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Toshiko Alana Dignam	April 21, 2011
	Date

Approval Sheet

The Association Between Contraceptive Choices, Parental Factors, and Hispanic Adolescents' Use of Emergency Contraception

By

Toshiko Alana Dignam
Master of Public Health

Hubert Department of Global Health

_____

Patricia J. Dittus, Ph.D
Committee Chair

_____

Roger Rochat, M.D.
Committee Member

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By

Toshiko Alana Dignam

Bachelor of Arts
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Thesis Committee Chair: Patricia J. Dittus, Ph.D

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Abstract

The Association Between Contraceptive Choices, Parental Factors, and Hispanic Adolescents' Use of Emergency Contraception

by Toshiko Alana Dignam

Thesis Committee: Patricia J. Dittus (Centers for Disease Control and Prevention) and Roger Rochat (Emory University)

Background: Hispanic adolescents have some of the highest teen pregnancy rates of any race/ethnic group in the U.S. and are the least likely to use birth control. Because adolescents are difficult to study and emergency contraception is a rare event, little is known about emergency contraceptive use among Hispanic adolescents and even less is known about what factors are associated with its use.

Objective: This study examines the relationship between Hispanic adolescents' use of emergency contraception and the associated contraceptive choices and parental factors that influence use.

Methods: We conducted a secondary analysis on data from an 8-year intervention study designed to improve sexual health among adolescents. This matched case-control of 518 Hispanic high school students from 12 urban public schools in California analyzed the association between emergency contraceptive use, contraceptive choices, and parental factors using conditional logistic regression.

Results: Results indicate the likelihood of using emergency contraception (EC) increases as the number of contraceptive methods used increases, when controlling for socioeconomic status, education level, and acculturation. The odds of using EC is 4.0 (95% CI: 1.619, 10.106) times greater when using withdrawal exclusively compared to using nothing at last intercourse. The odds of using EC after practicing withdrawal in conjunction with using another type of birth control method increases 3.6 times (95% CI: 1.751, 7.330) compared to using no method of birth control during last intercourse. Additionally, using the pill in conjunction with any birth control method increases the likelihood of using EC by 4.2 times (95% CI: 1.843, 9.618) compared to using no birth control. No parental factors, including maternal communication about the consequences of sex, communication style and adolescent's perceived level of expertise, trustworthiness, or directness was associated with emergency contraceptive use. Additionally, the level of relationship satisfaction and perceived parental attitudes about birth control were not associated with adolescent's EC use.

Discussion: Our study suggests that Hispanic Adolescents who use emergency contraception are more motivated to prevent pregnancy than their non-EC using peers. Interventions aimed at increasing EC use among Hispanic teens should target students currently using no method and those using the withdrawal method. Additionally, Hispanic parents should be encouraged to include EC in their conversations about birth control.

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Chapter 1: Introduction

According to the Centers for Disease Control and Prevention (CDC), the introduction of family planning was lauded as one of the ten greatest public health achievements of the 20th century (CDC, 1999). However, high rates of teen pregnancy and birth continue nationwide, especially for minority populations. Among them, Hispanic teens currently have the highest rates of pregnancy and reflect some of the lowest rates of contraceptive use (Kost, 2010). The President's Teen Pregnancy Prevention Initiative, in partnership with the CDC, has identified Hispanic teens as a target group for interventions aimed at reducing teen pregnancy and birth rates. To achieve this reduction, one main outcome of the initiative is to increase consistent and correct contraceptive use among teens (CDC, 2010).

Among the contraceptive choices available to teens, few can be used after unprotected heterosexual intercourse has occurred, with the exception of the emergency contraceptive pill and the copper intrauterine device (IUD). The 120 hours following unprotected intercourse in which the emergency contraceptive pill can be used provide a critical window of opportunity to reduce the chances of unintended pregnancy. Especially among adolescents, where abstinence regularly fails and incorrect contraceptive use can be problematic, emergency contraception is often an unknown or overlooked contraceptive method. Therefore, this study aims to examine what factors influence Hispanic adolescents use of emergency contraception. Specifically, we aim to identify how contraceptive choices, as well parental factors associated with discussions about sex, influence emergency contraceptive use. By identifying influential factors, we can develop

more effective interventions that increase contraceptive use and thereby reduce unplanned pregnancies among high-risk adolescent populations.

Teen Sexual Activity in the U.S.

Pregnancy, Birth, and Abortion Rates

According to the 2006-08 National Survey of Family Growth (NSFG), 28% of never-married females aged 15-17 and 60% of those aged 18-19 years have ever had sexual intercourse, defined as heterosexual vaginal intercourse. For never-married males, 29% of 15-17 year olds and 65% of 18-19 year olds have ever had sexual intercourse (Abma, 2010).

Sexual experience, however, varies among gender and race/ethnicity. Never-married Hispanic teens are less sexually experienced than black teens yet more experienced than white teens. Among non-married males aged 15-19, 45% of Hispanic males have ever had sexual intercourse, a percentage slightly lower than white males (39%) but significantly higher than black males (61%). Comparatively, among non-married females aged 15-19, Hispanic females (43%) are slightly less experienced than Hispanic males and black females (45%) yet slightly more experienced than white females (40%) (Abma, 2010).

Therefore, while Hispanic teens are somewhat more experienced than white teens, the percentage differences are small, especially between females. Similarly, differences in sexual experience of Hispanic females versus males are within two percentage points. Aside from implying that comprehensive sex education and contraceptive interventions

are needed before age 15, they also illustrate how Hispanic teen's sexual experience do not differ much between genders nor between races/ethnicities. This suggests that interventions solely aimed at delaying sexual activity may not succeed at addressing root causes of pregnancy disparities between races/ethnicities.

According to the 2006-08 NSFG, the national pregnancy rate among 15-19 year old adolescents is 72 pregnancies per 1,000 women. However, when the national denominator is recalculated to include only sexually active adolescents, the pregnancy rate increases to 153 per 1,000 women (Kost, 2010). Using slightly older data from the 2002 NSFG, Finer estimates adolescent unintended pregnancy rates using only sexually active adolescents in the denominator (Finer, 2010). Recalculated rates show 15-17 year olds have an unintended pregnancy rate of 147 per 1,000 adolescents. This is significantly higher than a traditionally calculated rate of 40 per 1,000 adolescents for 2002. Numbers are even higher for adolescents aged 18-19, with a recalculated rate of 162 compared against a traditionally calculated rate of 108 per 1,000 adolescents.

Therefore, the Hispanic pregnancy rate of 127 per 1,000 teens is likely much higher if only sexually experienced adolescents were included. However, even when compared to the national rate of 72 per 1,000, it is evident Hispanic teens are a leader in the high national rates of teen pregnancy.

While the past decade has shown national declines in adolescent pregnancy rate, an increase of 3% was observed between 2005 to 2006 (Kost, 2010). It is unclear whether this increase is the initial sign of a steady increase or a temporary fluctuation,

nevertheless, it warrants attention. One objective of Healthy People 2020 is to reduce pregnancy rates among 15-19 year old females by 10% from 2005 levels.

Identifying whether differing pregnancy rates between racial/ethnic groups is a result of choice or social/ economic disadvantages is central to developing effective interventions. Pregnancy intention, while difficult to measure, can potentially explain the disproportionately higher rates of Hispanic teen pregnancy. Teenagers may be less intentional about becoming pregnant, compared with older women, and may therefore also be more ambivalent about becoming pregnant.

According the the 2006-08 NSFG, among never-married adolescents aged 15-19, almost half as many non-Hispanic white females (9%) said they would be “a little pleased” or “very pleased” if they became pregnant whereas 20% of non-Hispanic black and Hispanic females reported the same. However, among never-married males aged 15-19, Hispanic males have significantly higher percentages of agreement. Thirty-seven percent of males said they would be a little or very pleased whereas 28% of non-Hispanic males and 9% of non-Hispanic white males said the same (Abma, 2010). Comparing Hispanic teens, almost double the percent of Hispanic males (37%), compared to Hispanic females (20%), would be at least a little pleased with becoming pregnant. This could have significant implications for the ability of female Hispanic adolescents to prevent pregnancy when using forms of birth control that rely upon partner consent and could be one factor contributing to higher pregnancy rates among Hispanic teens.

However, level of happiness regarding becoming pregnant may not be associated with increased likelihood of becoming pregnant. One study researching the pregnancy

intentions of Latina adolescent from San Francisco's Mission District found that pregnancy intention was an individual risk factor rather than a mediator for pregnancy (Rocca, 2010). The authors found that adolescents' level of wanting to become pregnant was strongly associated with becoming pregnant while level of happiness if they became pregnant was not. Additionally, the authors found that the proportion of teenagers who expressed any pregnancy wantedness was only 14%. The authors conclude that differences between Latina groups in regards to teen pregnancy rates are a result of circumstances rather choice, supporting arguments that efforts should focus on increasing effective contraceptive use among Hispanic teenagers.

In 2009, the U.S. teen birth rate was the lowest ever recorded at 39.1 births per 1,000 women. Among female Hispanic teens, the birthrate is 70.1 per 1,000 women, almost three times higher than for white women whose rate was 25.6 per 1,000 women. While the Hispanic teen birthrate has decreased 33% since 1991, gains were smaller than black or white teens (50% and 41% respectively) (CDC, 2011). Not surprisingly, given these statistics, Hispanic females have the highest risk of a teen birth, with 35% of Hispanics having had a first birth by age 20 (Abma, 2010).

The abortion rate among 15-19 year old women, between 2005 and 2006, increased slightly, from 19.1 to 19.3, the first increase since 1988 (Kost, 2010). While it is unclear if these increases are short term, increases in abortion and birth rates can be prevented with interventions that foremost prevent pregnancy. Among Hispanic teens, the abortion rate has been declining since 1998, reaching 24.6 per 1,000 women in 2006 (Kost, 2010). While Hispanics have fewer abortions than black teens (44), rates are double that of white teens (14) nationally (Kost, 2010).

In 2008, California ranked 6th highest in the country for abortion rate: 26 per 1,000 women aged 15-19.

Contraceptive Practices

Hispanic males are the most likely of any race/ethnicity to use no method of contraception during first intercourse. Of 15-19 year old males of Hispanic race and origin, 26.6% reported using no method at first intercourse, significantly higher compared to 15.1% of non-Hispanic white males and 15.6% of non-Hispanic blacks. Among this group, Hispanic males are also least likely to use both condoms and birth control combined during first intercourse (Abma, 2010).

According to the 1995-2008 NSFG survey, there was an increase in ever using contraceptive methods that are less efficacious as well as a decline in more effective Long Acting Reversible Methods (LARC) like the IUD. In 1982, only 24.5% of women had ever practiced the withdrawal method (coitus interruptus) yet in 2006-08, 58.8% of women indicated that they had ever used withdrawal. Additionally, the percent of women who had ever used more reliable methods of contraception also declined. In 1982, 18.4% of women had ever used the IUD whereas this number declined to 7.4% by 2006-08.

Additionally, the 2006-2008 NSFG indicates that 11.0% of sexually experienced Hispanic women aged 15-44 have ever used emergency contraception. This percent is slightly higher than those for all other single races, including white women (9.8%), black women (6.5%) (Mosher, 2010). Among 15-19 year olds, the percent of sexually experienced females who have ever used EC remains constant at 10.7% (Abma, 2010). Between 1995 and 2008, the percent of women aged 15-44 who have ever used

emergency contraception has increased from 0.8% to 9.7% (Mosher, 2010). While this is a significant increase, use remains low compared with other methods of birth control.

During the 1990s, the NSFG reported declines in both pregnancy rates and abortion rates among teenagers and young women, indicating decreases in unintended pregnancy. The decline between 1995 and 2002, one study argues, can be attributed to increased contraceptive use (Santelli, 2007). The authors estimate that 77% of the decrease in pregnancy rates among adolescents aged 15-17, and 100% those 18-19, is due to increased contraceptive use. Therefore, focused efforts on increasing contraceptive use could result in significant reductions in teen pregnancy rates.

In conclusion, while Hispanic teens do not differ much in their sexual experience compared against non-Hispanic blacks and whites, there are some surprising differences between Hispanic females and males as well as between races/ethnicities. Hispanic teens have much higher pregnancy and birth rates compared to national levels. While they have slightly higher abortion rates than the national average, the rate is twice as high as white teens. Hispanic males, especially, are less likely to use contraception and more likely to be at least a little pleased at becoming pregnant. Therefore, Hispanic teens live with the consequences of pregnancy more than any other group as a higher proportion become pregnant. As Hispanic teens are disproportionately affected by the consequences of teen pregnancy, they are a specific population of interest for appropriate interventions.

Chapter 2: Comprehensive Review of the Literature

History of Emergency Contraception in the United States

Emergency contraception is a contraceptive method used after intercourse when either the main method has failed or no method was used. There are currently two main types of emergency contraception: various hormonal regimens and the copper intrauterine device (IUD). Because the copper IUD, brand name ParaGard, requires an office visit for insertion, costs considerably more than hormonal pills, and is less accessible to adolescents, we are limiting our research to the hormonal method of emergency contraception.

The birth control pill became available in the United States in 1964 and ten years later it was discovered that the proper combination of pills, taken 12 hours apart, could safely and effectively prevent pregnancy. The Yuzpe method, as it was called, was a combination of estrogen and progestin pills taken within 72 hours post intercourse. As this method was not FDA approved, it was prescribed off label and therefore both knowledge and uptake of the method remained low for decades. In 1997, although not FDA approved, the American College of Obstetricians and Gynecologists published their recommended guidelines for emergency contraceptive use. Then, in an unprecedented move, without first receiving a request from the pharmaceutical companies, the FDA issued a Federal Register notice declaring six brands of hormonal contraceptives safe for emergency contraceptive use [Coeytaux, 2001].

Currently, there are three types of hormonal contraceptive methods available in the US: those that contain estrogen and progestin (Yupze method), progestin only (Next Choice, Plan B One-Step), and those containing ulipristal acetate only (ella). Mifepristone, a single dose of 10 mg, is also used as emergency contraception; however, this regimen is not approved in the US. Plan B involves two doses of 0.75 levonorgestrel taken 12 hours apart within 120 hours of intercourse. ella is a single dose of 30 mg ulipristal acetate, effective up to 120 hours after intercourse as well. The Plan B One-Step involves taking both doses of levonorgestrel at once. Both Plan B and Plan B One-Step are available over-the-counter to those 17 and older. Next Choice is an FDA approved generic version of Plan B for women 17 and younger. In 2010, the FDA approved ella by prescription only.

Timeline

- 1999
    - In July, the FDA approves Plan B for emergency contraception with a prescription only.
- 2002
    - In January, California implements the California Emergency Contraception Pharmacy Access Program, allowing pharmacists to distribute emergency contraception without a physician's prescription. Participating pharmacists must have a standing collaborative agreement

with a physician and have received training in accordance with California's law (Kaiser Family Foundation, 2004).

- 2003
    - In April, Plan B is submitted by Barr Research Inc to FDA for over-the-counter (OTC) use. The FDA rejects the proposal, many believe for political reasons.
- 2006
    - In August, the FDA approves Plan B over-the-counter for women 18 and older (Food and Drug Administration, 2009).
- 2009
    - In March, a federal court order is made to offer Plan B over-the-counter to women 17 and older. FDA states it will not appeal the decision (Food and Drug Administration, 2009).
    - In June, Next Choice is approved by the FDA for those 17 and younger with a prescription.
    - In July, Plan B One-Step is approved by FDA for prescription only for women under 17 and OTC for women 17 and older.
    - In August, Next Choice is approved by the FDA for OTC use.
- 2010

- Ella approved by FDA on August 13

Emergency Contraception's Public Health Impact

While not every act of intercourse results in a pregnancy, according to a Duramed Pharmaceutical double-blind, randomized, multicenter, multinational study, using Plan-B OneStep within 72 hours of unprotected intercourse can reduce the expected pregnancy rate from 8% to 1% (Duramed Pharmaceuticals, Revised August 2009).

While emergency contraception is more accessible than ever, studies have shown that access remains restricted, knowledge is low, and lack of clarity about the mechanism of action has hindered uptake (Ahonen, 2008; Aiken, 2005; Baldwin, 2008). Therefore, the ability of emergency contraception to affect unintended pregnancy rates has been low.

The intention of emergency contraception is to reduce rates of unplanned pregnancies, births, and abortions; however, studies have been unable to show effects at the population level. In a systematic review of the population effect of increased access to EC on pregnancy rates, the review identified 217 articles from which 23 of varying quality and intervention types were reviewed (Raymond, 2007). While 22 of 23 articles indicated that increased access to emergency contraception increased use, all articles failed to show clinically or statistically significant decreases in pregnancy or abortion rates between control and intervention groups. Raymond's review included five studies specifically conducted in California, which will be detailed below due to their geographical relevance to this study.

One randomized controlled study of 370 postpartum women in an inner-city hospital provided advance provision of emergency contraception along with a 5-minute educational session. Both intervention and control groups, 72% of which were Latina (mean age 26), were followed for one year. The women who were provided advanced provision of emergency contraception were four times as likely to use EC than those who did not receive advance provision (Jackson, 2003). However, the authors found that while the incidence of unintended pregnancy was lower among the intervention group, differences were not statistically significant. The authors state that a longer follow up period, as well as a larger sample size, would allow for greater detection in differences. Additionally, only 25% of the study participants who engaged in unprotected intercourse reported using emergency contraception during the follow-up period. The authors suggest this might be due to lack of knowledge about EC's mechanism of action, misconceptions of pregnancy risk, or concerns related to EC's safety.

A second study, another randomized study, included 160 adolescent mothers, 82% Hispanic, between the ages of 13 and 20. Both groups received EC education but the intervention group also received an advance supply of emergency contraception (AEC). At the 6-month mark, 83% of participants had used emergency contraception, compared to 11% of the control group. While the AEC treatment group had fewer unintended pregnancies, the study did not have enough power to detect small differences in unintended pregnancy rates (Belzer, 2005).

A third randomized, single-blinded, controlled trial of 2,117 women aged 15-24 who attended one of four California clinics, found similar results. Women were randomized to receive one of three interventions: access to EC through the pharmacy, 3 packs of AEC,

or clinic access (control group). Women in the pharmacy access group were no more likely to use EC than the control group, however, the AEC group was almost twice as likely as the control group. This study found no statistically significant differences in pregnancy rates among all three groups. The authors note that half of the women in the AEC group who reported having had unprotected intercourse did not use EC (Raine, 2005). Therefore, the authors conclude, either EC is not as effective as in clinical trial settings or the women at highest risk are least likely, if at all, to use EC.

Lastly, one cohort study in California (Raine, 2000) recruited women aged 16-24 who attended a California publically funded clinic and randomized them to receive either AEC and education or education only. Follow up was completed with 213 participants after four months. Women who received AEC were almost three times as likely to use EC (20% versus 7% respectively; p=0.06). While women in the education only group were more knowledgeable at follow up, their EC use did not increase. However, the study was too small to draw conclusions on the effect of AEC on pregnancy rates.

Few studies have been designed specifically to address EC's effect on a population level with the exception of three studies and one demonstration project. One larger study by Walsh *et al*, comprising over 9,000 women who were randomized to receive an informational packet either with or without AEC, also revealed no impact on pregnancy rates (Walsh, 2006). Women were selected for follow up based on an equal age and ethnicity distribution, with final numbers totaling 1,130 women aged 15-45. Among those with AEC, 19% used EC compared to 12% of those who received the informational packet only (p=0.0009). Equal percentages of women used EC after unprotected intercourse (27%) or contraceptive method failure (28%). Additionally, 22% of women

under 19 used EC compared to 9% of those over 19 ($p<0.001$). The authors did not see differences in unintended pregnancy, however, they noted that only 28% of those reporting having had unprotected intercourse used EC despite all participants having received information about EC. The percent of participants using EC reduced further to 14.5% among those who were at highest risk, experiencing five or more acts of unprotected intercourse. Among those who used withdrawal or experienced condom failure, EC use was higher (34% and 41% respectively). As with Raine's study, 50% of those who reported one or more risk event and had EC on-hand reported not using it because they believed they were not at risk.

Walsh's study also reveals interesting differences among the Hispanic subgroup. Hispanic women, more than any other ethnic group, were the most likely to report first seeking partner's permission before using EC (47% versus 34%, respectively; $p<0.0001$). This can have profound effects on a Hispanic woman's EC use as well as potentially impacting the amount of time that passes before accessing EC. Additionally, 18% of Hispanic women reported religious reasons as a barrier to using EC. Knowledge about EC's effectiveness and use also appeared to be a barrier. Among Hispanic women who had had unprotected intercourse and chose not to use EC, 11% reporting that they did not believe EC would work and 25% reporting they did not know how to take EC.

One randomized control trial, between 2002 and 2004, of 1,490 sexually active females aged 14-24 who did not desire pregnancy, were randomized to receive either advance provision of EC or standard access. Results revealed that while EC use increased significantly, pregnancy rates remained similar between both groups. The authors conclude that more than one third of all study participants admitted to having had

unprotected intercourse at least once without using EC afterward. Therefore, not all high-risk coital acts were protected by EC, possibly explaining why there was no observed differences in pregnancy rates between study groups (Raymond, 2006).

In conclusion, among the smaller studies highlighted, larger sample sizes with more power are needed to draw meaningful conclusions on the ability of EC to reduce unintended pregnancy rates. Additionally, among the population level studies, all studies cite a lack of perceived risk as a main barrier to EC uptake. This is evidenced by the high percentages of women who, even with access to EC, do not use any method during intercourse and those who believed themselves to be at low risk.

These studies highlight important barriers that may be resulting in EC's lack of effect. First, women must believe and understand their true risk for pregnancy. Without women perceiving every act of unprotected intercourse as a potential risk for pregnancy, EC's ability to reduce pregnancy is limited. Second, women must be motivated to prevent pregnancy. Many women are ambivalent about becoming pregnant and may "leave it up to chance". Some studies have found that young women from disadvantaged backgrounds are more ambivalent about becoming pregnant and bearing children (Berglas, 2003). Third, women must be aware that a post-coital pregnancy prevention method exists and have accurate information regarding its mechanism of action. Fourth, women must know where to access EC and in what time frame. Lastly, women must have the resources to access EC (money, transportation, time). In addition to these barriers, women may also be influenced by religious beliefs, partner's attitudes, or familial norms which might limit her willingness or ability to seek EC.

California's Policies and Programs

California has taken concerted efforts to reduce adolescent pregnancy and childbearing including being the only state in the country to never accept federal abstinence-only funds. Between 1992 and 2005, California experienced a teen pregnancy decline of 37%, the highest of any state in the U.S. Public health experts credit these decreases to California's progressive teen pregnancy prevention efforts (Boonstra, 2010). In 1997, California launched the California Family Planning Access Care Treatment (PACT) program, which provides free contraceptives to anyone at or below 200% of the national poverty level (Boonstra, 2010). A number of efforts were made to assure teens have access. First, eligibility is based on the teen's income rather than the parent's. Second, enrollment is possible on-site during the same day services are rendered. Third, private physicians are included under the program, expanding the provider pool for teens. Lastly, immigration status does not limit access. In fact, Latino youth account for 52% of the program's clientele, whereas they only account for 42% of California's youth (Boonstra, 2010). Additionally, 20% of today's family PACT clients are under the age of 20 (Boonstra, 2010). In January 2002, California enacted the pharmacy access law, giving pharmacists the ability to provide emergency contraception without a doctor's prescription provided they received training in clinical and counseling skills. In 2006, about 1500 of California's 5500 pharmacies were participating in the program (Foster, 2006).

California has also strategically partnered with many private sector actors to address teen pregnancy. The California Wellness Foundation, for example, provided over $60 million in 1995 for a 10-year teen pregnancy prevention initiative. As a result of these funds for

research, “hot spots” with high teen birth rates were identified throughout the state, facilitating the appropriate allocation of resources (Boonstra, 2010).

A variety of other initiatives target different factors that might influence contraceptive use. In 1999, California’s governor, Gray Davis, signed into law the Women’s Contraceptive Equity Act, requiring all private insurance plans which cover prescriptions to also cover contraception (NARAL Pro-Choice California, 2011). Since 1995, California’s Male Involvement Program specifically targets males 12-24 to increase their knowledge and involvement in family planning (Berglas, 2003). From 1995 to 2004, California’s Department of Public Health also undertook a statewide media campaign to address teen pregnancy (Boonstra, 2010).

California’s Youth

Using data from the 2003 California Health Interview Survey, among all female respondents aged 15 to 44, 57.6% of Hispanics had heard of EC, the lowest among all races/ethnicities. Ninety-two percent of non-Latina whites have heard of EC, 80% of African American women, 63% of Asian women, and 71% of Pacific Islander, and 76% of American Indian/Alaskan Native women (Baldwin, 2008).

Among teens aged 15-17, 67.6% have heard of EC and 14.1% having used EC in the previous year. The percent of women who have heard of EC increases with age, settling at 75% by age 35-44. However, while knowledge increases with age, use decreases. Fourteen percent of teens 15-17 used EC in the previous year, but only 0.77% of women aged 35-44 used the method in the previous year. Whereas age predicted EC use most

dramatically, having a lower income, no usual source of care or attending community/government clinic, and living in an urban area were also associated with EC use. Race/ethnicity, language spoken at home, and immigration status did not predict EC use among women aware of the method (Baldwin, 2008).

Los Angeles Youth Compared Nationally

Comparing the national and local Los Angles Youth Risk Behavior Survey (YRBS) provides some interesting insight into the sexual behaviors of Los Angeles (LA) youth.

Smaller percentages of students in LA report ever having had sexual intercourse, having intercourse before the age of 13, and having intercourse with four or more partners. However, while their sexual activity may be lower, their risky behavior is higher. LA youth report lower percentages of condom, birth control and Depo-Provera use before or at last intercourse (CDC, 2010).

According to the 2009 national YRBS, 46% of students in grades 9-12 reported ever having had sexual intercourse. Percentages were highest among black students (65%), second highest among Hispanic students (49%) and lowest among white students (42%). Trends are similar when broken down between genders; 72% of black males, 53% of Hispanic males, and 40% of white males reported ever having sexual intercourse. Among females, however, the range of those reporting ever having had sexual intercourse was much narrower, with 58% of blacks, 45% of Hispanics, and 45% of whites reporting ever having had sexual intercourse. The Los Angeles YRBS indicates that smaller percentages of high school students report ever having had sexual intercourse; 44% of males in Los

Angeles compared to 46% nationally and 33% of LA females compared to 46% nationally (CDC, 2010).

Not only do lower percents of students report ever having had sexual intercourse but the Los Angeles YRBS shows that lower percentages of female students have sexual intercourse at earlier ages. Nationwide percentages are similar to Los Angeles percentages for males (8.4% and 8.6% respectively) yet almost double for females (3.1% nationally, 1.7% Los Angeles). Additionally, 14% of LA males report having four or more partners compared to 16% nationally whereas only 4% of LA females report four or more partners compared to 11% nationally (CDC, 2010). Therefore, LA female high school students, specifically, report waiting longer to have sexual intercourse and having fewer partners.

Condom use is similar for LA students as those nationally; however, birth control pill and Depo-Provera use differs. Among LA students, 67% of males report using a condom during their last intercourse and 54% of females. Similarly, nationally 69% of males and 54% of females report condom use. However, nationally 17% of males report using the birth control pill before last intercourse, compared to less than half that (8%) of males in LA. More striking, almost three quarters fewer female LA students (8%) report using the birth control pill before last intercourse compared to nationwide percentages (23%). Percentages are equally noteworthy for Depo-Provera use. In Los Angeles, three times fewer males reported using Depo-Provera at last intercourse than students nationally (0.5% and 1.7% respectively). Among females, four times fewer students used Depo-Provera in LA (1.1%) compared to national numbers (4.4%) (CDC, 2010). There are many possible explanations for why fewer LA students use contraception, however, it is

clear that these sexual practices put LA teens at greater risk for pregnancy. As females specifically seem to have fewer but riskier acts of intercourse, emergency contraception may be an appropriate and effective intervention for this specific population.

In 2005 in California, the Hispanic birthrate among women 15-19 was 67 per 1,000 women, considerably higher than the non-Hispanic white birthrate of 16 and the non-Hispanic black birthrate of 39 (Kost, 2010). Among California counties with available data, Los Angeles youth rank 24th among 49 counties for teen birth rate. In 2007, the LA teen birth rate was 36.9 per 1,000 with the highest in Madera County (65.3) and the lowest in Marin County (13.2) (Public Health Institute, 2007).

Barriers to Use

The current literature on emergency contraception is centered on four themes; knowledge and attitudes, pharmacy access, provider attitudes, and advance provision.

California is one of eight states that allow EC access directly from a pharmacist without a physician's prescription (Foster, 2006). As mentioned earlier, California has taken many steps to reduce teen pregnancy however, many studies show that access is still a barrier.

In 2003, the Kaiser Family Foundation conducted a phone survey of 1,151 women and men aged 15 to 44. The survey revealed that just over half of teens and adults were aware that EC was available in the US and most participants were unaware of California's Pharmacy Access Program. Additionally, there continues to be confusion regarding EC and RU-486, the abortion pill. While 78% of young adults aged 18 to 24 were aware there was something they could take to prevent pregnancy after unprotected intercourse,

42% still had EC and RU-486 confused (Kaiser Family Foundation, 2004). This is especially pertinent for populations such as Hispanics whose religious beliefs influence their contraceptive choices.

The 2005 California Adolescent Health Interview Survey (CHIS) shows similar results. Less than half (46.9%) of female respondents had heard of EC, with 39.3% of Hispanic women having heard of EC. This percent is slightly higher than among Asians (33.6%) but much lower than black (55.7%) or white respondents (60.4%) (Office of Women's Health, 2009). Therefore, knowledge about EC should be increased, especially among Hispanic and Asian women, to give them the option to use EC.

A 2004 study of 426 women seeking EC in 25 California pharmacies found that younger women had greater delays acquiring EC (Foster, 2006). Those women younger than 16 took 27 hours longer to access EC than their counterparts who were 30 or older. This may indicate that teens have a more difficult time reaching the pharmacy or they need more negotiation time before deciding to use EC. Of the women who had first acquired a physician’s prescription, 65% of them were unaware that a prescription was unnecessary. Those women who directly accessed the pharmacy also had a higher level of knowledge regarding EC (92% compared to 72%). Knowledge about EC and where to obtain it is therefore critical in EC’s ability to be taken within the proper time, thereby increasing its ability to prevent pregnancy.

The authors also found that a greater percentage of Hispanic women (48%) were covered by the state’s health programs than non-Hispanic women (32%). This reveals that cost may be a greater barrier to Hispanic women, who may be less likely to afford private insurance.

Even if women attempt to access EC in a timely manner, other factors, such as provider attitudes, may contribute to their effective use of the method. A 2007 study of all Los Angeles county pharmacies listed in the yellow pages revealed that, of the 1206 with which callers spoke, 69% of pharmacies had EC on-site and 19% referred callers to another pharmacy. Eighty-six pharmacies required a prescription even though state law does not. The callers, women posing as 23 year-old women who had had unprotected sex the day previously, were asked in 29% of cases to tell her story to two or more people, if the call was transferred to another person. Among those who answered the phone, 39 claimed to know about what the woman was asking and 16 said there was nothing the woman could do to prevent pregnancy. Another seven gave recommendations for other home remedies, such as a vinegar and water douche, or even recommended traveling to "Tijuana to get some pills" (Nelson, 2009). This study exemplifies the difficulties women can experience even once they've contacted a pharmacy for EC.

Another study looked more specifically at language barriers. In a 2005-2006 study researchers posed as English and Spanish speaking females while calling 115 different pharmacy-access pharmacies. Women claimed to either be 15, having had unprotected sex the night before, or aged 18, having had unprotected sex four days earlier. If the researcher was told to come to the pharmacy for EC, the call was considered successful. Spanish speakers had less success, with only 24% told to come to the pharmacy while 48% of English calls were successful. Among Spanish speaking callers, all had to ask in broken English if there was someone available to translate in Spanish. Additionally, 97 Spanish speakers reached a pharmacy where there were no Spanish speakers, therefore

having no access to EC. Among unsuccessful callers, 39% were told there was no qualified pharmacist on-site. Additional reasons access was denied included ethical reasons in 13% of cases, timeliness reasons in 11% of cases, pharmacy out of stock in 2% of cases, no reason in 21% of cases, and inability to reach the pharmacy in 14% of cases (Sampson, 2009).

These studies exemplify the difficulty Hispanic speakers, especially adolescents, in California might encounter when seeking EC. From having the correct knowledge of EC, to reaching a pharmacy, to being offered the medication, can all provide barriers to a woman's ability to prevent pregnancy. Such experiences might explain the minimal use of EC as well as EC's modest influence on teenage pregnancy rates.

Communication About Sex Among Hispanics

One longitudinal study examining Latino mother-adolescent dyads focused on how discussions about dating and sexuality influenced adolescent's sexual behavior, their attitudes about premarital sex, and their reports of openness in their relationship with their mother (Romo, 2002). Adolescents engaged in less sexual behavior one year later when mothers had talked longer about their own attitudes and beliefs. However, adolescents engaged in more sexual behavior when mothers discussed their own attitudes and beliefs within the context of the adolescent's current daily activities. The authors suggest this might be a reaction to the parent's suspicions that their child was becoming sexually active. This supports the idea that greater communication about sex is often a response to parent's knowledge or suspicion of sexual behavior on the part of their child.

Lefkowitz et al found that conversations among Latino-American mother-adolescent dyads were dominated more by the mother than those among European-American dyads (Lefkowitz, 2000). However, while mothers dominated the conversations, they were less negative than their European-American counterparts. These results, even after controlling for SES, imply the differences are cultural rather than socioeconomic. The Latino cultural value on respect and obedience, the authors argue, may account for these differences. Additionally, within the Latino group, when divided by country of origin, language spoken at home, or religion, the differences were not significant. This would suggest that there is a common communication style among a diverse group of Latino Americans.

Study Aims and Hypothesis

Factors associated with Latino adolescents' contraceptive use are of particular interest given the group's high rate of pregnancy. As previously mentioned, emergency contraception differs from other forms of contraception given its ability to be used post-coitally. This last-line method especially, has the ability to effectively decrease unintended teenage pregnancy rates given its ease of use. Therefore, this study aims to identify how parental factors influence emergency contraceptive use among Latino adolescents in the Los Angeles Unified School District. Additionally, we are interested in the patterns of contraceptive use that might be associated with using emergency contraception in order to characterize the type of student most likely to use the method. Specifically, we are interested if students use EC as their main method of contraception after having unprotected sex or if they are using it as a backup method after their primary method has failed.

Given the importance of mother-adolescent communication among Latino families, we expect that parental communication about sex will influence a student's use of emergency contraception. Since discussions about sex and contraception have been shown to have protective effects, we expect that those students who use emergency contraception are also those whose mothers have communicated with them about sex and contraception.

We also anticipate that having used no form of contraception at last intercourse will be the greatest indicator of emergency contraceptive use. Additionally, we expect that having used the pill, which has a high user error rate among adolescents, also has a strong association with emergency contraception use. Therefore, knowing the strength of each association will give us a good measure of how interventions targeted at specific populations might have the greatest influence on increasing adolescent EC use and potentially decreasing teen pregnancy rates among the Latino population.

Chapter 3: Project Content

Methodology

Study Design

Project Connect

This study is a secondary analysis of a subsample of middle and high school adolescents (n=44,610) from Project Connect, an eight-year social-ecological intervention study developed to prevent STDs and teen pregnancy among adolescents in the county of Los Angeles. Project Connect included 12 high schools and 14 of their respective middle schools in the total sample. Six high schools, along with their feeder middle schools, received the intervention and the remaining schools acted as controls. The intervention involved four social context level interventions; parents, health care providers, schools, and community. Interventions were intended to increase parental monitoring and rules regarding friends and dating, connect adolescents to community health providers for sexual and reproductive health care, increase the knowledge and utilization of the condom availability program in high schools, and increase use of community resources for purposes of after school supervision.

The data were collected between 2005 and 2009 from in randomly selected homeroom classrooms. Among middle school students, 40,644 were eligible for the study and 68,022 high school students were eligible. Approximately 40% of middle school students (n=16,459) and 52% of high school students (n=35,468) returned consent forms. Among

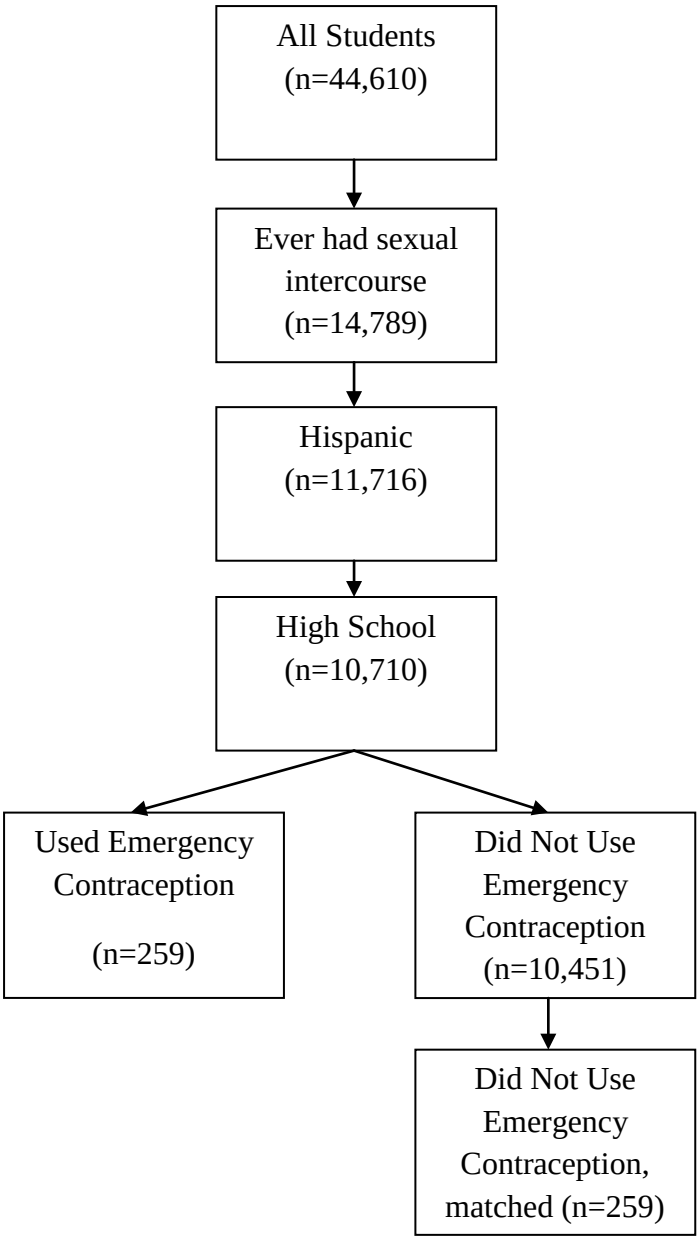
those who returned consent forms, 89% of middle school (n=14,651) and 84% of high school students (n=29,823) were surveyed. Considering students absent on survey day as well as those who refused to participate, about 41% of eligible students both in middle and high school (n=44,610) participated in the survey.

Table 1 includes demographic characteristics of participants. The study included slightly more females (55%) than males (45%), ranging in ages from 10 to 22. The study was comprised of 79% Hispanic students, 12% African American students, 7% Asian, and 2% white students. Among these students, the majority (65%) participated in the National School Lunch Program whereby they qualify for free or reduced school lunches if their family's household income is at or below 185% of the national poverty level. One third of students reported ever having had sexual intercourse.

Secondary Analysis

Because these analysis focused on the use of emergency contraception among Hispanic adolescents, the following participants were removed from analysis: students who indicated that they had never had sexual intercourse (n=27,389) or missing sexual intercourse information (n=2,432); students who reported non-Hispanic ethnicity (n=3,042) or missing ethnicity information (n=31). Likewise, because some of our survey questions were asked only of high school students, we removed any middle school students (n=1,006). Among those remaining (n=10,710), 259 indicated that they used emergency contraception at last intercourse (Figure 1).

Figure 1: Flow Chart for Study Inclusion



We chose to conduct a one-to-one matched case-control study because our non-EC users outnumbered our EC users 40:1. Any differences between the two groups would have been magnified, thereby indicating a statistically significant difference between the two groups when, in fact, no true differences exist. To account for confounding factors, we matched by three characteristics to ensure our two groups are comparable. Given the number one predictor of EC use is age and gender, we matched on these characteristics to

eliminate confounding (Baldwin, 2008). Lastly, because our intervention was intended to connect students to the health care community, we matched on intervention status to control for confounding and assure we had equal numbers of students who received the intervention and those who did not. By controlling for the effect of the intervention, gender, and age at the design stage, we avoid having to account for these in the analysis stage. Through matching our EC users to our non-EC users, we gain precision by more closely balancing the controls to the cases.

Measures

Demographic and Socioeconomic

Students reported their age, gender, grade, and generation of immigration. Students were coded as being in either middle or high school and as part of the intervention or control group. Students were coded as 1st generation if they and their parents are foreign born, 2nd generation if they are US born but both parents are foreign born, and 3rd generation if both parents are US born. Students reported if they participated in the free or reduced lunch program, used as a marker for low socioeconomic status. Students were also asked if they have ever had sexual intercourse and if they have ever been pregnant or gotten someone else pregnant as well as if a sibling ever had a baby as a teenager.

Students were asked if they spoke English, Spanish, something else, or a combination, which was forced into 3 categories. Those who marked “English and something else” were recoded as “English” and those who marked “Spanish and something else” were recoded as “Spanish”. Those who indicated “English, Spanish, and something else” were recoded at “Both English and Spanish.”

Students were asked about their race/ethnicity and were able to choose all that apply from 6 available categories; African-American/Black, Asian or Pacific Islander, Hispanic/Latino, Native American/American Indian/American Eskimo, White/Caucasian, and Other. To force students into a single category, those marking Hispanic as the only ethnicity, or as one of multiple ethnicities, were coded as Hispanic. Participants marking black only, or as one of multiple ethnicities (excluding above), were coded as black. Participants marking Asian only, or as one of multiple ethnicities (excluding above), were coded as Asian. Participants marking white only, or as one of multiple ethnicities (excluding above), were coded as white. Participants marking Native American only, or as one of multiple ethnicities (excluding above), were coded as Native American. Participants marking other only were coded as other.

Outcome Variable

Our outcome variable for both analysis was having used emergency contraception at last intercourse. Students were asked to "check all that apply" to indicate the method(s) of contraception used the last time they had intercourse. Emergency contraception was one check box among eight response options.

Parental Discussions About Sex

We asked adolescents 12 questions in total regarding adolescent's perceptions of communication during discussions about sex as well as relationship satisfaction. Items included the consequences of sex, maternal communication style, and relationship satisfaction. Eleven questions were asked specifically of maternal/female guardian communication, of which the response options included *not at all*, *some*, and *a lot*.

Consequences of Sex. Two questions asked about the quantity of communication related to the consequences of sexual intercourse. We asked about the quantity of discussions about the importance of using protection during sex and the quantity of discussions about what would happen if the student got pregnant now.

Communication Style: Four questions examined the mother's communication style during discussions about sex. We asked about the quantity of discussions when the mother/female guardian was perceived as nervous or argumentative and the quantity of communication in which she was perceived as being a good listener and paying close attention.

Directness. We asked adolescents if their mother/female guardian lets them know "what she thinks" when they talk about sex. We used this question to measure the quantity of perceived directness during discussions about sex.

Expertise. We measured adolescent's perceptions of maternal expertise by asking if the adolescent believes their mother/female guardian gives good advice when they talk about sex.

Trustworthiness. We measured perceived parental trustworthiness by asking if the student trusted his/her mother/female guardian when they discussed sex.

Relationship Satisfaction. We measured student's level of relationship satisfaction with the following question about their mother/female guardian: "Overall, I like the relationship I have with her." Again, this question was accompanied by three options including *not at all*, *some*, and *a lot*. Additionally, we asked, "How much does your

mother or female guardian care about you" to which students selected *not at all*, *some*, or *a lot*.

Contraceptive Attitudes. Adolescents were asked to indicate their perceptions of their parent's attitudes toward them using birth control. Perceptions of disapproval were measured by asking, "What would your parents think about you using birth control?" Response options included "they are against it," "they don't care", "they think that I should", and "I don't know what they think about it".

Contraceptive Practices

Contraception at Last Sex. We asked adolescents which forms of contraception they used at last intercourse, with an option to check all that apply. Response options included; condoms, birth control pills, patch or ring, birth control shots, emergency contraception ("morning after pill", plan B), withdrawal ("pull out"), rhythm method ("safe time of the month"), something else, or nothing. Due to small sizes, having used the birth control shot was combined with having used something else.

Dual Use. We created a composite variable to measure the total number of contraceptive methods used during last intercourse.

Withdrawal and Pill/Patch/Ring Behaviors. Two variables, meant to measure withdrawal and pill/patch/ring behaviors, were also created. These included four levels to indicate if the student used no form of protection at last intercourse, withdrawal only, withdrawal in addition to other form(s), or other type(s) of contraception excluding withdrawal use. The same four level variable was created for pill/patch/ring use. Hereafter, having used the

pill, patch, or ring at last intercourse will be referred to as having used the pill at last intercourse.

Reproductive Healthcare. We also asked if a doctor or nurse has ever given them "birth control like the pill, shots, the patch, or condoms".

Sexual Debut. We asked students the age they first had sexual intercourse.

Missing Data

Any observations that were missing demographic variables of interest were removed from the dataset. Additionally, those missing any response to the parental communication variables were removed from the first analysis and any missing contraceptive variables were removed from the second analysis.

Variables with 11% or more missing were removed from analysis. If the overall variable was not statistically significant, even if the stratified variable had significant levels, it was not included in model building.

Analysis

We used SPSS version 19.0.0 to perform the matching on our dataset but used SAS 9.2 for all statistical analysis thereafter. For all analyses, our outcome of interest was whether students used EC at last intercourse. For our first analysis, we considered only those students who gave complete answers. Any students who indicated they used nothing at last intercourse but simultaneously indicated having used another contraceptive method was recoded as having used something. Additionally, due to small cell sizes, students

who indicated that they used the birth control shot were recoded as having used *something else*.

We controlled for matching by performing conditional logistic regression. We used conditional logistic regression to test the unadjusted association between each risk factor and EC use (Table 5) as well as for model building. As the majority of our independent variables have multiple levels, we used the Wald Type 3 Analysis of Effect to determine if each independent variable was significant. Our first analysis included 12 independent variables and four covariates. Our second analysis included 10 independent variables and the same four covariates. Those independent variables statistically significantly associated with our outcome variable were included during associative model building. For all analyses, a significance level of α=0.05 was used.

Interaction was checked between withdrawal use and pill/patch/ring use. We checked confounding for reproductive health behaviors and any significant variables were kept in the associative model. For all models, we controlled for socioeconomic status, acculturation (language spoken at home and generation of immigration) and education level.

Results

Participant Characteristics

Among Hispanic adolescents who used EC, a greater percentage of females (71%) than males (29%) reported use (Table 3). Mean age of students in the sample was 16.8, with 17 year olds comprising 40% of the sample. Age was related to EC use, with an

increasing percentage of students using EC as age increased, but then declining after age 17. Sixty-seven percent of students live at or below 185% of the national poverty level. Additionally, 75% are second generation and 22% were born outside the United States. Correspondingly, almost 60% of students speak both English and Spanish. Students did not differ statistically on any demographic characteristics between EC users and non-users (Table 3). A quarter of all students have a sibling who had a baby as a teenager and 11% indicated that they have been pregnant or gotten someone else pregnant.

Parental Factors

We removed 95 observations from our parental communication dataset due to missing values. Table 4 presents frequencies and percent distributions for each parental communication variable of interest. Among the students who answered all the parental communication questions (Table4), 27% have never talked about sex with their mother and 45% do not know their parents' thought on their using birth control (Table 4). However, 23% of students indicated that their parents are against them using birth control and 26% said their parents are in favor of their using birth control. Eighty-nine percent of students said they believe their mother/female guardian cares a lot about them and over half are really satisfied with their relationship to her.

Of those who have talked with their mothers about sex, 72% of students indicated that their mothers talk some or a lot about the importance of using protection while a slightly higher percent, 76% talk about what would happen if they got pregnant or got someone else pregnant. Again, among those who have talked with their adolescents about sex, 50%

of students reported that their mother does not seem nervous during the discussion(s) while only 6% indicated that she seems very nervous.

Results from bivariate logistic regression (Table 5) indicate that parental communication about sex has no association with an adolescent's odds of using emergency contraception. Adolescents were no more likely to have used EC if their mother spoke with them about the consequences of sexual activity, including the importance of using protection or about what would happen if they got pregnant. The adolescent's perception of their mother's communication style was not associated with the student's use of EC. Whether the mother was perceived as nervous, argumentative, attentive, or a good listener had no effect on the student's likelihood of using EC. Additionally, adolescents' perceptions of their mother's directness or expertise had no effect on their EC use.

We expected the level of relationship satisfaction by the student to result in greater levels of birth control use. One study of African American female adolescents between 14 and 17 found that higher levels of relationship satisfaction with female caregivers were associated with negative attitudes toward pregnancy (Jaccard, 2003). We found that the level to which the student trusts their mother and enjoys their overall relationship with her does not affect EC use.

Lastly, adolescent's perceptions of their parent's attitudes toward them using birth control were not associated with EC use. While our overall variable to measure student's perception of parent's attitudes toward birth control use was insignificant, individual breakdowns showed a slight effect. Students who perceived their parents as against them using birth control were 1.7 (95% CI: 1.022, 2.807) times as likely to have used EC as

students who didn't know what their parents thought about them using birth control (Table 5).

Contraceptive Choices

Among students who answered questions regarding their reproductive health practices, 71% of students said they used a condom the last time they had sex. Among those who used EC, over double as many students used the pill, patch, or ring (22%) the last time they had sex compared to those who didn't use EC (10%). Additionally, twice as many students practiced the withdrawal method, 30% compared to 16%.

Among the students who used emergency contraception at last intercourse, 7% had used no other form of contraception. However, among the students who did not use emergency contraception, over three times as many (23%) used no contraception the last time they had sex (Table 6).

Condom use was not associated with EC use. However, having used the pill, patch, or ring, was associated with whether a student used EC. Among those who used the pill/patch/ring at last intercourse, 22% also used EC compared to 10% who did not. This pattern is similar for withdrawal use. Almost twice as many EC users (30%) used withdrawal at last intercourse compared to non-EC users (16%).

Three times as many students who did not use EC at last intercourse used nothing at all (23%) compared to those who did not use anything but did use EC (7%).

Table 7 presents the outcomes of our multiple logistic regression analysis. Results indicate that students who have ever seen a doctor or nurse for birth control were 3.1

(95% CI: 1.933, 4.753) times as likely to use EC as students who had never seen a doctor/nurse for birth control when controlling for socioeconomic status, grade level, and acculturation. Students were also 2.1 times (95% CI: 1.355, 3.513) more likely to use EC if they had used the withdrawal method than students who did not use the withdrawal method during last intercourse. Additionally, students were 71% (95% CI: 0.158, 0.532) less likely to use EC if they had used no contraceptive method during last intercourse than if they had used some type of contraceptive method. Lastly, grade level did not influence EC use, with the exception of 11^{th} and 12^{th} graders. In fact, 11^{th} graders were 55% (95% CI: 0.247, 0.809) less likely to use EC than 12^{th} graders.

When we examined multiple method use, outcomes showed that the likelihood of using EC increased as the number of contraceptive methods used increased when controlling for socioeconomic status, grade, and acculturation (Table 8). We found that students who used a method of birth control were 2.0 (95% CI: 1.122, 3.462) times as likely to use EC as students who used no method of birth control at last intercourse. Students who used two different kinds of birth control were 2.9 (95% CI: 1.476, 5.525) times as likely to use EC as students who used no form of birth control. Additionally, students who used three or more kinds of birth control were 6.7 (95% CI: 2.228, 20.003) times as likely to use EC as students who used no method. Once again, having seen a doctor or nurse for birth control increased the odds of using EC by 3.2 times (95% CI: 2.124, 4.888) compared to those students who had never seen a doctor/nurse for birth control.

After noting the relationship between pill/patch/ring use, withdrawal, and using multiple methods, we were interested in how using a method exclusively or in conjunction with another method influences EC use (Table 9). We found that the odds of using EC were

4.0 (95% CI: 1.619, 10.106) times greater when using withdrawal exclusively compared to using nothing at last intercourse. The odds of using EC when withdrawal is used in conjunction with another type of birth control method increases 3.6 times (95% CI: 1.751, 7.330) compared to using no type of birth control. Having seen a doctor or nurse for birth control meant students had a 3.5 (95% CI: 2.353, 5.293) greater chance of having used EC than students who have never seen a doctor/nurse for birth control. Additionally, students in the 11th grade were 53% less likely to use EC than student in the 12th grade.

Table 10 shows the relationship between using EC and using the pill/patch/ring exclusively or in conjunction with another method. Results indicate that using the pill exclusively versus using nothing at last intercourse is not associated with EC use. However, using the pill in conjunction with another method increases the likelihood of using EC by 4.2 (1.843, 9.618) times compared to using no birth control. Nonetheless, using another type of birth control, not including the pill/patch/ring increases the likelihood of using EC by 2.2 (95% CI: 1.251, 3.805) compared to using no birth control method. Once again, having seen a doctor or nurse for birth control was significant. Those who saw a doctor or nurse were 3.3 (95% CI: 2.142, 5.026) times more likely to use EC than those who have never seen a doctor/nurse for birth control. Students in the 11th grade were 50% (95% CI: 0.284, 0.897) less likely to use EC than students in the 12th grade.

Chapter 4: Discussion, Conclusion, and Recommendations

Parental Discussions About Sex

Previous research has shown that Hispanic parental communication has a protective effect on adolescent risky sexual behavior (Guilamo-Ramos, 2006; Guilamo-Ramos, 2009). Guilamo-Ramos et al found that mothers who convey specific expectations are more likely to have adolescents who meet those expectations (Guilamo-Ramos, 2009). One study found that if parents reported talking with youth about birth control, youth were twice as likely to use birth control at last intercourse (Aspy, 2007). In our study therefore, we would expect that maternal discussions about sex and birth control would correspond to an increased likelihood of the adolescent using emergency contraception. However, no association was found. To explain this, we suspect that discussions about sex and birth control do not include emergency contraception.

There are various reasons why we believe parents do not include EC in their birth control discussions. First, their awareness of EC is low. If parents have no personal experience with EC, or if they are uninformed to its use and mechanisms of action, they may be less likely to discuss and recommend the method. One study measured EC awareness and use among California women and teens aged 14 to 44 and found that Hispanic women were the least likely to have heard of EC. Slightly more than half (58%) of Hispanic women have heard of EC, compared to 92% of non-Latina white women ad 80% of African American women. However, race/ethnicity was not associated with using EC among the women who have heard of the method. Instead, age was the biggest predictor of EC use.

Fourteen percent of teens aged 15-17 who have heard of EC used the method whereas the percent declines significantly with age, reaching less than one percent among women 35-44 (Baldwin, 2008). Therefore, older Hispanic women are the least likely to have heard of EC; it is likely that this explains why Hispanic parents are not discussing EC with their adolescents.

Second, parents' knowledge of EC may be low. One study found that one main barrier to mothers discussing sex and birth control with their children is the mother's concern their child will ask a question they can't answer (Jaccard, 2000). Mothers may not fully understand EC's mechanism of action or the differences between the various types available. Also, with the continuing changes to age restrictions, parents may be confused about what to tell their children. Therefore, discussions about EC may be left ignored.

Third, parents may equate EC with the "abortion pill." Given the importance of religion in Hispanic families, parents may be least likely to discuss EC if they believe it is RU486 (mifepristone). Fourth, studies show that parents believe discussing birth control may lead to more risky sexual behavior (Guilamo-Ramos, 2006). With emergency contraception particularly, parents may believe discussing EC might be akin to condoning unprotected sex.

Fifth, parents may believe EC discussions may be the domain of their adolescent's medical care provider. Parents may still believe EC requires a medical doctor's prescription and may therefore believe that those discussions are best avoided unless the situation arises in which it might be needed. Interventions to reduce teen pregnancy should also encompass parental communication, in addition to medical provider

communication, as a way to educate parents on EC's mechanism of action and its proper use. Medical providers speak with parents, in addition to adolescents, about the proper use of EC. The practitioner guide published by the National Campaign to Prevent Teen and Unplanned Pregnancy encourages practitioners of Latino adolescents to "take an *active role* in helping parents understand and talk about contraception." The guide suggests it is insufficient to hand parents written materials and expect them to "read it, understand it, and feel comfortable enough to speak with their child knowingly and effectively" (Guilamo-Ramos, 2008). Parental communication about sex might be more generic, encouraging adolescents to "use protection". However, while condoms and the pill are the most widely known methods of protection, EC may be overlooked. Interventions to promote EC knowledge should also focus on developing parent's skills and technical knowledge.

If indeed parents are including EC in their discussions about birth control and sex, another reason why parental communication may not influence EC use is that access may be the most important factor. As mentioned previously, even in California where laws are intended to make EC as accessible as possible, women still face many barriers to access. Adolescents may perceive greater barriers due to economic and transportation limitations.

Further research is needed to explain what forms of birth control are included in discussions about contraception. If our explanation holds true, we would encourage parents to expand their discussions about sex to include EC and other forms of contraception.

Contraceptive Choices

A surprising number of students used emergency contraception in addition to condoms at last intercourse (table 6). Condoms have a typical user failure rate of 17.4% which means an additional 17% of students presumably did not have condom failure but chose to use emergency contraception nonetheless (Guttmacher Institute, 2010).

This study describes the contraceptive practices associated with emergency contraceptive use. We found that EC is most often used in conjunction with other types of birth control, specifically withdrawal and the birth control pill. With each increasing number of contraceptive methods used, the odds of using emergency contraception increase significantly (Table 8). This suggests EC users are students especially concerned about becoming pregnant by using multiple methods to guarantee avoiding pregnancy. The percent of students who used nothing at last intercourse is relatively high, 15%, yet 75% of these students did not use EC (Table 6). This is useful information when targeting interventions meant to reduce teen pregnancy. Understanding that the most cautious students use EC rather than those at greatest risk for pregnancy might explain why EC has not had an effect on pregnancy rates. The students using EC perceive having had contraceptive failure yet their use of a primary and secondary birth control method in addition to EC has likely already reduced their chance of pregnancy. The students who used no method at last intercourse, however, are at highest risk for pregnancy and appear to have the least perceived risk. It is when we effectively intervene in this group of women that we might see EC decrease unintended pregnancy rates.

Additionally, having practiced withdrawal at last intercourse has a significant effect on a student's use of EC (Table 9). Practicing withdrawal, either exclusively or with another method, increases the chances of using EC almost four-fold compared against using nothing. Practicing withdrawal, though it has a first year failure rate of 25% (Ranjit, 2001), at minimum indicates that students are aware that having intercourse might lead to pregnancy and suggests they are motivated to prevent pregnancy. Using nothing, on the other hand, might indicate either an ambiguity or desire to become pregnant or a lack of knowledge regarding one's risk of becoming pregnant. Given that using any other method, aside from withdrawal, also almost doubles the likelihood of using EC further supports this hypothesis.

The use of the withdrawal method, while often ignored as a type of birth control, may be especially high among adolescents. It is easy to use, has no cost, does not require a physician or pharmacy visit, and takes the burden of birth control away from women (Finger, 1996). One study of withdrawal use among African American adolescents found that withdrawal was not a rare event. Rather, the withdrawal method had a 3-month point prevalence of 25% and was frequently used in combination with other methods. Adolescents reported using withdrawal as a secondary method in combination with the birth control pill 17% of the time, condoms 32%, and only 5% with no other method (Woods, 2009). Therefore, our results, which indicate high prevalence of withdrawal in combination with other methods, do not appear unique. It is essential, then, that efforts to reduce teen pregnancy must include the discussion of withdrawal alongside discussions of other methods of birth control. Parents, teachers, and health professionals need to understand the importance of discussing withdrawal with adolescents.

Having used the pill/patch/ring versus nothing at last intercourse does not increase the likelihood of using EC. This could be because perfect use does not require a backup method. However, having used the pill/patch/ring in addition to another method indicates that perhaps students had not used the pill/patch/ring perfectly and were therefore using an additional method.

These findings may shed some light on why EC has not been shown to have a population level effect. Only 7% of the adolescents who indicated they used EC also indicated using no other method of birth control. If EC is used, as our study suggests, mostly by adolescents especially concerned with becoming pregnant, it may be the adolescents at the lowest risk for pregnancy who are using the method. If a student misses a hormonal pill during her monthly cycle, her risk of pregnancy is higher than if she used the method perfectly, yet still lower than if she had used no method. As an example, Raine et al's (2005) study revealed that the risk of pregnancy was lower for women who used more reliable methods of contraception. Of the women who became pregnant during the study period, 4% had been using oral contraceptives (user failure rate 9%), 10% used condoms (user failure rate 17%) and 18% used no method (user failure rate 85%) (Raine, 2005) (Guttmacher Institute, 2010). Therefore, EC will not prevent as many pregnancies as expected given that the highest risk population, those using no method, is not using EC. Future studies on EC's population effect should take into account dual contraceptive use as well as women's level of motivation for preventing pregnancy.

Strengths and Limitations

There are a number of limitations to this study. First, because we matched our case-control study, we are unable to analyze the effect of age and gender on emergency contraceptive use. As most other research about emergency contraception identifies age as an important factor, we expect that age would influence EC use in our study as well. Additionally, most research about contraception is centered around female use, making our study unique because 30% of our self-identified EC users are male. However, again, we were unable to test the effect of gender due to matching. We expect both of these characteristics to be related to EC use.

Another limitation of our study is the relatively low overall response rate of our study, which may have introduced a selection bias. Among the high school students, 68,022 were eligible for the study, of which 56% returned parental consent forms. Among those who returned the consent form, 94% of parents gave consent and 84% of students were surveyed. Therefore, 29,823 (43.8%) of the eligible high school students completed the survey. Parents who consented to their adolescents taking a sex related survey are likely different at baseline from parents who do not consent. This suggests that the study may not be representative of all Hispanic adolescents in the Los Angeles Unified School District. We expect that parents who consented are more likely to have openly spoken with their adolescents about sex and contraception and that parents were more likely to consent if their adolescent was older in age.

Our survey removed all observations that had at least one missing response item. As we wanted to assure that each of our models included the same students, we felt it best to

remove those with missing observations, however, this may have excluded students who did not have randomly missing response items. It appeared that many of the 95 students we removed had stopped answering the survey at similar points, thereby possibly indicating a response pattern that should have been further studied.

There may have been some confusion about survey questions regarding contraceptive use. Some students gave contradictory answers, such as indicating they used nothing but also indicating they used something at last intercourse. While the survey asked “the last time”, with this text specifically bolded, students may have simply marked all methods they had ever used. This may have overestimated the percent of students who used multiple methods in addition to EC.

Each of our models included an item asking about having ever seen a doctor or nurse for birth control. Unfortunately, we do not know if the time during which the student visited a doctor or nurse was the same visit for which students received an EC prescription. While prescriptions are not needed, previous research shows that many women are unaware of the direct access program and may therefore still seek a health professional’s prescription. Therefore, this doctor/nurse variable may overlap the act of seeking EC. Unfortunately, we did not have information regarding where students accessed EC and are therefore unable to distinguish what percent overlap. Regardless, whether students saw a doctor or nurse for birth control or EC, it is clear that access to reproductive health services are critical for Hispanic adolescents.

Given that we asked both boys and girls if they had used EC at last intercourse, there is a possibility that some of the observations overlap, thereby counting the same EC event

twice. However, because the data was collected over a five-year period, from randomly selected classrooms from 12 different high schools, we believe the overlap, if any, is minimal.

As mentioned earlier, pregnancy intention is difficult to measure, especially among teens. Given that 23% of students who did not use EC at last intercourse used no method of birth control, we are unable to tell what proportion of this group is ambivalent about pregnancy or actively trying to become pregnant. One study, using a subsample of the National Longitudinal Study of Adolescent Health database found that 15-30% of adolescent females felt some ambivalence toward pregnancy, which is predictive of the occurrence of pregnancy (Jaccard, 2003). Because our study has no measure to indicate student's pregnancy desire, we cannot make any conclusions about this group of adolescents.

Lastly, we collapsed 5 waves of cross-sectional data into one dataset, which prohibited us from examining predictors of EC use over time. Additionally, we were unable to measure the developmental trajectories of individual adolescents and their contraceptive choice.

One strength of our study is the large sample size of Hispanic adolescents who used emergency contraception. Because EC use is relatively rare and because adolescents are difficult to study, the size and time span of our research allowed us to capture a large sample of EC events. Additionally, we were able to ask about contraceptive practices that took place alongside EC use.

In conclusion, Hispanic adolescent's contraceptive practices are complex and require attention to many factors associated with communication, knowledge and access. Parents

should consider including EC alongside their discussion about sex and birth control and health care providers should counsel parents on EC's mechanism of action so they are both aware of the method and comfortable discussing it. Public health professionals should recognize the role withdrawal plays in adolescents' sexual practices and seek ways to reach students who are using no method of birth control with emergency contraception information.

Tables

Table 1: Frequency and percent distribution of participants in Project Connect, by selected characteristics, Los Angeles, 2005-2009 (n=44,610)	
	N (%)*
Gender	
Males	20264 (45.4)
Females	24326 (54.5)
Missing	20 (0.0)
Ever had intercourse	
No	27389 (61.4)
Yes	14789 (33.2)
Missing	2432 (5.5)
Intervention	
No	20872 (46.8)
Yes	23738 (53.2)
Age	
10	8 (0.0)
11	2298 (5.2)
12	4623 (10.4)
13	5093 (11.4)
14	5946 (13.3)
15	6113 (13.7)
16	7064 (15.8)
17	7447 (16.7)
18	5103 (11.4)
19	629 (1.4)
20	141 (0.3)
21	1 (0.0)
22	1 (0.0)
Missing	143 (0.3)
Ethnicity	
Hispanic	35103 (78.7)
Black	5224 (11.7)
Asian	2922 (6.6)
White	801 (1.8)
Native American	144 (0.3)
Other	91 (0.2)
Missing	325 (0.7)
Free/reduced-fee lunch	
No	14392 (32.3)
Yes	29029 (65.1)
Missing	1189 (2.7)
* Percentages may not add to 100.0 because of rounding	

Table 2: High School Hispanic Students who have ever had sexual intercourse, by select Characteristics				
	Did not use EC (n=10,451)	Used EC (n=259)	Total (n=10,710)	Relative Risk (Confidence Interval)
	N (%)	N (%)	N (%)	
Gender				
Male	5198 (98.6)	74 (1.4)	5272 (50.9)	0.3863 (0.2959, 0.5045)*
Female	4907 (96.4)	185 (3.6)	5092 (49.1)	
Missing			346	
Age				
14 and under	492 (98.8)	6 (1.2)	498 (4.77)	p= 0.0022*§
15	1469 (98.6)	21 (1.4)	1490 (14.4)	
16	2413 (97.3)	66 (2.7)	2479 (23.9)	
17	3180 (96.8)	104 (3.2)	3284 (31.7)	
18	2203 (97.5)	57 (2.5)	2260 (21.8)	
19 and older	351 (98.6)	5 (1.4)	356 (3.4)	
Missing			343	
Age Category				
16 and under	4374 (97.9)	93 (2.1)	4467 (43.1)	0.7397 (0.5756, 0.9506)*
17 and older	5732 (97.2)	166 (2.8)	5898 (56.9)	
Missing			345	
Age Category				
Under 18	2552 (97.6)	62 (2.4)	2614 (25.2)	0.9332 (0.7039, 1.2372)
18 and older	7554 (97.5)	197 (2.5)	7751 (74.8)	
Missing			345	
Intervention				
No	4689 (97.5)	120 (2.5)	4809 (46.4)	0.9978 (0.7840, 1.2699)
Yes	5419 (97.5)	139 (2.5)	5558 (53.6)	
Missing			345	
In free or reduced lunch program				
No	3412 (97.5)	89 (2.5)	3501 (34.3)	1.0159 (0.7883, 1.3093)
Yes	6546 (97.5)	168 (2.5)	6714 (65.7)	
Missing			495	
Student country of birth				
U.S.	7746 (97.5)	202 (2.5)	7948 (77.0)	p=0.8612§
Mexico	1589 (97.8)	36 (2.2)	1625 (15.7)	
El Salvador	352 (97.8)	8 (2.2)	360 (3.5)	
Elsewhere	384 (97.7)	9 (2.3)	393 (3.8)	
Missing			384	
Generation of Immigration				
Student and parents	2309 (97.8)	53 (2.2)	2362 (23.2)	p=0.7002§

Table 2: High School Hispanic Students who have ever had sexual intercourse, by select Characteristics				
	Did not use EC (n=10,451)	Used EC (n=259)	Total (n=10,710)	Relative Risk (Confidence Interval)
	N (%)	N (%)	N (%)	
foreign born				
Student US born, both parents foreign born	7017 (97.5)	183 (2.5)	7200 (70.8)	
Both parents US born	593 (97.4)	16 (2.6)	609 (6.0)	
Missing			539	
Student has brothers or sisters who had baby as teenagers				
No	7882 (97.7)	189 (2.3)	8071 (78.6)	0.7353 (0.5612, 0.9634)*
Yes	2128 (96.8)	70 (3.2)	2198 (21.4)	
Missing			441	
Grade				
9	1307 (98.8)	16 (1.2)	1323 (12.8)	p=0.0003*§
10	2088 (98.0)	42 (2.0)	2130 (20.6)	
11	2815 (97.5)	73 (2.5)	2888 (27.9)	
12	3896 (96.8)	128 (3.2)	4024 (38.8)	
Missing			345	
Ever been pregnant or gotten someone else pregnant				
No	8527 (84.2)	209 (2.4)	8736 (86.2)	p=0.0742§
Yes	868 (96.9)	28 (3.1)	896 (8.8)	
Don’t know	482 (96.2)	19 (3.8)	501 (4.9)	
Missing			577	
* Significant at p≤0.05 § chi square test of independence				

Table 3: Emergency Contraceptive Use Among High School Hispanics who have ever had sexual intercourse, matched on intervention status, gender, and age, by select characteristics			
	Did not use EC at last intercourse [controls]	Used EC at last intercourse [cases]	Total
	N, % (n=259)	N, % (n=259)	N, % (n=518)
Gender [matched variable]			
Male	74 (28.6)	74 (28.6)	148 (28.6)
Female	185 (71.4)	185 (71.4)	370 (71.4)
Age [matched variable] (mean = 16.8, standard deviation = 1.0)			
14	6 (2.3)	6 (2.3)	370 (71.4)
15	21 (8.1)	21 (8.1)	12 (2.3)
16	66 (25.5)	66 (25.5)	132 (25.5)
17	104 (40.2)	104 (40.2)	132 (25.5)
18	57 (22.0)	57 (22.0)	208 (40.2)
19	5 (1.9)	5 (1.9)	10 (1.9)
Intervention Status [matched variable]			
No	120 (46.3)	120 (46.3)	240 (46.3)
Yes	139 (53.7)	139 (53.7)	278 (53.7)
In free or reduced lunch program (p=0.3422)			
No	77 (30.7)	89 (34.63	166 (32.7)
Yes	174 (69.3)	168 (65.37	342 (67.3)
Missing	8	2	10
Student country of birth (p=0.7810)			
U.S.	199 (76.8)	202 (79.2)	401 (78.0)
Mexico	43 (16.6)	36 (14.1)	79 (15.4)
El Salvador	10 (3.9)	8 (3.1)	18 (3.5)
Elsewhere	7 (2.7)	9 (3.5)	16 (3.1)
Missing	0	4	4
Generation of Immigration (p=0.5041)			
Student and parents foreign born	60 (23.4)	53 (21.0)	113 (22.2)
Student US born, both parents foreign born	183 (71.5)	183 (72.6)	366 (72.1)
Both parents US born	13 (5.1)	16 (6.4)	29 (5.7)
Missing	3	7	10
Language (p=0.1542)			
English only, English and something else	29 (11.2)	40 (15.6)	69 (13.4)
Spanish only, Spanish and something else	83 (32.1)	66 (25.7)	149 (28.9)

Table 3: Emergency Contraceptive Use Among High School Hispanics who have ever had sexual intercourse, matched on intervention status, gender, and age, by select characteristics			
	Did not use EC at last intercourse [controls]	Used EC at last intercourse [cases]	Total
	N, % (n=259)	N, % (n=259)	N, % (n=518)
English and Spanish only, English Spanish and something else	147 (56.8)	151 (58.8)	298 (57.8)
Missing	0	2	2
Student has brothers or sisters who had baby as teenagers (p=0.3765)			
No	197 (76.4)	189 (73.0)	386 (74.7)
yes	61 (23.6)	70 (27.0)	131 (25.3)
Missing	1	0	1
Grade (p=0.4394)			
9	16 (6.2)	16 (6.2)	32 (6.2)
10	47 (18.2)	42 (16.2)	89 (17.2)
11	86 (33.2)	73 (28.2)	159 (30.7)
12	110 (42.5)	128 (49.4)	238 (46.0)
Ever been pregnant or gotten someone else pregnant (p=0.3846)			
No	216 (86.1)	209 (81.6)	425 (83.8)
Yes	22 (8.8)	28 (10.9)	50 (9.9)
Don’t know	13 (5.2)	19 (7.4)	32 (6.3)
Missing	8	3	11
* Significant at p≤0.05, Pearson’s Chi-Square			

Table 4: Emergency Contraceptive Use at Last Intercourse by Parental Factors Among High School Hispanics who have ever had sexual intercourse, matched on intervention status, gender, and age,			
	Did not use EC [controls]	Used EC [cases]	Total
	N, % (n=207)	N, % (n=216)	N, % (n=423)
Talked about what would happen if student got pregnant or got someone pregnant now			
Not at all	52 (25.1)	48 (22.2)	100 (23.6)
Some	99 (47.8)	102 (47.2)	201 (47.5)
A lot	56 (27.1)	66 (30.6)	122 (28.8)
Talked about the importance of having protection if student were to have sex			
Not at all	65 (31.4)	52 (24.1)	117 (27.7)
Some	74 (35.8)	84 (38.9)	158 (37.4)
A lot	68 (32.9)	80 (37.0)	148 (35.0)
Student and mother/female guardian argue during talk about sex			
Not at all	80 (38.7)	100 (46.3)	180 (42.6)
Some	44 (21.3)	54 (25.0)	98 (23.2)
A lot	16 (7.7)	13 (6.0)	29 (6.9)
Have not talked about sex	67 (32.4)	49 (22.7)	116 (27.4)
Mother/female guardian seems nervous during talk about sex			
Not at all	97 (46.9)	114 (52.8)	211 (49.9)
Some	31 (15.0)	38 (17.6)	69 (16.3)
A lot	12 (5.8)	15 (6.9)	27 (6.4)
Have not talked about sex	67 (32.4)	49 (22.7)	116 (27.4)
Mother/female guardian pays close attention during talk about sex			
Not at all	19 (9.2)	19 (8.8)	38 (9.0)
Some	36 (17.4)	55 (25.5)	91 (21.5)
A lot	85 (41.1)	93 (43.1)	178 (42.1)
Have not talked about sex	67 (32.4)	49 (22.7)	116 (27.4)
Mother/female guardian is a good listener during talk about sex			
Not at all	14 (6.8)	22 (10.2)	36 (8.5)
Some	43 (20.8)	53 (24.5)	96 (22.7)
A lot	83 (40.1)	92 (42.6)	175 (41.4)
Have not talked about sex	67(32.4)	49 (22.7)	116 (27.4)
Mother/female guardian lets student know what she thinks during talk about sex			
Not at all	9 (4.4)	12 (5.6)	21 (5.0)
Some	40 (19.3)	55 (25.5)	95 (22.5)
A lot	91 (44.0)	100 (46.3)	191 (45.2)
Have not talked about sex	67 (32.4)	49 (22.7)	116 (27.4)
Mother/female guardian gives good advice during talk about sex			
Not at all	8 (3.86)	16 (7.4)	24 (5.7)

Table 4: Emergency Contraceptive Use at Last Intercourse by Parental Factors Among High School Hispanics who have ever had sexual intercourse, matched on intervention status, gender, and age,			
	Did not use EC [controls]	Used EC [cases]	Total
	N, % (n=207)	N, % (n=216)	N, % (n=423)
Some	51 (24.6)	49 (22.7)	100 (23.6)
A lot	81 (39.1)	102 (47.2)	183 (43.3)
Have not talked about sex	67 (32.4)	49 (22.7)	116 (27.4)
Student trusts mother/female guardian when talking about sex			
Not at all	17 (8.2)	31 (14.4)	48 (11.4)
Some	57 (27.5)	58 (26.9)	115 (27.2)
A lot	66 (31.9)	78 (36.1)	144 (34.0)
Have not talked about sex	67 (32.4)	49 (22.7)	116 (27.4)
Overall, student likes the relationship he/she has with their mother/female guardian			
Not at all	20 (9.7)	23 (10.7)	43 (10.2)
Some	74 (35.8)	79 (36.6)	153 (36.2)
A lot	113 (54.6)	114 (52.8)	227 (53.7)
Mother/female guardian cares about student			
Not at all	1 (0.5)	2 (0.9)	3 (0.7)
Some	24 (11.6)	19 (8.8)	43 (10.2)
A lot	182 (87.9)	195 (90.3)	377 (89.1)
Parents' thoughts on student using birth control			
They are against it	38 (18.4)	58 (26.9)	96 (22.7)
They don't care	14 (6.8)	6 (2.8)	20 (4.7)
They think I should	54 (26.1)	55 (25.5)	109 (25.8)
I don't know what they think about it	100 (48.3)	91 (42.1)	191 (45.2)
Don't have this person in their life	1 (0.5)	6 (2.8)	7 (1.7)
*includes having used the birth control shot			

Table 5: Associations between Parental Factors and Emergency Contraceptive Use at Last Intercourse Among High School Hispanics Who have Ever had Sexual Intercourse, Matched on Intervention Status, Gender, and Age	
	Odds Ratio (Confidence Interval)
Talked about what would happen if student got pregnant or got someone pregnant now (p=0.7397)	
Not at all : A lot	0.810 (0.475, 1.382)
Some: A lot	0.896 (0.572, 1.404)
A lot	(ref)
Talked about the importance of having protection if student were to have sex (p=0.2936)	
Not at all : A lot	0.698 (0.431, 1.130)
Some: A lot	0.956 (0.614, 1.488)
A lot	(ref)
Student and mother/female guardian argue during talk about sex (p=0.4160)	
Not at all : A lot	0.585 (0.264, 1.299)
Some: A lot	0.614 (0.268, 1.406)
A lot	(ref)
Mother/female guardian seems nervous during talk about sex (p=0.9988)	
Not at all : A lot	0.993 (0.437, 2.256)
Some: A lot	0.981 (0.398, 2.421)
A lot	(ref)
Mother/female guardian pays close attention during talk about sex (p=0.3380)	
Not at all : A lot	0.844 (0.417, 1.705)
Some: A lot	1.384 (0.833, 2.299)
A lot	(ref)
Mother/female guardian is a good listener during talk about sex (p= 0.7354)	
Not at all : A lot	1.339 (0.644, 2.786)
Some: A lot	1.057 (0.641, 1.744)
A lot	(ref)
Mother/female guardian lets student know what she thinks during talk about sex (p=0.5975)	
Not at all : A lot	1.182 (0.477, 2.932)
Some: A lot	1.287 (0.783, 2.114)
A lot	(ref)
Mother/female guardian gives good advice during talk about sex (p=0.3063)	
Not at all : A lot	1.564 (0.632, 3.872)
Some: A lot	0.772 (0.475, 1.256)
A lot	(ref)
Student trusts mother/female guardian when talking about sex (p= 0.2794)	
Not at all : A lot	1.508 (0.762, 2.984)

Table 5: Associations between Parental Factors and Emergency Contraceptive Use at Last Intercourse Among High School Hispanics Who have Ever had Sexual Intercourse, Matched on Intervention Status, Gender, and Age	
	Odds Ratio (Confidence Interval)
Some: A lot	0.847 (0.519, 1.382)
A lot	(ref)
Overall, student likes the relationship he/she has with their mother/female guardian (p= 0.9271)	
Not at all : A lot	1.126 (0.590, 2.150)
Some: A lot	1.049 (0.697, 1.579)
A lot	(ref)
Mother/female guardian cares about student (p=0.4923)	
Not at all or Some: A lot	0.808 (0.440, 1.484)
A lot	(ref)
Parents' thoughts on student using birth control (p= 0.0538)	
They are against it	1.694 (1.022, 2.807)*
They don't care	0.454 (0.167, 1.235)
They think I should	1.104 (0.692, 1.763)
I don't know what they think about it	(ref)
§ includes having used the birth control shot * Significant at p≤0.05	

Table 6: Associations between Contraceptive Choices and Emergency Contraceptive Use at Last Intercourse Among High School Hispanics Who have Ever had Sexual Intercourse, Matched on Intervention Status, Gender, and Age				
	Did not use EC [controls]	Used EC [cases]	Total	Odds Ratio (Confidence Interval)
	(n=256)	(n=256)	(n=512)	
Ever been given birth control by a doctor or nurse (p= <.0001)				
No	186 (72.66)	112 (43.75)	298 (58.20)	3.564 (2.436, 5.213)*
Yes	70 (27.34)	144 (56.25)	214 (41.80)	
Used condoms at last intercourse (p= 0.0895)				
No	83 (32.42)	66 (25.78)	149 (29.10)	1.398 (0.950, 2.058)
Yes	173 (67.58)	190 (74.22)	363 (70.90)	
Used birth control pills, patch, or ring at last intercourse (p= 0.0002)				
No	230 (89.84)	199 (77.73)	429 (83.79)	2.574 (1.553, 4.269)*
Yes	26 (10.16)	57 (22.27)	83 (16.21)	
Used withdrawal at last intercourse (p= 0.0001)				
No	216 (84.38)	179 (69.92)	395 (77.15)	2.297 (1.495, 3.530)*
Yes	40 (15.63)	77 (30.08)	117 (22.85)	
Used rhythm method at last intercourse (p= 0.5240)				
No	245 (95.70)	242 (94.53)	487 (95.12)	1.302 (0.578, 2.933)

Table 6: Associations between Contraceptive Choices and Emergency Contraceptive Use at Last Intercourse Among High School Hispanics Who have Ever had Sexual Intercourse, Matched on Intervention Status, Gender, and Age				
	Did not use EC [controls]	Used EC [cases]	Total	Odds Ratio (Confidence Interval)
	(n=256)	(n=256)	(n=512)	
Yes	11 (4.30)	14 (5.47)	25 (4.88)	
Used something else last at last intercourse§ (p= 0.6414)				
No	247 (96.48)	245 (95.70)	492 (96.09)	1.238 (0.505, 3.036)
Yes	9 (3.52)	11 (4.30)	20 (3.91)	
Used nothing at last intercourse (p= <.0001)				
No	197 (76.95)	237 (92.58)	434 (84.77)	0.272 (0.158, 0.471)*
Yes	59 (23.05)	19 (7.42)	78 (15.23)	
Used multiple methods of contraception (p= <.0001)				
None	52 (20.31)	26 (10.16)	78 (15.23)	0.130 (0.047, 0.359)*
1 additional	155 (60.55)	133 (51.95)	288 (56.25)	0.222 (0.088, 0.563)*
2 additional	43 (16.80)	74 (28.91)	117 (22.85)	0.449 (0.168, 1.195)*
3 additional	6 (2.34)	23 (8.98)	29 (5.66)	(ref)
Withdrawal Patterns (p=0.0003)				
No Contraception	51 (20.8)	26 (10.5)	77 (15.7)	0.267 (0.113, 0.6330)*
Withdrawal Exclusively	11 (4.5)	22 (8.9)	33 (6.7)	(ref)
Withdrawal Plus Other Contraceptive(s)	28 (11.4)	54 (21.9)	82 (16.7)	1.008 (0.426, 2.383)
Other Contraceptive(s) (no withdrawal)	155 (63.3)	145 (58.7)	300 (61.0)	0.490 (0.229, 1.047)
Missing			20	
Pill/Patch/Ring Patterns (p=<.0001)				
No Contraception	51 (20.8)	26 (10.5)	77 (15.7)	0.653 (0.231, 1.841)
Pill/Patch/Ring Exclusively	10 (4.1)	8 (3.2)	18 (3.7)	(ref)
Pill/Patch/Ring Plus Other Contraceptive(s)	14 (5.7)	48 (19.4)	62 (12.6)	4.469 (1.473, 13.562)*
Other Contraceptive(s) (no withdrawal)	170 (69.4)	165 (66.8)	335 (68.1)	1.233 (0.476, 3.195)
Missing			20	
§ includes having used the birth control shot * Significant at p≤0.05 P-values based on Type 3 Analysis of Effects				

Table 7: Association Between Single Contraceptive Method Use on Emergency Contraceptive Use: Conditional Logistic Regression Analysis	
	Point Estimate (95% Wald Confidence Limits)
Seen a doctor or nurse for birth control	3.078 (1.993, 4.753)*
Use pill/patch/ring at last sex	1.460 (0.807, 2.639)
Used withdrawal at last sex	2.182 (1.355, 3.513)*
Used nothing at last sex	0.290 (0.158, 0.532)*
Socioeconomic Status	0.863 (0.563, 1.323)
Grade 9 vs 12	0.980 (0.236, 4.063)
Grade 10 vs 12	0.505 (0.221, 1.157)
Grade 11 vs 12	0.447 (0.247, 0.809)*
1st generation vs 3rd generation	1.357 (0.459, 4.006)
2nd generation vs 3rd generation	1.203 (0.450, 3.217)
Spanish only vs 1 English only	0.552 (0.258, 1.182)
English and Spanish vs 1 English only	0.734 (0.369, 1.459)
* Significant at $p \leq 0.05$	

Table 8: Association Between Multiple Method Contraceptive Use on Emergency Contraceptive Use: Conditional Logistic Regression Analysis	
	Point Estimate (95% Wald Confidence Limits)
Seen a doctor or nurse for birth control	3.222 (2.124, 4.888)*
Used one contraceptive method vs. no method	1.971 (1.122, 3.462)*
Used two contraceptive methods vs. no method	2.856 (1.476, 5.525)*
Used three or more contraceptive methods vs. no method	6.676 (2.228, 20.003)*
Socioeconomic status	0.832 (0.547, 1.267)
Grade 9 vs 12	0.992 (0.243, 4.054)
Grade vs 12	0.516 (0.228, 1.170)
Grade 11 vs 12	0.467 (0.261, 0.835)*

Table 8: Association Between Multiple Method Contraceptive Use on Emergency Contraceptive Use: Conditional Logistic Regression Analysis	
	Point Estimate (95% Wald Confidence Limits)
1st generation vs. 3rd generation	1.252 (0.430, 3.651)
2nd generation vs 3rd generation	1.141 (0.433, 3.007)
Spanish only vs English only	0.519 (0.246, 1.093)
English and Spanish vs English only	0.708 (0.361, 1.387)
* Significant at $p \leq 0.05$	

Table 9: Association Between Withdrawal on Emergency Contraceptive Use: Conditional Logistic Regression Analysis	
	Point Estimate (95% Wald Confidence Limits)
Seen doctor or nurse for birth control	3.530 (2.353, 5.293)*
Used withdrawal exclusively vs. used nothing	4.045 (1.619, 10.106)*
Used withdrawal in addition to other contraceptive(s) vs. used nothing	3.582 (1.751, 7.330)*
Using other contraceptive(s) without withdrawal vs. used nothing	1.926 (1.098, 3.380)*
Socioeconomic Status	0.822 (0.540, 1.251)
Grade 9 vs 12	0.864 (0.207, 3.613)
Grade 10 vs 12	0.511 (0.224, 1.165)
Grade 11 vs 12	0.474 (0.264, 0.851)*
1st generation vs 3rd generation	1.295 (0.440, 3.810)
2nd generation vs 3rd generation	1.218 (0.459, 3.233)
Mainly Spanish Speaking vs Mainly English Speaking	0.533 (0.252, 1.127)
English and Spanish Speakers vs Mainly English Speakers	0.690 (0.350, 1.358)
* Significant at $p \leq 0.05$	

Table 10: Association Between Pill/Patch/Ring Use on Emergency Contraceptive Use: Conditional Logistic Regression Analysis	
	Point Estimate (95% Wald Confidence Limit)
Seen a doctor or nurse for birth control	3.281 (2.142, 5.026)*
Used pill/patch/ring exclusively vs. used nothing	1.071 (0.349, 3.284)
Used pill/patch/ring in addition to other method(s) vs. used nothing	4.210 (1.843, 9.618)*
Used other contraceptive(s) but not pill/patch/ring vs. used nothing	2.182 (1.251, 3.805)*
Socioeconomic Status	0.799 (0.525, 1.218)
Grade 9 vs 12	0.980 (0.244, 3.943)
Grade 10 vs 12	0.507 (0.223, 1.150)
Grade 11 vs 12	0.504 (0.284, 0.897)*
1st generation vs 3rd generation	1.246 (0.426, 3.640)
2nd generation vs 3rd generation	1.131 (0.427, 2.994)
Mainly Spanish Speaking vs Mainly English Speaking	0.528 (0.250, 1.116)
English and Spanish Speaking vs Mainly English Speaking	0.702 (0.357, 1.379)
* Significant at $p \leq 0.05$	

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