy testing. Coons, Churchill, and Brinkman (1990) distributed questionnaires to women visiting a student health service and found that the female students who were most likely to report having used a home pregnancy test kit had a mean age of 22.3 years, an age traditionally representing upperclassmen students (p. 171). Coons et al. (1990) found that students' main reasons for using a home pregnancy test kit were "speed in obtaining results," "confidentiality," and "convenience" (p. 173). Over 30% of those who had used a pregnancy test kit reported "confidentiality" as their primary reason for doing so. Coons et al. found that about 52% of those who had used a test kit "had the results verified by a test other than a kit" (1990, p. 173). Coons et al. discussed the most common reasons reported by women who thought they might be pregnant. Over 67% had "missed a period" and more than 25% had "had intercourse and worried/wondered" (1990, p. 173). Coons et al. found that about one in five students reported they had misused birth control or had not used any method of birth control (1990, p. 173).

A study by Zabin, Emerson, Ringers, and Sedivy (1995) showed that over 34% of young women who had never conceived had previously had a negative pregnancy test result at a clinic. According to medical histories, almost three out of five young women, including both those who had conceived and those who had not, had received a negative pregnancy test result at a clinic prior to becoming pregnant. Zabin et al. (1995) reported over 54% of the respondents' past pregnancy tests were performed in clinics, more than 5% were done in private physicians' offices, and almost 29% were done at home with self tests. For about 11% of the tests, the site was either unknown or known only to be other than a clinic. Although most patients had good reason to seek a pregnancy test, 18% sought a test even though they had no symptoms and believed there was "little chance" or they felt "sure" they were not pregnant. Zabin et al. were unclear of the motivation of these particular patients. However, 58% of the women who had had a negative pregnancy test at baseline became pregnant within the next 18 months.

Zabin et al. determined providers could have identified one-fourth of young women who had received a negative pregnancy test in time to prevent early, unplanned pregnancy. Zabin et al. concluded that young women with a

negative pregnancy test were an appropriate target group for intervention.

Emergency Contraception

For students who experience contraceptive failure, or who engage in unprotected sex, emergency contraceptive pills (ECPs) may be an appropriate back-up method to prevent pregnancy. There are two types of ECPs available in the United States (NOT-2-LATE.com, 06/03/2000). The Yuzpe regimen "relies on the use of combined oral contraceptives for post-coital contraception" ("Emergency Contraception: Not a Secret," 1998). The second type of ECP is a progestin-only method, the levonorgestrel regimen. The levonorgestrel method was found to be both "better tolerated and more effective than the Yuzpe method" ("Emergency Contraception: Not a Secret," 1998). In fact, one study by the Special Programme of Research, Development, and Research Training in Human Reproduction found the levonorgestrel-only method had a failure rate of only 1.1% versus a failure rate of 3.2% for the Yuzpe regimen (as cited in "Progestin-only ECPs," 1999). Calculations of the number of pregnancies that could have occurred if treatment had not been administered showed that the levonorgestrel-only method prevented 85% of unintended pregnancies whereas the Yuzpe regimen prevented 57%.

Glei (1999) reported that EC might reduce "the chance of pregnancy by 74% when started within three days after unprotected sex" (p. 79). It is important to note that in both the levonorgestrel-only and Yuzpe regimen groups, "the efficacy of both treatments declined with increasing time following unprotected intercourse ("Counsel Women," 1999, p. 75). The researchers of this study concluded that delaying the first dose of either regimen by 12 hours increased the odds of pregnancy by about 50%; the risk of pregnancy continued to increase in a linear fashion at each 12-hour interval.

Dorman (1996) explained that ECPs work by preventing ovulation and/or by making the uterine wall unsuitable for implantation. However, Dorman noted that, "only 17% to 26% of acts of unprotected intercourse, at most, lead to pregnancy, 1 day before ovulation" (1996, p.91). Thus, there is a good chance the woman will not become pregnant, and this means ECPs usually work by preventing implantation (Dorman, 1996). One drawback to EC is that many people may not be aware that it is an option. For example, one national study discussed by Dorman states that only 36% of a national sample were aware that pregnancy could be prevented a few days after intercourse.

In a 1996 survey, Smith, Gurney, Aboulela, and Templeton found 94% of a sample of British women knew about EC, but less than 39% knew when it had to be taken to be effective. Similarly, Young, McCowan, Roberts, and Farquhar (1995) found 72% of a sample of women from New Zealand were aware of ECPs, but only 7% had attempted to use ECPs to prevent pregnancy. Young et al. felt this was indicative of barriers to accessing emergency contraception.

A survey by the Kaiser Family Foundation (1997) revealed only 9% to 11% of providers surveyed included information about EC every time or almost every time they counseled a patient (as cited in "Emergency Contraception Status Report," 1998). A related public opinion poll found that many people were unaware or misinformed about EC and therefore may not ask about it on their own ("Emergency Contraception Status Report," 1998).

Although many providers offer EC, a national survey showed that only about one-fourth of American teens were aware that something could be done to prevent pregnancy after unprotected sex (Delbanco et al., 1998, as cited in "Emergency Contraception: Not a Secret," 1998). Of the teens surveyed, 28% had heard of ECPs or "morning-after" pills. Of those who did know about ECPs, one-third did not

know a prescription was needed to obtain them and 78% underestimated how long after unprotected sex ECPs could be started. Once they were informed about ECPs, 67% of female teens reported they would be likely to use ECPs. Young et al. suggested one way ECP availability could be increased was to encourage "doctors to prescribe it in conjunction with other forms of contraception..." (1995, p. 148). A study by Glasier and Baird (1998) showed that prescribing ECPs ahead of time could reduce the rate of unwanted pregnancies.

In the following study conducted, women who sought ECPs or pregnancy testing services were compared to women using reliable birth control methods seeking other medical services to determine if factors such as Pap smears, sex education, binge drinking, and contraceptive use were related to risk of unplanned pregnancy.

CHAPTER II

METHOD

Participants

There were three groups of participants: the "ECP" group, the "hCG" group, and the comparison group. The ECP group was defined as women who sought and were eligible for emergency contraceptive pills (ECPs). Women were ineligible for ECPs if they had waited longer than 72 hours after unprotected sex to seek EC, if they were at heightened risk of blood clots, or if they had any other medical condition or pharmaceutical regimen that would have made it medically inadvisable for them to use ECPs. Health care providers determined whether or not a woman was eligible for ECPs.

The hCG group was defined as women who received a negative urine-hCG test, but were not prescribed ECPs. The SHC laboratory (lab) used Stanbio's QuPid® One-Step Pregnancy Test, Procedure No. 1220. This test is a qualitative immunoassay for the detection of human chorionic gonadotropin or hCG. According to Stanbio's

product information sheet, detection of hCG serves as an excellent marker for confirming pregnancy, and hCG can be detected as early as 6 days after conception. Women in the hCG group were not given a survey if they received a positive hCG test or if they were medically required to take an hCG test prior to initiating a course of treatment such as Accutane or Depo Provera.

The decision to exclude women with positive test results was based on the hypothesis that the only difference between women with positive results and women with negative results would be the test result. The risky sexual behavior would not necessarily be different between these two groups. The group with positive test results just happened to engage in certain behaviors during the six days of the month in which conception was likely. Women who received positive test results were not given surveys because of the emotional distress often associated with receiving a positive test result. The SWTSU Student Health Center (SHC) decided they would not risk exposing their clients to additional duress. The actual number of positive pregnancy tests at the SHC averaged about 10% annually, and thus was not considered to be an overly large loss of potential respondents.

Women who were medically required to take a pregnancy test prior to receiving a course of treatment were excluded since they may not have engaged in behaviors similar to students seeking pregnancy tests for personal reasons. Because most serum-hCG tests were performed on women seeking prescriptions for Accutane, all serum-hCG tests were excluded.

The comparison group was defined as a random sample of sexually active women who sought health care services other than EC or pregnancy testing in the SHC Women's Clinic and who reported using reliable birth control. "Sexually active" women were defined as women who "have had intercourse at least once in the last two months." Reliable birth control use was determined by the students' self-reported survey responses. For the purposes of this study, reliable use was defined as taking birth control pills at approximately the same time "everyday" or "most days", as using condoms for each act of intercourse, from start to finish, "every time" or "most of the time", or as using Depo Provera. The comparison group was formed by random sampling, to avoid overwhelming the Women's Clinic staff. Respondents from Women's Clinic who reported unreliable birth control use were excluded prior to analyses.

Apparatus

Each student was given a survey that consisted of four questions (see Appendix A). The first question addressed if the student had received a Pap smear in the last 12 months, more than 12 months ago, or had never received one. The second question addressed the student's perception of the quality of the sex education she had received at home and at school. The student was asked to rate her sex education on a scale that ranged from "excellent" to "poor" or "none."

The third question asked the student to check which method(s) of birth control she had used in the past two months. Students could check more than one method if applicable. The methods listed were "condoms," "birth control pills," "other," "withdrawal," and "no method." Choices were limited to the above methods because previous research on students at SWTSU showed that condoms and birth control pills were the most commonly used methods of birth control (Gordon-Sosby, n.d.). If a student checked either "condoms" or "birth control pills," she was asked to circle how consistently she used the method. Consistency of condom use was rated on a scale ranging from using condoms from start to finish "every time" the respondent had intercourse to "rarely." Consistency of birth control pill

use was rated on a scale ranging from taking the pill at approximately the same time "every day" to "rarely."

The fourth question asked if the student had consumed four or more drinks at a sitting during the past two weeks. This question was phrased to match the binge-drinking question for females on the national Core Alcohol and Drug Survey that was administered to students on the SWTSU campus by the SWTSU Alcohol and Drug Resource Center (ADRC).

The questionnaire was one page in length, and had an introductory paragraph that was signed by the Director of the SHC. The introductory paragraph explained that the survey was completely voluntary and confidential. Students were informed via this introduction that the questionnaire was not part of their medical exam and would not be filed with their medical records. Students were also informed that their decision to participate, or not, would not affect their health care services in any way. The surveys were color-coded by group. Women who were in the ECP group were offered green surveys, women in the hCG group were offered blue surveys, and women who were seen in the Women's Clinic were offered yellow surveys.

Procedure

Each eligible student who sought pregnancy testing services or was prescribed ECPs at the SHC from February 1, 2000 through April 28, 2000, was requested by a nurse or other health care provider to fill out a short, four-question, confidential survey. Students who sought ECPs were given the questionnaire at any time during their appointment since there was no way of diagnosing whether or not they were actually pregnant as a consequence of their most recent sex. Students in the hCG group were given the survey after they received their negative test results to lessen the possibility that any of the questions were interpreted as blaming, and to encourage candid answers in the wake of relief.

One family nurse practitioner (FNP) and one licensed vocational nurse (LVN) were the sole health care providers in the Women's Clinic for the spring 2000 semester. To ensure an adequate sample from the comparison group, and to avoid overwhelming staff in the Women's Clinic,`24 dates were randomly selected, using SPSS® 10.0 (SPSS Incorporated, 1999), from a pool of all available dates during the study period, that the SHC was scheduled to be open and that the FNP was scheduled to work. Surveys were administered to all sexually active women visiting the Women's Clinic on

those dates. Additionally, optional dates were selected in the event that the FNP was unexpectedly unavailable. Optional dates could also be used if fewer than three surveys were collected on a randomly selected survey day.

Students who agreed to fill out the questionnaire completed it while they were alone in the examining room and then sealed their completed survey in an envelope that was provided. They returned this sealed envelope to the nurse or health care provider who gave it to them. The nurse or provider wrote the student's social security number (SSN) on the outside of the envelope after the student returned the survey. The nurse or provider deposited the sealed envelopes into a manila collection envelope; after they were collected, the sealed envelopes were transferred into a locked cabinet for safekeeping. Only the Assistant Director of the SHC and the Health Education Graduate Research Assistant (GRA), one of the principal researchers, had access to the locked cabinet.

Staff from the office of the Vice President of Student Affairs (VPSA) and the systems support analyst to the SHC, accessed respondents' demographic information from the university database. The university database consists of Digital Equipment Corporation (DEC) mainframe computers on which SWTSU maintains student information systems. Student

information systems are large bodies of data used for university business purposes. Student information records begin with the application process, and additional pieces of information are collected each semester. Only computing services and certain analysts have access to the university's database.

The only persons who had access to both the completed surveys and the respondents' identifying numbers were the Assistant Director of the SHC and the Health Education GRA. Information identifying respondents was destroyed after demographic information was compiled and analyses were completed.

Although anonymous surveys would have been preferable from a potential risk standpoint, this would have entailed a much longer and more time-consuming questionnaire. This research consisted only of voluntary completion of surveys. Participants' behavior was not manipulated in any way. Surveys were not connected with medical records, and students' health care was not affected in any manner, whether or not students chose to respond. This study was granted approval from the SWTSU Institutional Review Board (IRB).

Data analyses

Information was entered into Microsoft® Excel 2000 and was analyzed using SPSS® 10.0. Due to small sample sizes, and the nature of the survey questions which provided for frequency or count data, the focus of the analyses were nonparametric statistics such as frequencies and chi-square tests for independence. In addition to frequency analyses, chi-square tests for independence were performed to analyze relationships between use of ECPs or pregnancy testing services by the following independent variables: had a Pap smear, perceived quality of sex education, method and frequency of birth control, and whether the student had engaged in binge drinking in the two weeks prior to the survey. These measures were all based on students' self-reported survey responses. Chi-square tests for independence were also performed on the demographic independent variables of race/ethnicity and classification. For certain chi-square tests for independence, rows or columns were collapsed when cell(s) expected frequencies were less than five, and/or when minimum expected counts were less than one, so that one large deviation would not "make the value of the chi-square 'significant'" (Finkelstein, 1985). A contingency coefficient (C) was listed for each statistically significant chi-square test

for independence as an index of proportion to illustrate the size of the relationship between two variables. Row percentage tables for statistically significant chi-square tests for independence can be seen in Appendix B. Logistic regression with forward stepwise selection was used to evaluate the relative contributions of the independent variables to use of EC or pregnancy testing services and to adjust for any potential confounding variables. The dependent variable for all tests was survey group membership, unless otherwise stated. An alpha level of .05 was used for all tests unless otherwise specified. Odds ratios were obtained for all statistically significant associations using Computer Programs for Epidemiologic Analysis version 2.0 (PEPI 2.0) (Gahlinger & Abramson, 1993).

The variable GPA was calculated by averaging respondents' fall 1999 GPAs with their spring 2000 GPAs. This was done so that GPA would reflect values over the course of two semesters as opposed to one, in order to provide a more representative measure of GPA. Race/ethnicity was based on information the student provided upon entering SWTSU. Classification was defined by the university and was based on the number of credit hours the students had completed, including hours completed

during the spring 2000 semester. Certain variables were dichotomized, when appropriate, for clarity of analysis. For example, GPA was divided into passing and failing, based on university definitions. Pap smears were divided by whether a respondent had ever or never had a Pap smear, since most of the literature reviewed analyzed Pap testing by a similar definition. All demographic information was based on the most recent information available to the university. Age was defined as age at May 15, 2000.

CHAPTER III

RESULTS

From the women who sought and were eligible for ECPs, 54 surveys were collected. From the women who received a negative urine-hCG test but who were not prescribed ECPs, 22 surveys were collected. From women who were seen in the Women's Clinic, 161 surveys were collected; 141 of these women reported using reliable birth control measures, and they formed the comparison group.

The mean age for all respondents was 21.65 (SD = 3.32) with a minimum age of 18 and a maximum age of 40. The 54 respondents who made up the ECP group sample had a mean age of 21.06 years (SD = 3.29) with a minimum age of 18 and a maximum age of 39. The 22 respondents who made up the hCG group sample had a slightly higher mean age of 22.73 years (SD = 3.37); the minimum age was 19 and the maximum age was 33. The comparison group sample had a mean age of 21.71 years (SD = 3.30); the minimum age was 18 and the maximum age was 40. Age was broken into groups. Age groups were defined by quartiles based on the comparison group sample.

This was done so that percentages could be easily viewed in a table format. See Table 1 for a breakdown of age by survey group. A chi-square test for independence was run with age group as the independent variable; there was no relationship between age and survey group membership.

A customer satisfaction survey on SHC clients at SWTSU showed that 15% of SHC clients were freshmen, 19% were sophomores, 21% were juniors, 40% were seniors, 4% were graduate students, and 1% were post-graduate students (Southwest Texas State, 1999). Thus, 34% of the SHC clients were lower classmen. As can be seen in Table 1, lower classmen accounted for 38% both the comparison group and the hCG group, but accounted for 50% of the ECP group. A chi-square test for independence was run with classification as the independent variable. There was no relationship between classification and survey group membership.

According to the customer satisfaction survey, 77% of the SHC clients at SWTSU were White/Caucasian, 15% were Hispanic/Mexican American, 3% were Black/African American, 2% were Asian/Pacific Islander, and 3% fell into the "other" category (Southwest Texas State, 1999). As can be seen in Table 1, race/ethnicity percentages for the comparison group were similar to the SHC demographics.

However, both the ECP and hCG groups contained lower percentages of White students and higher percentages of Hispanic students, as well as slightly higher percentages of Black students and students in the "other" category. There were 5 Asian, 1 American Indian, and 4 International students in the "other" category. A chi-square test for independence was run with race/ethnicity as the independent variable. There was no relationship between race/ethnicity and survey group membership.

Finally, GPAs were dichotomized into passing ($\geq$ 2.0) and failing (< 2.0) to look at students on the basis of academic soundness (see Table 1). A chi-square test for independence was run with GPA as the independent variable. There was no relationship between GPA and survey group membership.

Table 1

Demographic Characteristics of Women Seeking Emergency Contraception or Pregnancy Testing and Comparison Women

	Survey Group		
	ECP[a]	hCG[b]	Comparison[c]
Age			
18-20	28 (52%)	5 (23%)	56 (40%)
21	7 (13%)	4 (18%)	26 (19%)
22-23	12 (22%)	8 (36%)	38 (27%)
> 23	7 (13%)	5 (23%)	20 (14%)
Classification			
Freshman	13 (24%)	2 (9%)	19 (14%)
Sophomore	14 (26%)	6 (27%)	33 (24%)
Junior	7 (13%)	5 (23%)	28 (20%)
Senior	18 (33%)	8 (36%)	52 (37%)
Graduate	2 (4%)	1 (5%)	8 (6%)
Race/Ethnicity			
White	31 (57%)	13 (62%)	103 (74%)
Hispanic	15 (28%)	7 (33%)	26 (19%)
Black	4 (7%)	1 (5%)	5 (4%)
Other	4 (7%)	0 (0%)	6 (4%)
Grade Point Average (GPA)[d]			
Passing	46 (89%)	11 (65%)	110 (85%)
Failing	6 (12%)	6 (35%)	20 (15%)

[a]n = 54 except for "GPA" (n = 52)

[b]n = 22 except for "Race/Ethnicity" (n = 21) and "GPA" (n = 17)

[c]n = 140 except for "GPA" (n = 130)

[d]GPA was calculated by averaging respondents' fall 1999 and spring 2000 GPAs

Table 2 shows demographic information for women who did not complete surveys. Surveys were not completed for three reasons: 1) the potential respondent was not offered a survey, 2) the potential respondent was a member of the hCG group and she received a positive test result, which excluded her from the study, or 3) the potential respondent was offered a survey but declined to complete it. There were 49 potential respondents who were missed; all of those missed were in the hCG group. There were 12 positive hCG test results and 6 refusals.

Although sample sizes were very small, women who received positive urine-hCG tests had a higher percentage of students aged 23 years and older when compared to the comparison group sample, as well as the hCG group sample. Those who were missed more closely resembled the comparison group sample than the hCG group sample in age. The missed group contained more freshmen than either the hCG group sample or the comparison group sample. However, the majority of women who received positive tests were seniors. This was similar to the hCG group sample which contained a higher percentage of seniors than the ECP group sample or the comparison group sample.

Both the missed group and the positive group were similar to the hCG group sample in racial/ethnic makeup,

however, both had lower percentages of Hispanic women and higher percentages of Black women. Women who declined to take the survey were all White students under 22 years of age. The percentage of those with passing GPAs was similar for all groups except for the positive group, which had a higher percentage of women with passing GPAs. Due to the small sample sizes, no statistical analyses were conducted on these groups.

Table 2

Demographic Characteristics of Women Who Did Not Complete the Survey

	Survey Group		
	Missed[a]	Positive[b]	Refused[c]
Age			
18-20	16 (33%)	2 (17%)	2 (33%)
21	12 (25%)	2 (17%)	1 (17%)
22-23	12 (25%)	3 (25%)	3 (50%)
> 23	8 (17%)	5 (42%)	0 (0%)
Classification			
Freshman	11 (26%)	2 (17%)	2 (40%)
Sophomore	12 (28%)	2 (17%)	0 (0%)
Junior	8 (19%)	1 (8%)	2 (40%)
Senior	10 (23%)	7 (58%)	1 (10%)
Graduate	1 (2%)	0 (0%)	0 (0%)
Race/Ethnicity			
White	33 (67%)	7 (58%)	6 (100%)
Hispanic	8 (16%)	3 (25%)	0 (0%)
Black	6 (12%)	2 (17%)	0 (0%)
Other	2 (4%)	0 (0%)	0 (0%)
Grade Point Average (GPA)[d]			
Passing	37 (88%)	9 (100%)	4 (80%)
Failing	5 (12%)	0 (0%)	1 (20%)

[a]n = 49 except for "Classification" (n = 42) and "GPA" (n = 42)

[b]n = 12 except for "GPA" (n = 9)

[c]n = 6 except for "Classification" (n = 5) and "GPA" (n = 5)

[d]GPA was calculated by averaging respondents' fall 1999 and spring 2000 GPAs

Percentages of students in each group who obtained Pap smears can be seen in Table 3. A chi-square test for independence was run with Pap smears as the independent variable. There was a relationship between having obtained a Pap smear and survey group membership, $\chi^2(2, \underline{N} = 216) = 8.056$, $\underline{p} < .05$, $\underline{C} = 0.190$. There was no relationship between having obtained a Pap smear and survey group membership when the ECP and hCG group samples were collapsed into one group. However, when the hCG group sample cases were excluded from analysis, there was a relationship between having obtained a Pap smear and survey group membership, $\chi^2(1, \underline{N} = 194) = 6.018$, $\underline{p} < .05$, $\underline{C} = 0.173$. Excluding the hCG group sample allowed an odds ratio (OR) to be calculated. An adjusted OR of 0.37 (95% confidence interval (CI) = 0.15, 0.90) was calculated, indicating that having been "exposed" to a Pap smear was protective against needing EC. However, having obtained a Pap smear was significantly correlated with frequency of birth control pill use ($\underline{r} = .458$, $\underline{p} < .001$). When the ECP group and the comparison group were compared with regard to frequency of birth control pill use, an adjusted OR of 0.13 (95% CI = 0.06, 0.27) was obtained. Thus, the protective effect seen in the comparison group for Pap smear may be due to "exposure" to birth control pill use.

Table 3

Lifetime Pap Testing by Group

	Survey Group		
	ECP[a]	hCG[b]	Comparison[c]
Pap Test			
Yes	40 (75%)	21 (95%)	126 (89%)
No	13 (25%)	1 (5%)	15 (11%)

[a]n = 53

[b]n = 22

[c]n = 141

As can be seen in Table 4, when women from the ECP, hCG, and comparison group samples were grouped by age, the youngest age group contained the largest percentage of women who had not received Pap smears. A chi-square test for independence was run with age group as the independent variable and having had a Pap smear as the dependent variable. There was a relationship between age and having received a Pap smear, $\chi^2(3, \underline{N} = 215) = 10.315$, $\underline{p} < .05$, $\underline{C} = 0.214$. Age was then dichotomized into two groups, in order to obtain an odds ratio. When age was dichotomized into two groups, 20 years and younger and 21 years and older, women in the younger group were more than 3 times as likely as women in the older group to have never received a Pap smear, adjusted OR = 3.50, 95% CI = 1.45, 9.19, and the

value of the chi-square test statistic was still statistically significant, $\chi^2(1, \underline{N} = 215) = 9.654$, $\underline{p} < .01$, $\underline{C} = 0.207$.

Table 4

Lifetime Pap Testing by Age

	Age			
	18-20[a]	21[b]	22-23[c]	>23[d]
Pap Test				
Yes	69 (78%)	33 (89%)	55 (95%)	30 (94%)
No	19 (22%)	4 (11%)	3 (5%)	2 (6%)

[a]n = 88

[b]n = 37

[c]n = 58

[d]n = 32

As can be seen in Table 5, when the ECP, hCG, and comparison group samples were grouped by race/ethnicity, lower percentages of Black and Hispanic women reported having received a Pap smear when compared to White women and women who fell into the "other" category. Because 90% of both White women and women who fell into the "other" category had received a Pap smear compared to 77% of Hispanic women and 80% of Black women, race/ethnicity was dichotomized into two groups, "White/Other" and

"Black/Hispanic." This was done in order to obtain an odds ratio. When race/ethnicity was dichotomized into two groups, Black and Hispanic women were more than twice as likely as White women or women who fell into the "other" category to have never received a Pap smear, adjusted OR = 2.71, 95% CI = 1.12, 6.60. A chi-square test for independence was run with dichotomized race/ethnicity as the independent variable and Pap testing as the dependent variable. There was a relationship between race/ethnicity and Pap testing, $\chi^2(1, \underline{N} = 214) = 6.090$, $\underline{p} < .05$, $\underline{C} = 0.166$.

Table 5

Lifetime Pap Testing by Race/Ethnicity

	Race/Ethnicity			
	White[a]	Hispanic[b]	Black[c]	Other[d]
Pap Test				
Yes	132 (90%)	37 (77%)	8 (80%)	9 (90%)
No	10 (10%)	11 (23%)	2 (20%)	1 (10%)

[a]n = 142

[b]n = 48

[c]n = 10

[d]n = 10

Table 6 shows percentages for students' ratings of the sex education they received at home and at school. A

higher percentage of women in both the comparison group and the hCG group rated their sex education at school as "poor" or nonexistent when compared to the ECP group. A greater percentage of those who perceived their sex education as "very good" were in the hCG and ECP group samples when compared to the comparison group sample. Chi-square tests for independence were run with perceived quality of sex education at home and at school as the independent variables. There was no relationship between either perceived quality of sex education at home or perceived sex education at school and survey group membership.

Table 6

Ratings of Perceived Quality of Sex Education

	Survey Group		
	ECP[a]	hCG[b]	Comparison[c]
At Home			
Excellent	9 (23%)	5 (26%)	26 (22%)
Very good	14 (35%)	4 (21%)	31 (26%)
Good	13 (33%)	6 (32%)	30 (25%)
Poor	3 (8%)	1 (5%)	19 (16%)
None	1 (3%)	3 (16%)	13 (11%)
At School			
Excellent	13 (28%)	3 (17%)	33 (28%)
Very good	22 (48%)	9 (50%)	31 (26%)
Good	10 (22%)	4 (22%)	38 (32%)
Poor	1 (2%)	2 (11%)	16 (13%)
None	0 (0%)	0 (0%)	2 (2%)

[a]"At Home" (n = 40); "At School" (n = 46)

[b]"At Home" (n = 19); "At School" (n = 18)

[c]"At Home" (n = 119); "At School" (n = 120)

Perceived sex education at home and at school were both dichotomized so that percentage differences could be more easily compared (see Table 7). Sex education was labeled "good" if the respondent rated their education as "excellent," "very good," or "good." Sex education was labeled "poor" if the respondent rated their education as "poor" or "none."

The ECP and hCG group samples were collapsed into one group so that all cells would have an expected count greater than five. Chi-square tests for independence were run with the dichotomized sex education variables as the independent variables. The value of the chi-square test statistic was statistically significant for perceived quality of sex education at home, $\chi^2(1, \underline{N} = 178) = 4.024$, $\underline{p} < .05$, $\underline{C} = 0.149$, and for perceived quality of sex education at school, $\chi^2(1, \underline{N} = 184) = 4.390$, $\underline{p} < .05$, $\underline{C} = 0.153$. There was a relationship between both sex education at home and at school and survey group membership.

The dichotomized variables of perceived quality of sex education at home and at school were not significantly correlated with each other. However, prior to being dichotomized, perceived quality of sex education at home and at school were significantly correlated, $\underline{r} = .243$, $p < .01$.

Table 7

Perceived Quality of Sex Education

	Survey Group		
	ECP[a]	hCG[b]	Comparison[c]
At Home			
Good	36 (90%)	15 (79%)	87 (73%)
Poor	4 (10%)	4 (21%)	32 (27%)
At School			
Good	45 (98%)	16 (89%)	102 (85%)
Poor	1 (2%)	2 (11%)	18 (15%)

[a]"At Home" (n = 40); "At School" (n = 46)

[b]"At Home" (n = 19); "At School" (n = 18)

[c]"At Home" (n = 119); "At School" (n = 120)

The percentages of students using each method of birth control and self-reported consistency of use can be seen in Table 8. A chi-square test for independence was run with frequency of condom use as the independent variable. There was a relationship between frequency of condom use and survey group membership, $\chi^2(8, \underline{N} = 214) = 24.562$, $\underline{p} < .01$, $\underline{C} = 0.321$.

A chi-square test for independence was run with frequency of birth control pill use as the independent variable. Although the value of the chi-square test statistic was statistically significant, it was not

reported here because seven cells (46.7%) had expected counts of less than five and the minimum expected count was less than one.

A chi-square test for independence was conducted with use of withdrawal as a birth control method as the independent variable. There was no relationship between use of withdrawal and survey group membership. A chi-square test for independence was run with failure to use any method of birth control as the independent variable. Although the value of the chi-square statistic was significant, it was not reported here because two cells (50%) had expected counts of less than five, and the minimum expected count was less than one. Another chi-square test for independence was run after collapsing the ECP and hCG group samples. After collapsing the data, there was a relationship between failure to use a method of birth control and survey group membership, $\chi^2(1, \underline{N} = 217) = 6.328$, $\underline{p} < .05$, $\underline{C} = 0.168$.

One additional chi-square test of independence was run with failure to use a method of birth control as the independent variable. Survey group membership was kept as the dependent variable, but the hCG group sample cases were excluded. There was a relationship between failure to use

a method and survey group when hCG cases were excluded, $\chi^2(1, \underline{N} = 195) = 7.012, \underline{p} < .01, \underline{C} = 0.186$.

Table 8

Use of Birth Control Method by Type in Past Two Months

	Survey Group		
	ECP[a]	hCG[b]	Comparison[c]
Condom Use			
Every time	27 (52%)	2 (10%)	32 (23%)
Most of the time	12 (23%)	4 (19%)	36 (26%)
Sometimes	4 (8%)	2 (10%)	14 (10%)
Rarely	4 (8%)	5 (24%)	24 (17%)
Never	5 (10%)	8 (38%)	35 (25%)
Take OCs on Time			
Every day	7 (13%)	7 (32%)	75 (53%)
Most days	5 (9%)	4 (18%)	24 (17%)
Some days	1 (2%)	0 (0%)	0 (0%)
Rarely	0 (0%)	3 (14%)	2 (1%)
Do not use OCs	40 (76%)	8 (36%)	40 (28%)
Withdrawal			
Yes	10 (19%)	6 (27%)	30 (21%)
No	44 (82%)	16 (73%)	111 (79%)
No method used			
Any method	50 (93%)	21 (96%)	140 (99%)
No method	4 (7%)	1 (5%)	1 (1%)

[a]n = 54 except for "Condom Use" (n = 52) and "Take OCs on Time" (n = 53)

[b]n = 22 except for "Condom Use" (n = 21)

[c]n = 141

Condom use and birth control pill use were grouped by "consistent" use, "inconsistent" use, and nonuse (see Table 9). This was done for two reasons: 1) as discussed in the review of literature, previous research found differences between samples of women based on consistency of birth control method use, and 2) it was easier to visually compare percentages of consistent and inconsistent users and nonusers in a simplified table format. For the purposes of this research, consistent condom users were defined as respondents who reported using condoms "every time" or "most of the time" when they had intercourse in the two months preceding the survey. Inconsistent condom users were defined as respondents who reported using condoms "sometimes" or "rarely" on the occasions they had had intercourse in the two months preceding the survey. Likewise, birth control pill users were defined as "consistent" users if they took their birth control pills at approximately the same time "every day" or "most days" during the past two months preceding the survey. "Inconsistent" birth control pill users were defined as respondents who reported taking their pill at approximately the same time every day "some days" or "rarely" in the two months preceding the survey. Respondents who consistently used both condoms and birth control pills were filtered out

so they would not be counted twice. The dual users included 8 in the ECP group sample, 1 in the hCG group sample, and 29 in the comparison group sample. Chi-square tests for independence were run with condom use and birth control pill use as the independent variables. There was a relationship between condom use and survey group membership, $\chi^2(4, \underline{N} = 176) = 19.756, \underline{p} < .01, \underline{C} = 0.318$. There was also a relationship between birth control pill use and survey group membership, but the value of the chi-square test statistic is not reported here since the minimum expected count was less than one. The ECP and hCG group samples were collapsed, and another chi-square test for independence was conducted. Again, the value of the chi-square test statistic was statistically significant; there was a relationship between birth control pill use and survey group, $\chi^2(2, \underline{N} = 176) = 27.363, \underline{p} < .001, \underline{C} = 0.367$.

Table 9

Consistency of Birth Control Method Use by Type

	Survey Group		
	ECP[a]	hCG[b]	Comparison[c]
Condom Use			
Consistent	31 (71%)	5 (25%)	39 (35%)
Inconsistent	8 (18%)	7 (35%)	38 (34%)
Do not use	5 (11%)	8 (40%)	35 (31%)
Birth Control Pill Use			
Consistent	4 (9%)	10 (50%)	70 (63%)
Inconsistent	1 (2%)	3 (15%)	2 (2%)
Do not use	39 (89%)	7 (35%)	40 (36%)

[a]n = 44

[b]n = 20

[c]n = 112

In addition to varying by survey group membership, percentages of women using certain birth control methods also varied by age and by race/ethnicity. As can be seen in Table 10, a greater percentage of women in the two younger age groups used condoms as a birth control measure than did women in the two older age groups. A chi-square test for independence was run with age group as the independent variable and condom use as the dependent variable. There was a relationship between age and condom use, $\chi^2(3, \underline{N} = 216) = 16.628$, $\underline{p} < .01$, $\underline{C} = 0.267$.

Table 10

Condom Use by Age

	Age			
	18-20[a]	21[b]	22-23[c]	>23[d]
Used Condoms				
Yes	78 (88%)	32 (86%)	39 (67%)	19 (59%)
No	11 (12%)	5 (14%)	19 (33%)	13 (41%)

[a]n = 89

[b]n = 37

[c]n = 58

[d]n = 32

Greater percentages of White women and women in the "other" category reported using birth control pills, as can be seen in Table 11. In order to obtain an odds ratio, the variable race/ethnicity was once again dichotomized into "White/Other" and "Black/Hispanic." Both White women and women who fell into the "other" category were more than twice as likely to use birth control pills than were Black or Hispanic women, adjusted OR = 2.57, 95% CI = 1.34, 5.03. A chi-square test for independence was run with dichotomized race/ethnicity as the independent variable and birth control pill use as the dependent variable, $\chi^2(1, \underline{N} = 215) = 9.448$, $\underline{p} < .01$, $\underline{C} = 0.205$.

Table 11

Birth Control Pill Use by Race/Ethnicity

	Race/Ethnicity			
	White[a]	Hispanic[b]	Black[c]	Other[d]
Use Birth Control Pills				
Yes	97 (66%)	20 (42%)	5 (50%)	7 (70%)
No	50 (34%)	28 (58%)	5 (50%)	3 (30%)

[a]n = 147

[b]n = 48

[c]n = 10

[d]n = 10

Finally, percentage differences between groups in self-reported binge drinking in the two weeks preceding the survey can be seen in Table 12. A chi-square test for independence was run with binge drinking as the independent variable. There was no relationship between binge drinking and survey group membership.

Table 12

Self-Reported Binge Drinking Behavior

	Survey Group		
	ECP[a]	hCG[b]	Comparison[c]
Binge Drank in Past Two Weeks			
Yes	29 (54%)	8 (36%)	59 (42%)
No	25 (46%)	14 (64%)	82 (58%)

[a]n = 54

[b]n = 22

[c]n = 141

A forward stepwise logistic regression was run to ascertain if any of the independent variables were predictive of survey group membership. The ECP and hCG group samples were combined to form the "study" group of those at risk for unintended pregnancy. When variables for the four research questions were analyzed, the only variable predictive in value was frequency of birth control pill use (see Appendix C), which ranged from not being used as a method of birth control to being taken daily at approximately the same time. This was not surprising since OCs are a highly effective method of birth control and because women are required to see a health care provider in order to obtain a prescription for OCs. The logistic regression model had an overall predictive value of 67.9%

(see Table 13) because it was able to correctly predict 72.4% of the comparison group sample and 58.8% of the ECP/hCG group sample. If the logistic regression model was not predictive in value, the predicted survey group classification should have been distributed in a proportional manner, with 32% classified into the ECP/hCG group sample, and 67% classified into the comparison group sample. Table 14 shows the values for the logistic regression model.

Table 13

Logistic Regression Classification Table[a]

	Predicted		
	ECP/hCG	Comparison	Percentage Correct
Observed			
ECP/hCG	30	21	58.8
Comparison	29	76	72.4
Overall Percentage			67.9

[a]Cut value = .5

Table 14

Logistic Regression[a]

Variable	Beta	S.E. (Beta)	Wald
Step 1			
BCPFREQ	0.428	0.100	18.199***

[a]139 cases included in analysis

***$p < .001$

CHAPTER IV

DISCUSSION

Limitations

There were several limitations to this study. First of all, non-demographic variables for all groups were measured through self-report, and error in self-report has been well documented. Secondly, 69% of the hCG group was "missed," meaning they were not offered surveys.

Of this missed group, few reported "pregnancy" or "pregnancy counseling" as their reason for coming to the clinic. There could be several explanations for this. One possible explanation for this is that the hCG group could have been poorly defined. Perhaps the study design failed to capture those truly at risk for unintended pregnancy. Another possible explanation is that the respondents interpreted the questions as blaming or were too embarrassed to answer honestly. There are two pieces of peripheral evidence that suggest clients were too embarrassed to answer candidly. First, when the hCG lab test reports were crosschecked by reason code, very few

women who sought pregnancy testing actually cited "pregnancy" or "pregnancy counseling" as their reason for seeking health care. Second, at least one nurse or health care provider offered surveys to potential respondents while they were waiting for their hCG test results. Thus, protocol was not uniformly followed for the hCG group. For these reasons, in addition to the small sample size for the hCG group, findings for this group should be viewed with caution due to the increased likelihood of bias.

Finally, respondents appeared to have some difficulty with the way certain questions on the survey instrument were structured. On question number two, several respondents checked more than one box under each column; other respondents left one or both columns blank, even though there was a selection present for respondents who felt they had not received any sex education. Also, percentages of women who reported failure to use a method are smaller than the percentages of women who reported using no method in previous studies, which were discussed in the literature review. Question number three might have been more clearly stated as, "at times in the past two months, I have not used any method of birth control."

Findings in Relation to Previous Research

The percentage of women in the hCG group sample who reported receiving a Pap test was higher than originally hypothesized. However, a greater percentage of women in the comparison group sample obtained a Pap smear than did women in the ECP group sample. If risky behaviors did tend to cluster together, then it would be plausible that women who had not obtained a Pap test would be more likely to engage in a risky behavior such as unprotected sex.

As found in previous literature, younger women were significantly less likely to have obtained Pap smears than were women in the older age groups. The literature also reported significant differences between racial/ethnic groups with regards to having obtained Pap smears. This validated that finding as well: Black and Hispanic women were underrepresented with regard to Pap testing. Also similar to literature findings was the fact that upperclassmen sought pregnancy testing more frequently than did freshmen or sophomores.

Regarding sex education, a greater percentage of women in the ECP group sample rated their sex education as good or better when compared to the comparison group sample. Since the ECP group was considered to be at risk for unintended pregnancy, this finding was contrary to what we

expected. Although the literature reviewed found certain sex education programs increased the use of birth control in adolescents, perceived quality of sex education did not appear to reduce the risk of unintended pregnancy through the use of birth control in our study. However, perceived quality of sex education may have reduced actual unwanted pregnancies since women who rated the quality of their sex education as good or better sought out EC services.

Overall, method and consistency of birth control use appeared similar to what was reported in the literature. A higher percentage of women relying on condoms were in the ECP group sample compared to the comparison group sample, whereas the greatest percentage of OC users were in the comparison group sample. This was similar to literature findings, in that the majority of women who used a contraceptive method but were presenting for abortions had used condoms as their contraceptive method. Thus, women who sought ECPs may have experienced method failure. Due to the high number of women in the ECP group sample who reported "consistent" use of condoms, it is probable that contraceptive failure was due to user failure versus failure of the method.

No significant relationships were found in survey group membership with regard to binge drinking. This may

be due in part to the fact that SWTSU has a binge-drinking rate that is higher than the national average.

Conclusion

The goal of this research was to benefit students as well as to fulfill a degree requirement. The SHC will use these findings to plan effective education programs and interventions to meet the health needs, to improve the retention of, and to increase the success of, the students at SWTSU. The data suggest several appropriate target groups and interventions. With regard to Pap testing, sexually active women 20 years of age and younger and Black and Hispanic women are underrepresented. These groups of women are appropriate target groups for increased educational efforts on the importance of Pap testing.

Women who are currently sexually active, or who are unsure whether or not they will become sexually active in the near future, are an appropriate group to target for OC use as a means to reduce risk of unwanted pregnancy. Women who do not wish to use OCs are an appropriate target group for education on the correct use of condoms and on the availability of ECPs in case failure occurs. Because women who sought ECPs rated the quality of the sex education they received from school as high, health and sex education and programs may be an integral part of preventing unintended

pregnancy. Because the majority of women who sought EC reported condoms as their method of birth control, it appears that encouraging OCs as a birth control method, or education on correct use of condoms, would be effective in further reducing risk of unintended pregnancy in women seeking EC services.

The percentage of women who reported binge drinking is higher than the national average, suggesting another health issue altogether. However, because binge drinking has been consistently associated with unplanned and unprotected sex, further research may indicate that binge drinking is also a risk factor for unintended pregnancy.

APPENDIX A - Questionnaire

Women's Health Survey

The SWT Student Health Center is concerned about women's health issues. The information you provide will help us increase the quality of education and care for our students. This short survey of four questions is completely voluntary and all responses are confidential. Your completion of this survey is your consent to participate in this study. This survey is not part of your medical exam and will not be filed with your medical record. Your decision to participate or not will not affect your health care services in any way. Your name will not be connected with your responses in any way. Your answers are very important, please answer as accurately as possible. If you feel a question is too personal, you may skip it, but please continue and answer the others. Any information you provide will help us plan programs and services to improve the health of women on our campus.

Emilio Carranco, M.D.
Student Health Center Director

1) When was your last Pap smear?

- ☐ Within the last 12 months
- ☐ More than 12 months ago
- ☐ I have never had a Pap smear

2) Please check one answer for each column that you feel best describes the quality of sex education you received:
   - ➢ at home from your parent(s) or guardian(s)
   - ➢ at school from your teachers, school counselors, and/or school nurses

Sex education includes information about sex, sexually transmitted diseases, and birth control.

		Check Only One Box Under HOME	Check Only One Box Under SCHOOL
Excellent:	(I received all of the information I wanted/needed to know.)	☐	☐
Very Good:	(I received most of the information I wanted/needed to know.)	☐	☐
Good:	(I received some of the information I wanted/needed to know.)	☐	☐
Poor:	(I received little of the information I wanted/needed to know.)	☐	☐
None:	(This information was not discussed at all.)	☐	☐

Comments:_____

_____

3) Please check each method of birth control that you have used in the past 2 months.

- ☐ **Condoms**
  Think about the past 2 months. Each time you had sex, how often did you use a condom from the beginning until the end of intercourse.
  Every time **Most of the time** **Sometimes** **Rarely**
- ☐ **Birth control pills**
  In the past 2 months, how often did you take your pill every day at approximately the same time?
  Every day **Most days** **Some days** **Rarely**
- ☐ **Withdrawal**
- ☐ **Other** _____
  Please specify
- ☐ **I don't use any form of birth control.**

4) Within the past two weeks, have you had four or more drinks* at a sitting?

- ☐ Yes
- ☐ No

*A drink is a bottle of beer, a glass of wine, a wine cooler, a shot glass of liquor, or a mixed drink.

Thank you for completing the survey. Please seal your survey in the envelope provided and return it to the nurse who gave it to you.

APPENDIX B - Row Percentages Tables for Chi-Square Tests of Independence

Table 1: Had a Pap Smear*Survey Group

			Survey Group			
			ECP	hCG	Comparison	Total
Pap Smear	No	Count	13	1	15	29
		% within Pap Smear	44.8%	3.4%	51.7%	100.0%
	Yes	Count	40	21	126	187
		% within Pap Smear	21.4%	11.2%	67.4%	100.0%
Total		Count	53	22	141	216
		% within Pap Smear	24.5%	10.2%	65.3%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.056[a]	2	.018
N of Valid Cases	216		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 2.95.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.190	.018
N of Valid Cases		216	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 2: Received a Pap Smear*Survey Group, hCG Group Sample Cases Excluded

			Survey Group		
			ECP	Comparison	Total
Pap Smear	No	Count	13	15	28
		% within Pap Smear	46.4%	53.6%	100.0%
	Yes	Count	40	126	166
		% within Pap Smear	24.1%	75.9%	100.0%
Total		Count	53	141	194
		% within Pap Smear	27.3%	72.7%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.018[b]	1	.014
N of Valid Cases	194		

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.65.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.173	.014
N of Valid Cases		194	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 3: Had a Pap Smear*Age Group

			Age Group				
			18 to 20	21	22 to 23	> 23	Total
Pap Smear	No	Count	19	4	3	2	28
		% within Pap Smear	67.9%	14.3%	10.7%	7.1%	100.0%
	Yes	Count	69	33	55	30	187
		% within Pap Smear	36.9%	17.6%	29.4%	16.0%	100.0%
Total		Count	88	37	58	32	215
		% within Pap Smear	40.9%	17.2%	27.0%	14.9%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.315[a]	3	.016
N of Valid Cases	215		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 4.17.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.214	.016
N of Valid Cases		215	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 4: Had a Pap Smear*Age Group

			Age Group		Total
			18 - 20	21 +	
Pap Smear	No	Count	19	9	28
		% within Pap Smear	67.9%	32.1%	100.0%
	Yes	Count	69	118	187
		% within Pap Smear	36.9%	63.1%	100.0%
Total		Count	88	127	215
		% within Pap Smear	40.9%	59.1%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.654[b]	1	.002
N of Valid Cases	215		

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.46.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.207	.002
N of Valid Cases		215	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 5: Had a Pap Smear*Race/Ethnicity

			Race/Ethnicity		
			White/Other	Black/Hispanic	Total
Pap Smear	No	Count	15	13	28
		% within Pap Smear	53.6%	46.4%	100.0%
	Yes	Count	141	45	186
		% within Pap Smear	75.8%	24.2%	100.0%
Total		Count	156	58	214
		% within Pap Smear	72.9%	27.1%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.090[b]	1	.014
N of Valid Cases	214		

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.59.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.166	.014
N of Valid Cases		214	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 6: Perceived Quality of Sex Education at Home*Survey Group

			Survey Group		
			ECP/hCG	Comparison	Total
Sex Ed at Home Good or Poor	Poor	Count	8	32	40
		% within Sex Ed at Home Good or Poor	20.0%	80.0%	100.0%
	Good	Count	51	87	138
		% within Sex Ed at Home Good or Poor	37.0%	63.0%	100.0%
Total		Count	59	119	178
		% within Sex Ed at Home Good or Poor	33.1%	66.9%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.024[b]	1	.045
N of Valid Cases	178		

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.26.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.149	.045
N of Valid Cases		178	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 7: Perceived Quality of Sex Education at School * Survey Group

			Survey Group		
			ECP/hCG	Comparison	Total
Sex Ed at School Good or Poor	Poor	Count	3	18	21
		% within Sex Ed at School Good or Poor	14.3%	85.7%	100.0%
	Good	Count	61	102	163
		% within Sex Ed at School Good or Poor	37.4%	62.6%	100.0%
Total		Count	64	120	184
		% within Sex Ed at School Good or Poor	34.8%	65.2%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.390[b]	1	.036
N of Valid Cases	184		

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.30.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.153	.036
N of Valid Cases		184	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 8: Frequency of Condom Use*Survey Group

			Survey Group			
			ECP	hCG	Comparison	Total
Frequency of Condom Use	Do not use	Count	5	8	35	48
		% within Frequency of Condom Use	10.4%	16.7%	72.9%	100.0%
	Rarely	Count	4	5	24	33
		% within Frequency of Condom Use	12.1%	15.2%	72.7%	100.0%
	Some times	Count	4	2	14	20
		% within Frequency of Condom Use	20.0%	10.0%	70.0%	100.0%
	Most of the time	Count	12	4	36	52
		% within Frequency of Condom Use	23.1%	7.7%	69.2%	100.0%
	Always	Count	27	2	32	61
		% within Frequency of Condom Use	44.3%	3.3%	52.5%	100.0%
Total		Count	52	21	141	214
		% within Frequency of Condom Use	24.3%	9.8%	65.9%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.562[a]	8	.002
N of Valid Cases	214		

a. 4 cells (26.7%) have expected count less than 5. The minimum expected count is 1.96.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.321	.002
N of Valid Cases		214	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 9: Failure to Use a Method*Survey Group

			Survey Group		
			ECP/hCG	Comparison	Total
Method Used	Yes	Count	71	140	211
		% within Method Used	33.6%	66.4%	100.0%
	No	Count	5	1	6
		% within Method Used	83.3%	16.7%	100.0%
Total		Count	76	141	217
		% within Method Used	35.0%	65.0%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.328[b]	1	.012
N of Valid Cases	217		

a. Computed only for a 2x2 table

b. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.10.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.168	.012
N of Valid Cases		217	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 10: Failure to Use a Method*Survey Group, hCG Group Sample Cases Excluded

			Survey Group		
			ECP	Comparison	Total
Method Used	Yes	Count	50	140	190
		% within Method Used	26.3%	73.7%	100.0%
	No	Count	4	1	5
		% within Method Used	80.0%	20.0%	100.0%
Total		Count	54	141	195
		% within Method Used	27.7%	72.3%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.012[b]	1	.008
N of Valid Cases	195		

a. Computed only for a 2x2 table

b. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.38.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.186	.008
N of Valid Cases		195	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 11: Consistent Condom Use*Survey Group

			SURVEY			Total
			ECP	hCG	Comparison	
Consistent Condom Use	Do not use	Count	5	8	35	48
		% within Consistent Condom Use	10.4%	16.7%	72.9%	100.0%
	No	Count	8	7	38	53
		% within Consistent Condom Use	15.1%	13.2%	71.7%	100.0%
	Yes	Count	31	5	39	75
		% within Consistent Condom Use	41.3%	6.7%	52.0%	100.0%
Total		Count	44	20	112	176
		% within Consistent Condom Use	25.0%	11.4%	63.6%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.756[a]	4	.001
N of Valid Cases	176		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.45.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.318	.001
N of Valid Cases		176	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 12: Consistent Birth Control Pill Use*Survey Group

			Survey Group		
			ECP/hCG	Comparison	Total
Consistent BCP Use	Do not use	Count	46	40	86
		% within Consistent BCP Use	53.5%	46.5%	100.0%
	No	Count	4	2	6
		% within Consistent BCP Use	66.7%	33.3%	100.0%
	Yes	Count	14	70	84
		% within Consistent BCP Use	16.7%	83.3%	100.0%
Total		Count	64	112	176
		% within Consistent BCP Use	36.4%	63.6%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.363[a]	2	.000
N of Valid Cases	176		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.18.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.367	.000
N of Valid Cases		176	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 13: Condom Use*Age Group

			Age Group				
			18 to 20	21	22 to 23	> 23	Total
Use Condoms	No	Count	11	5	19	13	48
		% within Use Condoms	22.9%	10.4%	39.6%	27.1%	100.0%
	Yes	Count	78	32	39	19	168
		% within Use Condoms	46.4%	19.0%	23.2%	11.3%	100.0%
Total		Count	89	37	58	32	216
		% within Use Condoms	41.2%	17.1%	26.9%	14.8%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.628[a]	3	.001
N of Valid Cases	216		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.11.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.267	.001
N of Valid Cases		216	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 14: Use of Birth Control Pills*Race/Ethnicity

			Race/Ethnicity		
			White/Other	Black/Hispanic	Total
Use BCPs	No	Count	53	33	86
		% within Use BCPs	61.6%	38.4%	100.0%
	Yes	Count	104	25	129
		% within Use BCPs	80.6%	19.4%	100.0%
Total		Count	157	58	215
		% within Use BCPs	73.0%	27.0%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.448[b]	1	.002
N of Valid Cases	215		

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 23.20.

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.205	.002
N of Valid Cases		215	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

APPENDIX C - Logistic Regression Analysis

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	156	71.9
	Missing Cases	61	28.1
	Total	217	100.0
Unselected Cases		0	.0
Total		217	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
1.00	0
3.00	1

Block 0: Beginning Block Classification Table

			Predicted		
			Survey Group		Percentage Correct
	Observed		ECP/hCG	Comparison	
Step 0	Survey Group	ECP/hCG	0	51	.0
		Comparison	0	105	100.0
	Overall Percentage				67.3

Constant is included in the model.
The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.722	.171	17.901	1	.000	2.059

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Q2HOME	1.419	1	.234
		Q2SCHOOL	2.481	1	.115
		CONDFREQ	5.826	1	.016
		BCPFREQ	19.529	1	.000
		WITHDRAW	.213	1	.645
		NOMETHOD	5.254	1	.022
		Q4DRINK	.701	1	.403
		PAPYES	.355	1	.551
	Overall Statistics		26.560	8	.001

Block 1: Method = Forward Stepwise (Likelihood Ratio)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	19.720	1	.000
	Block	19.720	1	.000
	Model	19.720	1	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	177.457	.119	.166

Classification Table

			Predicted		
			Survey Group		
	Observed		ECP/hCG	Comparison	Percentage Correct
Step 1	Survey Group	ECP/hCG	30	21	58.8
		Comparison	29	76	72.4
	Overall Percentage				67.9

The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	BCPFREQ	.428	.100	18.199	1	.000	1.534
	Constant	-.128	.254	.254	1	.614	.880

a. Variable(s) entered on step 1: BCPFREQ.

Model if Term Removed

Variable		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1	BCPFREQ	-98.589	19.720	1	.000

Variables not in the Equation

			Score	df	Sig.
Step 1	Variables	Q2HOME	.639	1	.424
		Q2SCHOOL	.969	1	.325
		CONDFREQ	.029	1	.866
		WITHDRAW	.240	1	.624
		NOMETHOD	2.699	1	.100
		Q4DRINK	.304	1	.582
		PAPYES	2.081	1	.149
	Overall Statistics		6.907	7	.439

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Vita

Teresa Jane Miller, the daughter of Kunzang Challender and Richard Noel Miller, was born in Edina, Minnesota, on August 5, 1971. She is blessed with an extended family, including parents Stephen Jacob Bean, Carole Lee Senty, and Nancy Revenaugh-Bean. Teresa graduated from MacArthur High School, San Antonio, Texas, in 1989. She received the degree Associate of Arts from Normandale Community College, Bloomington, Minnesota, and then studied Criminology at the University of Minnesota, Duluth, Minnesota. She received a Bachelor of Arts in Sociology from Southwest Texas State University, San Marcos, Texas, in 1998. In August 1998, she entered the Graduate School of Southwest Texas State University, San Marcos, Texas. In April 2000, she received an Academic Excellence Award, and the Outstanding Student Award for the Health Services and Research department, Biostatistics and Epidemiology track.

Permanent address: 2959 SE Lybarger
Olympia, WA 98501

This thesis was typed by Teresa Jane Miller.