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No More Baby Steps: Preventing Unintended Pregnancies of Los Angles Minorities and Adolescents

rachel bass
rbbass@dons.usfca.edu

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Rachel B. M. Bass
MPH Candidate 2017
University of San Francisco

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Abstract

Previous studies have identified pregnancy intention to correlate with both maternal and fetal health. Though unintended pregnancy rates are dropping in America, they remain high among minority and young women. Contraceptive usage, a leading protective factor for unintended pregnancies, has been found to vary greatly by age and ethnicity. These two projects aimed to decrease unintended pregnancy rates through increasing patient knowledge of contraceptive options and correct usage. The first project focused on creating a comprehensive, oral contraceptive pill instructional handout for research participants of the birth control pill study. This handout was created through the analysis of compliance errors made by current study participants. Statistical analysis found that participants who started their pills after receiving the handout were more likely use their pills correctly than participants without the handout. Future research in this area should include a larger sample size. The second project used subject recruitment as a platform to educate college-aged women in sororities about their contraceptive options, mainly LARCs. This project has yet to be implemented, so future steps will lead to its implementation followed by program evaluation through electronic surveys. Community programs that strengthen patient knowledge of contraceptives and proper use should be implemented. Additionally, policy reform should focus on the availability of contraceptive use instructions and sexual health outreach in college campuses.

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I. Introduction

Unintended pregnancy rates in America today are falling, but still relatively high. In America in 2016, 45% of the 6.1 million pregnancies were unintended, with minority and adolescent populations particularly at risk (Guttmacher Institute, 2017). Both the Center for Disease Control and Prevention and Healthy People 2020 state the importance of reducing unintended conception to promote healthy pregnancy outcomes in the United States (Taylor et al., 2011). Unintended pregnancies are a public health concern because they are associated with adverse health effects in both the mothers and their unborn babies. A cross-sectional study from Turkey found that women with unplanned pregnancies have statistically higher depression rates (mean 10.3, SD 6.9) and lower health practice rates (mean 118.4, SD 13.5) than women with planned pregnancies (mean 8.1, SD 5.8, mean 124.0, SD 14.1), (Yanikkerem et al., 2013). Another study determined that when a pregnancy is unintended, there is an increased likelihood that the mother will continue to smoke during pregnancy, which has negative consequences on the developing fetus (Taylor et al., 2011). Similarly, a study by Wellings et al. (2013) found unplanned pregnancies to be associated with current smoking (2·47 [1·46–4·18]) and recent use of drugs other than cannabis (3·41 [1·64–7·11]). Considering fetal health, a meta-analysis of seventeen articles linked unintended pregnancies with 1.4 times greater odds of having a baby of low birth weight (Hall et al., 2017). Two older studies from 1980 and 1994 in the U.S. found an increased risk of neonatal fatality in cases where the pregnancy was unplanned, a relative risk of 1.80 and 2.4 respectively, even when adjusted for marital and socioeconomic status (Hall et al., 2017).

Though unintended pregnancy rates have been declining in recent years, their prevalence in the U.S., specifically in Los Angeles, California is still of concern, especially for minority and young women. In America in 2008, unwanted pregnancy rates were high, at 51% of all pregnancies, as compared to other developed regions (Finer & Zolna, 2016). For example, in 2008 the percentage of unintended pregnancies in Asia was 38%, in Northern Europe was 41%, in Western Europe was 42%, and in Southern Europe was 39% (Singh et al., 2010).

Interestingly, disparities in unintended pregnancy rate and contraception use coincide with differences in race or ethnicity. For example, in America in 2012, the unintended pregnancy rate for African Americans was 91 per 1000 women and for Hispanic women was 82 per 1000 women, whereas the unintended pregnancy rate for white women was only 11.5 per 1000 women (Haider et al., 2013). The Los Angeles Mommy and Baby program found that, in 2015, African American mothers were most likely to report their pregnancy as unintended (15.2%), and Hispanic mothers were most likely to report mistimed pregnancies (43%), with African Americans at a close second (42.7%). They found that white mothers reported significantly lower values of 5.1% unintended pregnancies and 18.6% mistimed pregnancies (Higgins et al., 2016). A discrepancy in unintended pregnancy rates also exists between age groups. In America in 2012, 60 per 1000 women aged 16 to 19 reported unintended pregnancies (Haider et al., 2013). In Los Angeles in 2015, between age groups, 64% of pregnancies from mothers under 20, 54.1% of pregnancies from mothers age 20-24, 31.4% of pregnancies from mothers 25-34, and 19.2% of pregnancies from mothers 35 and up, were reported as mistimed (Higgins et al., 2016).

There are also differences in the use of birth control between ethnicities. In terms of contraceptive use, one California study found that independent of cost, black and Latina women were more likely to receive the patch (odds ratios (OR): 1.6 and 2.3) or injectable contraception

(OR: 1.6 and 1.4) and less likely to receive oral contraceptive pills (OR: 0.4 and 0.6) and contraceptive rings (OR: 0.7 and 0.5) than white women. Additionally, black women were less likely to receive IUDs (OR: 0.5) and more likely to use emergency contraceptive pills (OR: 2.6) than white women (Dehlendorf et al., 2011).

A national survey from Britain in 2012 investigated on risk factors found to be associated with unintended pregnancy. Similar to the LAMB study, this study found that pregnancies in adolescents age 16-19 were more commonly unplanned than planned (OR: 45·2% [30·8–60·5]) (Wellings et al., 2013). Additionally, pregnancies in women without partners were more commonly unplanned than women with partners (Wellings et al., 2013). Unplanned pregnancies were also found to be associated with women having intercourse before the age of 16 (age-adjusted OR: 2·85 [95% CI 1·77–4·57] (Wellings et al., 2013). They also found lower educational attainment to be associated with higher rates of unplanned pregnancy (Wellings et al., 2013). Finally, they noted that receiving sexual education from a non-school source was associated with higher rates of unintended pregnancy (1·84 [1·12–3·00]) (Wellings et al., 2013). Overall, researchers found decreased age, single marital status, having intercourse before age 16, smoking, substance use, lower educational level, and receiving sexual education form a non-school source to be risk factors for unintended pregnancy.

Conversely, many protective factors have been identified that reduce women's risk for unintended pregnancy, such as use of contraception. It was noted earlier that African American women have the highest rate of unintended pregnancy and white women have the lowest rate. Interestingly, in America, African American women are also less likely to use contraception (84%) than Hispanic and white women (91%) (Higgins et al., 2016). Additionally, adolescents use contraception 81% of the time and are less likely to use an effective form of birth control

than older women (Higgins et al., 2016). Another protective factor to consider is the use of more effective contraceptives. Using more effective and reliable forms of contraception, such as long-acting reversible contraceptives (LARCs), should reduce the rate of unintended pregnancies. More than half of the United State's unintended pregnancies are to women who were using a form of birth control during conception, though the use is often inconsistent (Taylor et al., 2011). According Taylor's et al. (2011) article, which evaluates evidence-based guidelines to prevent unintended pregnancies, primary prevention should include a plan to prevent contraceptive method failure.

Finally, a study in Turkey found that women with planned pregnancies were more likely to be younger, more educated, employed, happy in marriage, and receive social support (Yanikkerem et al., 2013). Thus, they found increased education, employment, social support, and decreased age to be protective factors. Though finding younger age as protective factor contradicts its status as a risk factor, these studies were conducted in different countries with vastly different familial values. Since this paper is mainly evaluating unintended pregnancy rate in America, decreased age will be considered a risk factor throughout this discussion.

Programs targeting different levels of the Ecological model have attempted to reduce the rates of unintended pregnancies in America. Many of these programs aimed to lessen barriers preventing the use of contraception. Prominent barriers to unwanted pregnancy prevention include affordability of contraceptives, lack of knowledge of sexual health practices, and side effects of contraceptives (Haider et al., 2013). The contraceptive CHOICE Program in St. Louis, Missouri, addressed the cost barrier at the community level. This program recruited participants through abortion clinics to participate in a prospective cohort study in which they were given free birth control (Peipert et al., 2014). The results showed statically significant reductions in

abortion rates, repeat abortions, and teenage birth rates, as compared to the Kansas City and non-metropolitan Missouri rates (Peipert et al., 2014). Further analysis of the contraceptive CHOICE program found that when choosing between LARCs and non-LARC contraception when cost is not a factor, both age groups 14-17 and 18-20 preferred LARCs. This statistic is evidence that without cost as a barrier, adolescents prefer the more effective method (Mestad et al., 2012). Another barrier to effective contraceptive use is lack of education on sexual health practices and contraceptive options. One study evaluating intrapersonal factors found only 14.7% of women aged 14-24 had knowledge about LARCs as contraceptive options (Whitakert et al., 2010). In another study, 55% of participants aged 14-27 had never heard of an IUD (Fleming et al., 2010). Addressing interpersonal factors by promoting LARCs and educating participants about their benefits was proven to be advantageous (Piepert et al., 2014). Piepert et al. (2014) found that half of all unwanted pregnancies are due to failure of reversible contraceptive methods, like the pill or condoms. This information suggests that promoting LARCs such as IUDs may be advantageous to preventing unwanted pregnancies, because they have a much lower failure rate than other methods (Piepert et al., 2014). Finally, side effects are a prominent barrier in adoption of LARCs (Haider et al., 2013). Among Hispanic women, perceived side effects such as decreased sex-drive, cancer, and infertility contributed to decreased contraceptive use (Haider et al, 2013). Another study showed that minority women had more misconceptions about contraceptive methods as compared to white women (Dehlendorf et al., 2011).

Other programs have focused upon increasing facilitators of contraceptive use and safe sex practices to decrease rates of unintended pregnancy. Evidence shows that recommendation from a trusted source, an interpersonal factor, is a facilitator of safe sex practices. For example, a qualitative study on African American women found that women rated a physicians

recommendation of an IUD as the most influential predictor of their choice to get an IUD, being 2.7 times more likely to get an IUD due to physicians' recommendation (Fleming et al., 2010). Another small qualitative study found that adolescent mothers referenced familial and partner support as strong influences to get an IUD during postpartum (Weston et al., 2011). The Strong African American Families–Teen (SAAF–T) program, a preventative intervention to reduce sex-risk behaviors with a family-centered approach was successful in reducing the frequency of unprotected intercourse and increasing condom use among African American adolescents (Kogan et al., 2012).

There is little research on cultural competence as a facilitator of safe sexual practices, though it is thought that it may be a facilitator among minority women (Haide et al. 2013). A qualitative study in California found that in the Hispanic community, it is important to understand the cultural significance of family and motherhood when providing family planning counseling (Russell & Lee, 2004). Similarly, the Adult Identity Mentoring (AIM) program was found to reduce sexual-risk behaviors and delay initial sexual experiences among adolescent African Americans by using culturally sensitive strategies to counsel participants (Haider et al., 2013).

Finally, Haider et al. (2013) suggested that community-wide sexual education programs could be facilitators of safe sexual practices. Over the years, California has implemented many sexual education programs with varying methodologies. In 1995, the ENBL program was launched as an abstinence-only approach to sexual education in schools. California's Republican Governor Pete Wilson abruptly canceled the program in December 1995. Although it was popular among teens and parents, the program evaluation found that had no impact on teen's initiation of intercourse (Boonstra, 2010). California then launched the Family PACT program, a

program that uses state funding to fund free contraceptive and reproductive health services for Californians that are 200% below the federal poverty line. This program specifically targets teens and minorities, as they can participate in this program based on their own income rather than their families, and immigration status is not required (Boonstra, 2010). The California Wellness Foundation, a private company, has funded the California Family Health Counsel, now known as Essential Access Health, to provide specialized trainings to healthcare educators in order to better support teens in making good sexual health decisions (Boonstra, 2010). Evaluations of California's programs found that between 1995 and 2005, teen birth rates dropped by 47%, proving to be successful (Boonstra, 2010).

A 2006 analysis from the Gunster Institute found that policy decisions in California have contributed to California's prominent success in reducing unintended pregnancies (Boonstra, 2010). Though many of these programs were successful, gaps still exist that should be addressed to decrease the rate of unwanted pregnancies in minorities and adolescent women in America. To address unintended pregnancy from an institutional level, national policies should be changed to increase access to contraception nationwide. The new administration is attempting to repeal and replace the Affordable Care Act, suggesting changes such as revision of the government's contraception coverage mandate, which could end up denying covered contraception to many Americans (Pear, 2017). This revision could have a detrimental effect on safe sex options, therefore leading to an increase in unintended pregnancies in the United States, especially for minority populations of low socioeconomic status.

Additionally, there is still a large gap in patient knowledge that can be addressed though patient education programs. Specifically, the most effective contraceptive options, such as LARCs should be promoted to at-risk populations, specifically adolescents and minorities. The

2011 study evaluating contraceptive choice by race independent of cost (discussed earlier) attributed the lack of LARC use in minorities to lack of knowledge, perceived side effects, and lack of provider knowledge about these products (Dehlendorf et al., 2011). This suggests that lack of knowledge, perceived side effects, and lack of provider knowledge can be addressed in future programs. Another study tested an intervention using interpersonal factors to increase intrauterine device (IUD) awareness in adolescents (Whitaker et al., 2010). The Intervention was a 3-minute presentation involving the risks and benefits of IUDs including information about costs, side effects, insertion, and removal, and a brief survey. They found that knowledge of IUDs increased from 14.7% before the intervention to 58.3% after the intervention, and positive attitude towards IUDs increased in all subpopulations (Whitaker et al., 2010).

II. Scope of Work

Essential Access Health's mission is to champion and promote quality sexual and reproductive health care for all. Formerly known as the California Family Health Counsel, Essential Access Health serves over one million uninsured and low-income men, women, and teens in California each year. Though they advocate for policy reform on a national level, their scope of projects and services reach California residents and providers in the state of California. Their headquarters is located in Los Angeles, with a satellite office in Berkeley. Essential Access Health has 60 employees. In the research division there are 20 employees.

Essential Access Health's mission is achieved through program and services involving clinic support initiatives, provider training, advanced clinical research, advocacy and consumer awareness. For example, Essential Access operates the nation's largest Title X system, which provides 1 million Californians with sexual and reproductive healthcare. This program addresses the public policy factor of the ecological model. In another program involving partnerships with the California STD Control Branch, Los Angeles County Division of HIV/STD Programs, county health departments, and providers, Essential Access Health works to prevent the spread of sexually transmitted diseases, focusing on chlamydia, gonorrhea, HPV, and HIV. In this project, Essential Access Health provides trainings, conducts site-visits, and creates and resources for current STD screening and treatment for healthcare providers. They also create and distribute educational tools about STD prevention for Californians to address intrapersonal factors. Additionally, through the Chlamydia/Gonorrhea (CT/GC) Patient-Delivered Partner Therapy (PDPT) Distribution Program, Essential Access Health works to provide free antibiotics to low-income patients who test positive for chlamydia or gonorrhea through providing community access. Essential Access Health also focuses on teen outreach, encouraging teens to

make educated and healthy decisions involving their sexual health practices through four programs addressing intrapersonal, institutional, and interpersonal factors respectively. These four programs are TeenSource.org, the Condom Access Project, Hook Up, and TalkWithYourKids.org.

The Essential Access Health Solutions department acts as a consulting arm to advise various clients about program effectiveness strategies through addressing institutional factors. They collaborate with client organizations to ensure maximum impact, efficiency, sustainability, and to strengthen healthcare service delivery of new initiatives and existing programs. In yet another program, Essential Access Health established a Co-Op to help providers save on healthcare supplies through community relationships that allow providers to access supplies at discounted rates. Similarly, The California Health Benefits Alliance for Non-Profits (CBAN) is a partnership with Houska Insurance Services that allows healthcare providers to improve purchasing power with insurance services, allowing providers to save on health benefits for employees. This federally funded program operates at the public policy level of the ecological model. Additionally, Essential Access Health's Learning Exchange Program offers trainings and educational resources for healthcare providers to learn and collaborate on standard of care and best practices involving women's sexual and reproductive health. This program allows for collaboration between healthcare professionals through operating on both community and interpersonal levels. I work in Essential Access Health's research department, a nationally recognized leader in contraceptive research and development that operates at the institutional level of the ecological model. The research department is part of the NIH's Contraceptive Clinical Trials Network, and conducts clinical research on new forms of contraception including IUDs, oral contraceptives, condoms, microbicides, vaginal rings, and emergency contraceptives.

These studies are designed to aid in the development of new contraceptive innovations, eventually making advances in family planning available to the public. Finally, Essential Access Health advocates for public policy reform that acts in the best interest of access to reproductive and sexual healthcare for all. Currently, they are fighting to ensure that Congress saves the Title X program and to help protect freedom of choice for Medi-Cal patients in choosing family planning providers.

Essential Access Health's Strategic Plan for 2017-2019 focuses on a commitment to strengthening policies and programs that protect progress made in reducing unintended pregnancies and improving sexual health practices. Their first goal is to guarantee universal access to sexual and reproductive healthcare and information. This can be accomplished through three objectives. First, Essential Access health will advocate for the advancement of public policy initiatives to protect and expand access to comprehensive sexual and reproductive health services. Secondly, they will promote awareness of the issues surrounding sexual and reproductive health information, access and coverage. Finally, Essential Access Health will implement interventions to ensure access to quality healthcare in a shifting political environment. Their second goal is to promote and uphold the quality of sexual and reproductive services. Their objectives for this goal are to lead the country in best practices of sexual and reproductive healthcare in diverse settings, create strategic partnerships improve delivery of sexual and reproductive healthcare, and strengthen such healthcare services through-evidence based initiatives. Their third goal is to improve quality sexual and reproductive healthcare training that focuses on delivery and implementation. There are three objectives for this goal. First, Essential Access Health aims to shape the Learning Exchange trainings and continuing education programs to adapt to the changing healthcare environment. Secondly, they will broaden the

scope of the Learning Exchange to target a diverse group of healthcare professionals. Thirdly, they plan to educate healthcare workers in the expert delivery of sexual and reproductive healthcare. Their final goal pertains to the research department, in which I am conducting my fieldwork. This goal is to research emerging products and therapies in sexual and reproductive health. This will be accomplished through the objectives of creating opportunities for the Research Center through expanding partnerships and studying new sexual and reproductive healthcare products and treatments.

Through the research department, Essential Access Health is working to improve access to effective and affordable contraception. We partner with local gynecology clinics, pharmaceutical companies, and clinical research monitoring organizations to conduct our research. As mentioned previously, Essential Access Health is foundational member of the National Institutes of Health's Contraceptive Clinical Trials Network. One of the NIH's goals in contraceptive clinical research is to develop targeted non-hormonal contraceptive methods with minimal side effects. Since perceived side effects are a barrier to contraceptive use, creating products that are effective and cause less-severe side effects may increase contraceptive use. I am working on four contraceptive clinical trials, two of which involve non-hormonal methods of birth control. One study involves a new copper IUD that is smaller and shaped differently, in the hopes that this IUD will result in less vaginal cramping and bleeding than the Paragard. The other study involves a new spermicide product that does not use nonoxynol-9, a strong detergent that can irritate the vaginal wall. Our other studies involve researching the safety and efficacy of new oral contraceptives and a new hormonal IUD. The oral contraceptives contain synthetic fetal estrogen, which is $1/20^{th}$ the potency of estrogen currently used in pills on the market. This product was developed in the hopes of reducing side-effects associated with estrogen use, such

as mood changes, nausea, headache, vaginal discharge, risk of blood clot, and weight gain. The new hormonal IUD has a metal frame making it lighter weight and open more gently. It also has pre-cut tail strings and is spring-loaded to better fit into the uterine cavities of nulliparous women.

Essential Access Health's clinical research aims to get more contraceptive options FDA-approved, to ideally result in more affordable prices. In health economics, I learned that due to free market competition, when another product is launched, similar products compete for consumers. This competition often leads to price drops to incentivize consumers to buy one product over the others. Thus, having more contraceptive options on the market in America will theoretically lower the market price, making them more affordable for the uninsured. Aside from this overarching goal, Essential Access Health's goal in every research project is to educate participants about family planning techniques. As discussed in the introduction, many women are uninformed as to their contraceptive options, especially LARCs. We aim to increase participant knowledge of the risks, alternatives, and benefits of their chosen contraceptive, as well as the biological mechanism of action of the product. This is accomplished through four objectives. First, we give the participant a pamphlet of all available contraceptive options and go through each option to explain how it works and the effectiveness. Then we explain in layman's terms how the study product works, why it is effective, and the risks and benefits. Next, we instruct on proper use of the study product. Finally, we educate participant about how the study itself works. This objective falls under the intrapersonal factor category of the ecological model.

At Essential Access Health, I was a Clinical Research Intern. My role involved recruitment, patient education and communication, conducting visits, recording and reporting data, and physician assisting. I served as a liaison between participants, physicians, and project

directors, including scheduling patient visits and obtaining relevant study information from participants. My day to day activities included answering inquiries from potential study participants and educating them about our studies, and conducting participant visits including explaining study contraceptive method, obtaining informed consent, educating about contraceptive use, discussing risks, benefits, and alternatives taking medical histories, assessing for adverse events, taking vitals, and escorting patients through visits with clinicians. Additionally, I was in charge of recording and reporting data to the sponsor in a time-efficient manner.

In addition to my daily housekeeping tasks and coordination and conduction of patient visits, I worked on two main projects for the Research Department. My goal was to improve participant knowledge about their respective contraceptive choices and proper use. Thus far, four pregnancies were reported in our oral contraceptive study that can be attributed to improper use of the investigational product. My project aimed to provide participants with a resource to reference about proper pill use by addressing intrapersonal factors of the ecological model. My goal was accomplished through four objectives. First, we, as a research team, evaluated past visits and make note of mistakes participants have made with regards to pill use. Participants were in different phases of this research study; some were still enrolling, while others were already well into their use of the pills. So, while conducting visits of participants who were father along in the study, I evaluated errors in their pill use and worked to incorporate those into the hand out. I also collaborated with the other research associates and project directors to devise the content of the handout. Secondly, I created a deliverable in the form of a paper handout for participants to reference regarding proper pill use instructions and frequently asked questions. Then, the project director submitted the handout to IRB for approval. Lastly, as a team, we

improved our method of educating participants about proper pill use. This was achieved by amending our standard operating procedures to instruct research associates to quiz participants about proper pill use following patient education.

I was recently hired by Essential Access Health as a Clinical Research Associate, and have started another project. This project involves expanding the outreach of our studies to increase the recruitment of student participants. Not only will this benefit our research, but it will also benefit students by increasing their knowledge of sexual health and reproductive practices. This project aims to use recruitment as a platform for educating college-level women about family planning methods and the pros and cons of different contraceptive options by addresses intrapersonal and institutional factors. This will be accomplished by three objectives. First, I will script presentation to educate college-level women about contraceptive options as well as our upcoming research studies. Secondly, I will advertise for our clinical trials on college campuses by making presentations during weekly sorority meetings by performing "row-walks." Finally, I will include information about most effective contraceptive options, mainly LARCs such as IUDs. Though this project is still in its beginning stages, I will be continuing to work on it throughout the next year. Ideally, this project will be implemented by February 2018.

III. Impact

My first project, aimed at increasing participant compliance in the oral contraceptive pill study, resulted in the creation of an instructional handout that was distributed to participants at their enrollment visit. This handout was created by evaluation of past participant errors in pill use. For example, one participant thought that the white placebo pills were to be taken whenever she had menstrual bleeding. Rather than taking the pills in order, she started her first pack by taking the white placebo pills rather than the pink pills because she had menstrual bleeding. Thus, the *What You Need to Know* section of the handout addresses when to properly take the white placebo pills. The handout is included in Appendix B.

In order to gauge the public health impact of my oral contraceptive pill handout, I analyzed the data surrounding pill compliance following implementation of the handout. To evaluate this data, I reviewed patient dairies and pill pack use, and made note of the number of cycles each participant used her pills per instruction (found in the study protocol), termed *compliant cycles*, versus the number of cycles each participant misused her pills, termed *noncompliant cycles*. For example, if a participant missed a pill but followed the directions and took two the next day, this was considered compliant. If a participant missed a pill and took only one the next day, then the cycle was considered noncompliant. I separated this data into two groups. The control group consisted of data from cycles of earlier participants who were not given the handout. The experimental group consisted of data from cycles of participants who received the handout prior to enrollment. Unfortunately, only seven participants in the experimental group have completed their first cycle. Thus, there are only seven participants in the experimental group, as opposed to the 31 participants in the control group. Similarly, we only have collected data from seven cycles, as opposed to 168 cycles in the control group. The

following statistical analysis is mainly exploratory; upon which we can hopefully base a bigger study once more data is collected from the experimental group.

The results show that cycles in the experimental group had a higher likelihood of being compliant than cycles in the control group. Similarly, cycles in the experimental group had a lower rate of non-compliance than in the control group. This is backed up by evidence from the summary statistics, which can be found in Appendix B. The summary statistics compared the compliance rates by cycles rather than by participant. In the control group (no handout) 88.69% of cycles were compliant, whereas in the experimental group (with handout) 100% of cycles were compliant. In the control group (no handout) there was 11.31% of cycles were non-compliance, whereas in the experimental group (with handout) 0% of the cycles were non-compliant.

There was a statistically significant difference between the average compliance rate of a participant with the handout versus a participant without a handout. Where the summary statistics were performed to analyze compliance rates by cycle, the t-test analyzed compliance rates per each participant. A t-test was run, comparing the mean compliance percentages among participants in the control group, versus participants in the experimental group. A Welch's t-test was run, because this test is better adapted for two groups with unequal sample sizes and variances. The p-values of this tests was less than 0.05 ($p= 0.0.0023$), thus there was a statistically significant difference between the means of the two groups. It is highly probable that the mean compliance rate among participants in the experimental group is larger than the mean compliance rate among participants in the control group. This finding supports the claim that the handout increased pill use compliance among participants.

As mentioned above, the lack of data from the experimental group was a major limitation in my method of evaluation. This analysis was done prematurely because distributing the handout to participants was very recently incorporated into our protocol. The new participants have not gone though many cycles yet. This likely limited the strength of the t-test. Another limitation of this analysis is that the participants were not randomized.

Though the creation of this handout seemed to increase proper contraceptive use among study participants, there is still much more that needs to be done to address the public health concern. Due to limitations in my evaluation method, more research needs to be done to determine the impact of the handout. Since the analysis was done prematurely, another analysis of the compliance data should be done once all participants have completed the study. Analyzing a larger sample size of cycles increases the confidence level of the statistical result. Additionally, it may be helpful in a future study to compare compliance within subjects, rather than between subjects. For example, comparing pill compliance of each subject with no handout to pill compliance after distributing the handout. This method would eliminate variability between groups, leading to a more accurate analysis of the effect of the handout. Finally, these results are only from women in Los Angeles who have self-selected to be in a research study. Thus, these results do not have great external validity, and more research should be done on a broader population of women.

Such research can lead to the development of programs to better educate women about proper contraceptive use and distribute instructional handouts for each contraceptive method. For example, a program can be created to promote proper use of contraceptive methods and targets minority and adolescent women. This program could consist of a mobile phone app that explains proper use of each contraceptive method and what to do if the method is misused. In terms of

policy implications, the FDA's policy about printing directions on contraceptives should be further explored. Instructions similar to those in the handout could be printed on the back of oral contraceptives so that women have access to the instructions at all times.

My second fieldwork project is still in its early stages and has not yet been implemented. Though I cannot yet evaluate the results of this project, I have made a plan for evaluation once it is implemented. I plan to distribute a short survey to the sorority members to gauge how helpful they found my presentation. This survey will be distributed via email and small incentives will be provided to each girl who fills out the survey. An example of the survey can be found in Appendix E.

The next steps that need to be done in this project involve its implementation. I am working on researching evidence-based approaches on communicating sexual and reproductive information to large groups of young women. This will be accomplished gathering advice from members of other departments at Essential Access Health. For example, Essential Access Health employees who are working on TeenSource.org, the Condom Access Project, and Hook Up are likely to have insights on communicating with my college-aged women. Additionally, I am currently working on contacting members of Panhellenic for surrounding universities such as UCLA, USC, and CSUN, to schedule row-walks for my project. First, the program should be pilot tested at local Los Angeles college campuses. If successful, this program should build upon its existing target population by being implemented on more college campuses. Eventually, another intervention targeting fraternity men can be created based upon similar principles. To ensure proper implementation, the sorority's policies about women's reproductive and sexual health education should be explored. Additionally, both university and sorority national policy

related to communication of sexual and reproductive health among sorority members should be referenced.

V. Conclusion

This fieldwork project addressed the public health issue of unintended pregnancies through patient education surrounding correct contraceptive use. The literature suggests that unintended pregnancies continue to be a prevalent, especially among minorities and young women. Unintended pregnancies are an issue for both the mental and physical health of mothers and their developing babies. For example, mothers with unplanned pregnancies were found to have higher levels of depression, smoking, drug use, and lower health ratings (Yankkerem et al., 2013). Similarly, fetuses of unintended pregnancies were found to have higher risks of neonatal fatality and low birth weight (Hall et al., 2017). Multiple studies have also found unintended pregnancy rates to vary by ethnicity, such that black and Hispanic women area at higher risk for unintended pregnancy than white women (Higgins et al., 2016). Furthermore, women under 24 years of age were found to be more likely to have unintended pregnancies than women over 24 (Higgins et al., 2016). Additionally, contraceptive usage, a protective factor of unintended pregnancy, was found to vary by age and ethnicity (Higgins et al., 2016). Black women were the least likely to use contraceptives as compared to Latina and white women (Higgins et al., 2016). Comparably, young women were less likely to use a highly effective contraceptive method as compared to older women (Higgins et al., 2016). Interestingly, another study found that over 50% of the America's unintended pregnancies were to women who used contraceptives, though often inconsistently (Taylor et al., 2011).

The literature also shows that there is a large gap in patient knowledge of contraceptives, attributing the underuse of LARCs to lack of knowledge, perceived side effects, and lack of provider knowledge about these products (Dehlendorf et al., 2011). Programs at different levels of the ecological model have been implemented to reduce unwanted pregnancy rates in America.

The ENBL program, an abstinence-only health education program launched in 1995 was found to have no impact on teens' initiation of sex (Boonstra, 2010). California's family PACT program provides free contraceptives to teens and those below the federal poverty line. Additionally, Essential Access Health provides specialized trainings surrounding sexual and reproductive health to healthcare providers (Boonstra, 2010). Evaluations have found these programs to be successful in greatly decreasing California's unwanted pregnancy rates (Boonstra, 2010). The Contraceptive CHOICE program found that after eliminating cost differences, adolescents prefer more effective birth control methods (Peipert et al., 2014).

My fieldwork placement was in Essential Access Health's research department as a Clinical Research Intern. I am working on four contraceptive clinical trials involving new IUDs, oral contraceptives, and spermicides. Through this research, we hope to bring safer contraceptive options to the United States market. In the research department, I worked on two projects to improve education and awareness of contraceptive usage. First, I created a handout detailing directions about proper use of oral contraceptives to provide to our study participants. My second project is still in the early stages, but I am working to expand study recruitment to reach college-aged women. This project uses subject-recruitment as a vehicle to discuss sexual health practices and proper contraceptive use among sorority women at local Los Angeles universities.

To evaluate the impact of the oral contraceptive pill usage handout, pill use data from each subject was collected and labeled as compliant or noncompliant. Summary statistics compiled for each cycle found participants in the control group to have a lower percentage of compliant cycles and a higher percentage of noncompliant cycles than participants in the experimental group. The Welch's t-test found that the mean compliance rate of participants in the control group was significantly different than the mean compliance rate of participants in the

experimental group. Thus, participants in the experimental group were more likely to have compliant cycles than participants in the control group. These results indicate that further research should be done on a larger sample size.

In the future, this research can be used to implement programs geared towards increasing compliance in contraceptive use and to make policy changes involving comprehensive contraceptive instructions. Since the college-level sorority outreach program has yet to be implemented, the next steps for this program is its initiation. Following its implementation, the program will be evaluated using a short online survey completed by participants. It is my hope that this research will contribute to the decline of unintended pregnancy rates in both young and minority women in Los Angeles and around the globe.

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VI. Appendices

Appendix A: Competency Matrix	
Competency:	**Method of Achievement:**
Select communication strategies for different audiences and sectors.	Sexual health can be difficult to discuss as it is still taboo, so many participants often shy away from discussing their sexual health practices. On both my pill study handout and sorority outreach project, I select appropriate communication strategies that fit my audience. For example, to reach college-aged women I decided to make presentations to sororities during row-walks, in the hopes to get a conversation started about contraceptive techniques.
Perform effectively on interprofessional teams.	Throughout this process I have been working with many physicians, nurses, IRB members, and clinical research monitors. I have been able to communicate effectively and work efficiently with professionals from other disciplines in order to finish my project.
Assess population needs, assets and capacities that affect communities' health.	My pill study handout addressed population needs by evaluating past study data to assess why pill compliance had failed. By evaluating mistakes that had been made in the past, I was able to get a more accurate idea of what instructions to include in my handout.
Communicate audience-appropriate public health content, both in writing and through oral presentation.	My project involves both talking to participants about their sexual health habits, and correct use of contraceptives both in writing and though oral communication. Depending on whom I am conversing with, my tone and word usage change. For example, I will use different methods and terms to discuss sexual health on college campuses versus with married women in their late 30's.
Describe the importance of cultural competence in communicating public health content.	Since I work with many low-income and minority women, it is important for me to be aware and understanding of their respective situations. I have found it important to try my best to relate to a person, and make them feel comfortable during study visits. This is especially important because I am collecting data regarding sexual health, which is a sensitive topic in many cultures.

Appendix B: IRB-Approved Oral Contraceptive Pill Use Handout

PILL USE TIPS AND GUIDANCE **E4 STUDY**

GETTING STARTED **Study Line # 800-300-5767**

1) Complete 2 study questionnaires at home on or before the day I take my first pill
2) Call the study the first day I get my period **before** taking my first pill
3) Take the home pregnancy test and provide the results to the study
4) Start taking pills and completing my diary booklet

WHAT YOU NEED TO KNOW

When to start takingthe Pill	***If you are not switching from a hormonal method:*** Your first pink pill should be taken on the first day of your period. If you miss the first day of bleeding, you can still start your first study pill between days 2 and 5 of your menstrual period (while you are still bleeding) but you MUST use condoms for 7 days as back-up birth control. ***If you are switching from a hormonal method:*** Follow the instructions for your current method on pages 8-9 of the Diary Booklet
How often to take your pills	For each cycle/month, you must take 1 pill each day at about the same time each day. You will take 24 pink pills in a row and 4 white pills to complete a 28 day cycle. You should never skip any pills. Even the white placebo pills are important to take, so that you remember when to start your next pill pack.
When to expect your period	After you have taken all 24 pink pills and you begin the 4 white placebo pills, you may begin to experience spotting/bleeding. This is your period with the study pill.
Start a new pill pack after you finish taking the white pills even if you are still bleeding	Start a new pill pack after the fourth white placebo pill. There should be no interruption between pill packs. Even if you are bleeding you still need to start a new pill pack. Continue taking one pill each day without delay! If you start a new pack late, be sure to use condoms for 7 days.
What to do if you don't get your period	It is fairly common to have shorter and/or lighter periods when taking the pill. If you think you might be pregnant, you can take a home pregnancy test. You have been given an extra home pregnancy test in your study supply bag just in case. If the pregnancy test result is positive, then contact the study immediately.
What to do if you vomit or have diarrhea after taking the pill	If you get sick within 4 hours of taking an active pink pill, once you have recovered, you can take a another pink pill from your spare pill pack as a replacement. If this recurs and you are getting sick routinely, then call the study to exit. If you can no longer tolerate taking the study pill, you must use condoms for every act of intercourse until you exit the study.
What to do if you miss 2 or more pink pills in a row	Your study booklet has detailed instructions on pages 9-11 for when to double up on pink pills for specific days during your cycle, Keep in mind if you are having sex and missing pink pills you are at increased risk of getting pregnant. You can take emergency contraceptive pills to reduce your risk of pregnancy. Call the study!
How to avoid missing pills	Make sure to label your pill pack with the days of the week at the top and you can also write-in the date you started the pill pack on the blister pack. This date should be the same as the date you enter in your diary for "Date of Day 1 of your Cycle". When you are punching out your pills each day, it may help to remove the circle backing from the pill pack, so it is more clearly visible that you have taken the pill. You may also want to set an alarm on your phone to help remind you to take the pill daily.

E4 PILL STUDY **OTHER STUDY INFORMATION**

If you missed 2 or more pills in row, you could become pregnant unless you take emergency contraception

If you missed consecutive (pink) pills and are having intercourse your risk of pregnancy is increased. We can help arrange for you to get emergency contraception. We can also reimburse you for the cost when you purchase emergency contraception over-the-counter. Call us at 800-300-5767 if you need help or have any questions about getting emergency contraceptive pills.

If you think you're pregnant

You should get your period when you are taking the white placebo pills. If you do not get your period or think you might be pregnant, call us at 800-300-5767. We will arrange for you to come in to the study clinic to get a pregnancy test.

If you do a home pregnancy test and the result is positive, please call us as soon as possible. It is very important for us to know about your pregnancy.

Leaving the study early

If you are unhappy with your study pills or do not want to continue your study participation for ANY reason, you can leave the study early. Contact us immediately at 800-300-5767 and we'll schedule you for an exit visit. You will still receive $100 on your ClinCard when you come in for the exit visit. We will not be upset or disappointed if you don't complete the study- we just want to know what's really happening.

IMPORTANT: Do not stop taking the study pills until you have another form of birth control to keep you from getting pregnant. Our study doctor can write you a prescription for the birth control method of your choice and the prescription can be phoned-in to your local pharmacy for you to pick up at your convenience.

Appendix C: T-Test Comparing Means Of Compliance In The Control Group Versus The Experimental Group

		Compliant Cycles	Non-Compliant Cycles	%Compliance	%Noncompliance
Total Control Cycles	168	149	19	0.89	0.11
Total Experimental Cycles	7	7	0	100	0

Appendix D: T-Test Comparing Means Of Compliance In The Control Group Versus The Experimental Group With Unequal Variances.

Two Sample T-Test With Unequal Variances

Variable	Sample Size	Mean	Standard Error	Standard Deviation
Participant Compliance Rate Control Group	32	**0.87**	**0.22**	**0.79**
Participant Compliance Rate Experimental Group	7	**1**	**0**	**1**

P-Value = 0.0.0023
Significance level = 0.05
$p < \alpha$

e

Appendix E: Survey Example for Participant Outreach Project

Please rate how strongly you agree or disagree with each statement.

Question	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
I felt knowledgeable about IUDs before the presentation.	□	□	□	□	□
The presentation increased my knowledge of IUDs.	□	□	□	□	□
I feel more confident about my knowledge of contraceptives.	□	□	□	□	□
I found this presentation helpful.	□	□	□	□	□
I am considering getting an IUD.	□	□	□	□	□