ABSTRACT

Title of Dissertation: A NATIONAL SURVEY EVALUATING FACTORS INFLUENCING AMERICANS' WILLINGNESS TO USE AND UPTAKE OF EMERGENCY CONTRACEPTIVE PILLS

Michelle Jasczynski, Doctor of Philosophy, 2022

Dissertation directed by: Dr. Elizabeth M. Aparicio, Assistant Professor
Department of Behavioral and Community Health

In the United States, a paradox exists around the issue of contraception; there are more highly effective contraceptive methods available than ever before, including emergency contraception, yet unintended pregnancies have increased in the last 2 decades. Currently, 1 in 2 pregnancies in the United States are unplanned. These disparities are not equitably distributed among women of reproductive age and people who can become pregnant; the burden disproportionately falls upon those with limited access to healthcare, people of color, gender and sexual minorities, those with lower socioeconomic status, and people living in the South. Recognizing the multiple factors driving decisions made about contraception, evaluation of the underutilization and other potential barriers to emergency contraceptive pills (ECP) can be in part

addressed by the completion of a national survey. Most of the existing survey data for the United States provide insight into the perceptions of pharmacists, health care providers in emergency rooms, and college-aged women. A survey capturing the needs and experiences of a wider range of Americans has not yet been developed—most notably the need for a survey that is inclusive of an expansive understanding of gender identity and sexual orientation to evaluate what, if any, differences exist in how members of these groups view and choose to use ECPs.

A web survey was completed in March 2022. Two groups of participants were recruited simultaneously: a group of cisgender, heterosexual women ($n$ = 351), and a group of cisgender sexual minority women and gender minorities assigned female at birth ($n$ = 408), for a total of 759 participants. Comparisons between cisgender heterosexual participants and cisgender sexual minority participants were completed using chi-squared tests and $t$ tests to determine if there were differences in willingness to use and uptake of ECPs by sexual orientation. Latent class analysis (LCA) was completed to identify subgroups among the respondents. The latent class model was then used to determine if membership in the three latent classes predicted willingness to use ECPs and the number of times ECPs were used. Differences between classes on these two outcomes of interest were compared using chi-squared tests.

Among each group, approximately 1 in 3 respondents had used ECPs at least once. Cisgender sexual minority participants had a higher willingness to use ECPs when compared to cisgender heterosexual participants ($F[2, 708] = 16.33$, $p < .001$). Cisgender sexual minority participants who used ECPs previously also were found to be less willing to reuse ECPs again when compared to their cisgender, heterosexual counterparts ($\chi 2\ [2] = 5.14$, $p = .023$), with the most common reason of not wanting to use ECPs again due to participants indicating they would desire to be pregnant. The LCA final model had three classes: high reproductive coercion/low

stigma (Class 1), low reproductive coercion/low stigma (Class 2), and low reproductive coercion/high stigma (Class 3). When regressed on the number of times ECPs were used, the three-class model was found to be statistically significant for the overall model ($\chi 2 = 28.95$, $p < .001$). Class 3 (low reproductive coercion, high stigma) was significantly different from Class 1 and Class 2 when comparing the mean number of times ECPs had been used, with members of Class 3 averaging using ECPs 1.56 times versus Class 1 and Class 2 both averaging .56 times use ($p < .001$).

The high levels in which sexual minority women were willing to use ECPs but were less likely to reuse them again should be explored more in depth to understand underlying factors in decision making around contraceptive uptake and pregnancy intentions. The desire to become pregnant is the most common reason given for why sexual minority women would not use ECPs, highlighting the need for healthcare providers to have regular conversations with their patients about sexual behavior, contraceptive use, and pregnancy intentions. Individuals experiencing higher levels of stigma toward their use of ECPs have a higher prevalence of use. Although the direction of this association is yet to be determined, further investigation of this phenomenon can inform practice and policy to understand the impact of stigma and promote reproductive justice.

# A NATIONAL SURVEY EVALUATING FACTORS INFLUENCING AMERICANS' WILLINGNESS TO USE AND UPTAKE OF EMERGENCY CONTRACEPTIVE PILLS

by

Michelle Laurin Jasczynski

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Advisory Committee:
Assistant Professor Elizabeth M. Aparicio, PhD, *Chair*
Associate Professor Quynh Nguyen PhD, *Dean's Representative*
Sandra Saperstein, PhD, *Committee Member*
Assistant Research Professor Kirsten Stoebenau, PhD, *Committee Member*
Associate Professor Marie Thoma, PhD, *Committee Member*

## Preface

This dissertation is the original, unpublished, independent work of the author, Michelle Laurin Jasczynski.

## Dedication

This dissertation was completed in the midst of some of the most consequential legal decisions regarding reproductive and sexual health and the right to privacy. I want to thank my participants for sharing their experiences, reflections, and concerns about reproductive justice in the United States. Your candor gave me a level of insight and understanding I would not have otherwise had. I will continue to work to ensure your voices are elevated in the forthcoming presentations and publications from this dissertation project.

To my advisor, Dr. Elizabeth Aparicio, thank you for your mentorship during this process and giving me the perfect amount of support, feedback, honesty, and empathy to grow throughout the last three and a half years together. Thank you to my committee members Dr. Marie Thoma, Dr. Kirsten Stoebenau, Dr. Sandra Saperstein, and Dr. Quynh Nguyen, for your time and invaluable feedback during this season of growth for me as a scholar and student. Thank you to Dr. Kerry Green for teaching Team Carapace how to use latent class analysis as a methodology, which inspired a manuscript for this project.

To my parents and brother, I love you all so much and am so glad we have shared this journey. Thank you for always supporting me, wanting to know more about my project, and your patience when I was deep in this process. I would have never thought this would be possible without your support, prayers, and belief in me.

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## Chapter 1: Background, Theory, and Significance

In the United States, a paradox exists around contraception and reproductive rights: there are more types of highly effective contraceptive methods available than ever before, including emergency contraception (EC), yet the rate of unintended pregnancies has remained stable amid a notable increase in policies restricting or limiting access to affordable contraception in the last 2 decades (Finer & Zolna, 2014; Guttmacher Institute, 2021, 2022b; Higgins, 2014; Hussain & Kavanaugh, 2021; Kavanaugh & Jerman, 2018). Currently, 1 in 2 pregnancies in the United States is unplanned, a percentage that has not shifted significantly in the last 25 years (Daniels & Abma, 2018, 2020; Finer & Zolna, 2014; Henshaw, 1998; Higgins, 2014). These disparities are not equitably distributed among Americans who could become pregnant; the burden disproportionately falls upon those with limited access to healthcare, people of color, gender and sexual minorities, those with lower socioeconomic status, and people living in the South (Z. D. Bailey et al., 2021; Crear-Perry et al., 2021; Prather et al., 2018; Smith, 2017a; E. Smith et al., 2020; Sweeney & Raley, 2014).

With consideration of reproductive rights and justice to access contraception, it is essential to consider the political influences on the social determinants of health that have yielded wide and sustained disparities in reproductive health outcomes in the United States (Atkins & Bradford, 2014; Beal & Illingworth Plake, 2020; Pace et al., 2019; Sweeney & Raley, 2014; Tschann & Soon, 2015). The perennial tension between state and federal governments regarding access to reproductive health services has dictated that place be centered in the discussion of contraceptive access, selection, and uptake (Atkins & Bradford, 2014; Beal & Illingworth Plake, 2020; Briggs, 2018; Pace et al., 2019; Tschann & Soon, 2015). Access to emergency contraception pills (ECPs) has been more strictly regulated at the state level than

other forms of contraception after the U.S. Food and Drug Administration (FDA) approved their distribution as prescriptions in 1998 (Prescott, 2011). Further state-level regulations followed the FDA's approval for ECPs to be sold over the counter in 2013; researchers subsequently raised concerns about such policies resulting in the under-utilization of ECPs, which in turn affects rates of unintended pregnancy (Bosworth et al., 2014; Devine, 2012; Federal Drug Administration, 2013).

Noting that ECPs are unique because they can be used reactively after unprotected sex as another option to prevent pregnancy, but also only work within a relatively short window of 72–120 hours, additional restrictions limiting access to ECPs can effectively derail the opportunity to exercise one's reproductive agency to choose to use ECPs (Croxatto & Fernández, 2006; Smith, 2017a). The impact of restrictions to affordable reproductive healthcare and contraception in the United States means as of 2020, 19 million women of reproductive age reside in "contraception deserts," counties where there is no reasonable access to low-cost providers offering a full range of contraceptive options (Barber et al., 2019). Because ECPs are used reactively, accessing this form of contraception when residing in a contraceptive desert or facing other barriers to reproductive health care is of the utmost importance in maintaining self-determination and agency around one's reproductive health.

Likewise, descriptive trend data are needed to serve as a foundation for addressing the myriad inequities among people seeking reproductive healthcare in the United States. Given these considerable barriers to high-quality reproductive healthcare, I explored current sentiment, knowledge, and beliefs about the accessibility of ECPs in the United States via a cross-sectional national survey.

## Statement of Problem

Reproductive justice for all Americans has not yet been achieved due to the wide range of legislation affecting access to reproductive healthcare at state and federal levels, which in turn affects health outcomes on a broad spectrum of intersecting identities (Charlton, Janiak, et al., 2019; Gubrium et al., 2016; Prather et al., 2018; Smith, 2017a). Similarly, the underutilization of ECPs due to issues with access and awareness about this option has likely contributed to the still-high rate of unintended pregnancy in the United States (Devine, 2012). Without significant policy changes to increase access, changes in these trends are unlikely to occur without a data-driven justification of the issue that illustrates both the disparities and attitudes of community members about ECPs.

A cross-sectional survey distributed online was the most feasible methodological option to broadly track these changes in sentiment or awareness. Surveys of healthcare providers, college students, and adolescents have evaluated knowledge and attitudes toward ECPs, but few have been completed after 2015 (Lawrence et al., 2010; Lehan Mackin et al., 2015; Mollen et al., 2012). Considerations also had to be made regarding who has traditionally been sampled in these studies. At present, surveys about knowledge, usage, and sentiment toward ECPs among the general public have often excluded both sexual and gender minorities who could become pregnant, individuals over the age of 25, and those who reside in more rural states (Chuang & Freund, 2005; Foster & Wynn, 2012; Garrett Wagner et al., 2018; Lehan Mackin et al., 2015; Marcell et al., 2012; Miller, 2011; Mollen et al., 2013; Yen et al., 2015).

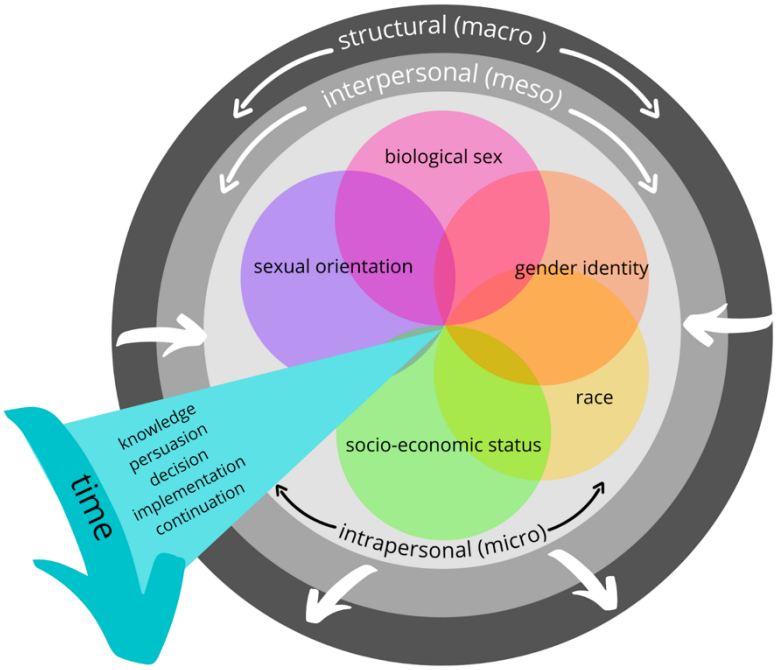
## Theoretical and Conceptual Framework: Health Stigma and Discrimination Framework

Survey development focused on participants' knowledge, attitudes, and willingness to use ECPs and who or what had influenced their viewpoints and understanding of ECPs. Although

well-known health behavior models, most notably the transtheoretical model (TTM), have often been used to inform surveys about contraceptives, TTM has noted deficits. TTM is not inclusive of the social setting in which the respondents make their health decisions (Baral et al., 2013; Hussein & Ferguson, 2019; Logie et al., 2021; Turan et al., 2019). To address this limitation, I used the health stigma and discrimination framework (HSDF) to guide survey development and remain intentional in selecting questions and scales that would be more descriptive of the fuller context in which respondents' decisions and attitudes were formed. I recognized although individuals are the drivers of their decisions, these decisions are informed by their contexts and unequally distributed barriers to reproductive healthcare (Hussein & Ferguson, 2019; Logie et al., 2021, 2012; Turan et al., 2019). The HSDF, which focuses on stigma as a broader social force and was initially designed to address HIV stigma, also acknowledges that stigma and attitudes shift over time (Flanders et al., 2017; Logie et al., 2018; Rice et al., 2012; Turan et al., 2019). HSDF also assists in capturing societal attitudes and how individuals react to those attitudes as well, reflecting a broader opportunity to measure the intersectional impacts of different types of discrimination using the HSDF. This model is inclusive of issues related to social support and the impacts of discrimination due to gender, racial, and sexual orientation, among others, to be better able to pinpoint locations for intervention to address health inequities (Hussein & Ferguson, 2019; Logie et al., 2021, 2012; Turan et al., 2019). Figure 1 shows how aspects of one's identity, community, and the broader socio-ecological context influence each other and can create protective or risk factors for health outcomes.

**Figure 1**

*Socioecological Model and Impacts of Identity on Health*




*Note*. Figure adapted from "Eliminating Stigma and Discrimination in Sexual and Reproductive Health Care: A Public Health Imperative," by J. Hussein & L. Ferguson (2019), *Sexual and Reproductive Health Matters*, *27*(3), 1–5 (https://doi.org/10.1080/26410397.2019.1697103)

## Study Purpose

Understanding the disparities in access, knowledge, stigma, or other factors influencing the underutilization of ECPs are essential to resolving broader reproductive health inequities in the United States. This research project was created to address the impact of social norms and attitudes toward contraception through conducting and analyzing data from a national survey on attitudes and knowledge about ECPs. The majority of surveys assessing knowledge and attitudes about ECPs have limited their samples to certain medical professions (i.e., pharmacists) or

heterosexual, cisgender women (Batur et al., 2016; Davidson et al., 2010; Lehan Mackin et al., 2015; Mollen et al., 2012). There has also been a notable slowdown in studies about knowledge and attitudes among the general public toward ECPs after 2015 when one type of ECP became available over the counter and age restrictions on purchase lifted (Devine, 2012; Lehan Mackin et al., 2015).

**Research Questions and Aims**

The primary research question guiding my study was: What are current attitudes, knowledge, and acceptance of emergency contraceptive pills in the United States when an inclusive national sample is surveyed? This question was asked with the aim of providing more nuance in the understanding of the "who" and "why" behind the uptake of ECPs. This aim was accomplished by looking at the association between ECP use and respondents' gender identities, sexual orientations, experiences with stigma in healthcare settings, experiences with reproductive coercion, their knowledge and beliefs about ECPs, their beliefs about their own sexual empowerment, their current pregnancy desires, and community-level stigma toward abortion in their community. Using a national survey to answer this overarching question, two subquestions were developed: (a) What differences, if any, exist between sexual and gender minority users versus their cisgender, heterosexual peers? and (b) What latent factors impact willingness and the uptake of emergency contraceptive pills?

**Rationale for the Study and Methodology**

EC's role in the landscape of contraceptive technologies is unique; unlike other forms of birth control, ECPs are used reactively after unprotected intercourse or other contraceptive failures and provide an additional opportunity for the user to make a self-managed decision about their reproductive health. ECPs have also been politicized in ways other forms of contraception

have not. The two types of ECPs available in the United States and their mechanisms of action to prevent pregnancy have been misunderstood and at times misrepresented (Bryant & Levi, 2012; Chuang & Freund, 2005; Marcos, 2021; Pruitt & Mullen, 2005; Richman et al., 2012; Tolani & Yen, 2009; Yen et al., 2015). Despite being FDA approved since 1998, bills have been presented on the House floor that present misinformation about ECPs, even as recently as June 2021 (Daniels et al., 2013; Marcos, 2021; Prescott, 2011).

An analysis of the 2017–2019 National Survey for Family Growth contraceptive usage of women between ages 15–49 found that ECP is used by approximately 95,000 women monthly (Daniels & Abma, 2020; Guttmacher Institute, 2021). Since its FDA approval in 1998, there have been steady increases in the usage of ECPs (Daniels et al., 2013; Daniels & Martinez, 2021). In 2002, the Center for Disease Control and Prevention's (CDC) National Survey of Family Growth reported that 4.2% of women surveyed had used ECPs (Daniels et al., 2013; Haeger et al., 2018). In 2010, the same biannual survey found the percentage of women who reported ever using ECPs had more than doubled to 11%, or 5.8 million women (Daniels et al., 2013; Haeger et al., 2018). By 2019, the percentage of women between the ages 22–49 who reported having used ECPs at least once rose to 24.3% (Daniels & Martinez, 2021; Hussain & Kavanaugh, 2021).

In further investigation of contemporary attitudes and knowledge toward ECPs, I conducted a nationwide online survey to examine understanding and willingness to use ECPs, which applies a broader scope that includes a more expansive understanding of sexual health care needs and sexuality, sex, and gender identity.

**Significance to Public Health**

This project has several critical implications for the three domains of public health. Using two descriptive studies guided by theories driven to understand how social norms and attitudes become accepted across a society and understanding the impact of stigma in creating health inequities, public health research benefits from the development of new inclusive measures and an understanding of data sentiment trends. The data found during the first inclusive survey about ECPs in the United States also provided key, contemporary descriptions of where the United States currently stands regarding ECPs. Public health practice, in turn, can be improved after the completion of this project as these findings pinpoint key populations, regions, or other demographic characteristics that may need further health education outreach and access to ECPs.

The descriptive findings of this dissertation can also be used to improve public health policies by serving as the evidence base for new approaches to reduce barriers to ECPs through policies supporting improved access (i.e., pharmacists permitted to dispense ulipristal acetate without a prescription authorization), introducing new requirements for healthcare professionals' education on ECPs, and requiring all medical professionals to provide medically accurate information on ECPs when providing sexual and reproductive health counseling. Documenting shifts in knowledge, willingness to use and uptake ECPs, and perceptions of stigma among other factors in the United States also demonstrates how Americans support reproductive healthcare service access and reproductive justice broadly. In sum, more accurate and up-to-date information on the current state of how Americans perceive and access ECPs serves as an essential foundation for a future in which reproductive health equity is a reality in the United States. Table 1 shows a brief list of common terms used in ECP research.

**Table 1**

*Abbreviations and Key Terms*

| Contraception term | Definition |
|---|---|
| Contraception uptake | Decision to obtain and use a type of contraception |
| Levonorgestrel (LNG-EC) | Emergency contraceptive pill that prevents pregnancy if taken within 72 hours of unprotected sex; sold under the brand name Plan B in the United States |
| Morning after pill | Term used in media after the introduction of ECPs in the 1990s to describe when ECPs are taken, but not inclusive of the entire window in which ECPs are effective |
| Ulipristal acetate (UPA-EC) | Emergency contraceptive pill that prevents pregnancy if taken within 120 hours of unprotected sex |

## Chapter 2: Literature Review

My study sought to understand both historical and current attitudes, knowledge, and intentions of using emergency contraceptive pills (ECPs) in the United States. The first section presents an overview summary of ECPs and the scope of this study. The second section presents an historical overview of how ECPs were developed, the advocacy work done to make ECPs accessible, how the U.S. Food and Drug Administration (FDA) has regulated ECPs, current issues surrounding ECP access varying by state, and misinformation about ECPs. The third section provides an overview of the mechanisms of action for the two types of ECPs and their effectiveness in preventing pregnancy, along with several key considerations about how the mechanisms can be limited by the time frame in which they are taken, users' weight and healthcare provider weight bias, considerations of usage among LGBTQ+ users, and notable side effects. In the fourth section, historic religious, philosophical, and cultural concerns about ECPs are described. This chapter concludes with an overview of the variations in knowledge and attitudes toward ECPs among healthcare providers and the general public in the United States and predictors of ECP use over time.

### Introduction to ECPs and Scope of Proposal

ECPs are a form of contraception that can prevent an unintended pregnancy from occurring after unprotected intercourse or the failure of another type of contraception up to several days after unprotected sex. ECPs are also the only form of contraception that can prevent unintended pregnancy after a sexual assault. These forms of contraception have been also called "post-coital contraception" and "morning-after pill." (Prescott, 2011). ECPs developed specifically to be used in emergencies and are not to be used as a regular form of birth control. Two types of ECPs are available in the United States, each using a different hormone to delay or

prevent ovulation. ECPs also will not work if the user is already pregnant (e.g., cause an abortion) and they do not have negative effects on fetal development if taken when already pregnant (Gemzell-Danielsson, 2010; Kim & Bridgeman, 2011; Peck et al., 2013).

The scope of this dissertation focused solely on the two single-dose pill options that were available in the United States at the time of the study. The American Academy of Obstetricians and Gynecologists (ACOG) recommended an option of using several pills from combination estrogen-progesterone-type oral contraceptives before the single pill options were available (Ellertson, 2003). This method, known as the Yuzpe method and its usage as emergency contraception (EC), has been poorly documented due to it being a derivative usage of oral contraceptives; as such, the Yuzpe method has not often been included on national surveys about contraception usage (Ellertson, 2003).

Another form of EC is the placement of a copper intra-uterine device (IUD) within 5 days of unprotected sex (Cleland et al., 2014; Ellertson, 2003; Harper et al., 2005). The copper IUD is used as a long-acting reversible contraceptive and discerning for what reasons one may have a copper IUD placed as an emergency contraceptive would be difficult in the methodologies I have selected. There also appears to be a provider preference for using ECPs over copper IUDs for EC, patient concerns over the high cost of copper IUDs, and overall limited research on trends in usage of copper IUDs as EC (Batur et al., 2016; Harper et al., 2012; Turok et al., 2011, 2016).

**Historical Overview of ECP Development and Status in the United States**

Although ECPs have only become widely accessible in the last decade, the development of this type of contraception, along with others, has been in process for over 100 years (Prescott, 2011). In following sections, I provide a comprehensive, decade-by-decade summary

highlighting key research developments, policy issues, social movements, and regulations associated with ECPs becoming available in the United States.

***1920–1930***

As more medical research was completed to understand the menstrual cycle and conception, researchers at University College, London established that the hormones estrogen and progesterone prompt all three stages of the cycle. The researchers also found that usage of a large dose of synthetic estrogen in mice studies appeared to destroy the egg cell and disrupt pregnancy outright (Prescott, 2011). In the United States, Margaret Sanger reopened her birth control clinic after courts in New York found the suspension of her center to violate constitutional rights to privacy (Prescott, 2011).

***1931–1940***

Researchers Dr. Gregory Pincus and Dr. H.O. Burdick replicated the University College experiments and found similar results (Prescott, 2011). Further research completed by Pincus and Burdick found in mice and rabbits, a high dose of synthetic estrogen can both disrupt and prevent pregnancy if given within a few days after copulation (Prescott, 2011). More types of synthetic estrogen were developed and tested in animal studies to again establish their impacts on menstruation, conception, and pregnancy (Prescott, 2011).

***1941–1950***

Dr. Pincus and colleagues founded the Worcester Foundation for Experimental Biology (WFEB) in Massachusetts to further explore fertility and fecundity in both animals and humans (Prescott, 2011). Dr. Pincus hired Dr. Min Chueh Chang and Dr. John Rock as lead researchers for studies in human fertility (Prescott, 2011).

***1951–1960***

Margaret Sanger met with WFEB with the intention of supporting the development of an effective, user-controlled birth control, but could not directly fund the research nor development of a drug or device to do so (Prescott, 2011; Ross, 2017). Sanger's friend, heiress Katherine Dexter McCormick—who was interested in investing in pharmaceutical research—provided a 1-million dollar donation to develop Sanger's idea by creating a partnership between WFEB and the pharmaceutical company, Searle (Prescott, 2011).

Due to the controversial nature of developing contraceptives, the initial development of what could become the first oral contraceptive pill was part of a larger group of studies focused on infertility (Prescott, 2011). Likewise, because birth control was illegal in Massachusetts when Searle received FDA approval for an effectiveness trial in Haiti and Puerto Rico instead (Prescott, 2011). These studies were conducted with egregious disregard for the women who participated in the study, their rights to informed consent, and basic research ethics, serving a stark reminder of the significant influence of eugenics and "population control" in this era of research (Liao & Dollin, 2012; Prescott, 2011; Ross, 2017). The FDA, however, reviewed the results of these trials favorably and approved the first oral contraceptive pill, Enovid, in May 1960 for sale in the United States (Prescott, 2011). Enovid was an immediate, immense success, with millions of prescriptions filled in the 5 years after its approval (Prescott, 2011).

***1961–1970***

Although demand for Enovid remained high, federal legislation enacted in the 1950s prevented prescription drugs from being sold to individuals without a prescription; this regulation in turn meant Enovid was only available to women with prescriptions, the majority of whom were married (Prescott, 2011). It was common for single women to be outright denied

prescriptions by physicians (Prescott, 2011). Likewise, as use of Enovid remained high, concerns about side effects and FDA requirements for disclosure of side effects or contraindications became part of larger public discourse (Prescott, 2011). As concerns about the negative health effects of high levels of estrogen in Enovid became more prevalent, WFEB's Dr. Chang and Dr. Pincus began investigating alternative hormones to use in oral contraceptives and revived their earlier studies to develop other contraceptive drugs that could be used after intercourse (Prescott, 2011). Their research revival was brief, as Dr. Pincus died in 1967 and Dr. Chang refocused on developing techniques for in vitro fertilization; Dr. Rock refused to participate in this research due to his beliefs that a post-coital contraceptive would effectively be an abortifacient (Prescott, 2011). Dr. John McLean Morris and Dr. Gertrude van Wagenen, research physicians at Yale, noted WFEB's prior findings and began to develop a post-coital drug; however, they had the expectation that the developed drug could not harm any existing pregnancy (Prescott, 2011).

Due to regulations on pharmaceutical research, the Yale team looked to repurpose other FDA-approved drugs containing progesterone and estrogen to determine if any could be used as post-coital contraception (Prescott, 2011). This research found that drugs containing diethylstilbestrol (DES) appeared to be effective also as a post-coital contraceptive (Prescott, 2011). DES was most commonly used in drugs during this era to reduce miscarriage risk during pregnancy (Prescott, 2011). Few members of the general public were made aware of this off-label application of DES, but the Yale research team began pursuing options to do a proper effectiveness trial of DES specifically as a post-coital contraceptive (Prescott, 2011). The 1968 publication of *Humanae Vitae* reaffirmed the Roman Catholic Church's opposition to the majority of forms of birth control and prompted worldwide discussion about moral and ethical concerns with using contraceptives (Prescott, 2011). Changes also occurred at Yale's student

health center, where contraceptives—including the off-label use of DES—were available to Yale's first class of female students in 1969 without the barriers of needing to be married to get a prescription (Prescott, 2011). As news about Yale's approach to contraceptive access garnered national attention, a larger movement emerged across U.S. colleges and universities to promote and share information about birth control (Prescott, 2011).

***1971–1980***

Further research into the use of DES as a post-coital contraceptive was conducted at the University of Michigan and the results, which indicated high levels of effectiveness and safety along with minimal side effects, were published by university physician Dr. Lucile Kirtland Kuchera in Fall 1971 (Prescott, 2011). In Boston, research into rare gynecological cancers was published a few weeks later, which found an association between mothers who took DES during pregnancy and their daughters developing vaginal cancer (Prescott, 2011). The differences in findings between the two studies prompted a wave of feminist-led health activism in which the sex disparities in healthcare and research were brought directly to the FDA and prompted a series of congressional hearings (Prescott, 2011). Further debate continued as more research into the carcinogenic risks of using DES was published and more women came forward about both the lack of warnings from their physicians about potential increased cancer risk and the sexist behaviors and beliefs of many physicians regarding women's health (Prescott, 2011).

The FDA, which had not formally authorized DES use as a post-coital contraceptive, issued a recommendation amid this 1973 controversy to use DES only in emergency events to prevent pregnancy. This recommendation in turn spurred more debate and increased demands for ethical, comprehensive research into women's health (Prescott, 2011). At the same time, physicians and researchers weighed in on the risks and benefits of using DES in rare, emergency-

only circumstances and concluded with additional warnings about cancer risk and limiting the dosage, DES could be used safely (Prescott, 2011). However, medical providers began losing liability insurance if they used DES, prompting many to begin seeking alternatives to DES for EC (Prescott, 2011). Two potential solutions emerged; first, as a researcher in Canada, Dr. Albert Yuzpe, found a combined dose of estrogen and progesterone oral contraceptive pills prevented pregnancy along with DES and appeared to have fewer side effects (Ellertson, 1996; Prescott, 2011). Second, the initial iteration of the copper IUD, which also could prevent pregnancy if inserted within 5 days of unprotected intercourse, also debuted and was similarly found to be as effective as DES, with fewer side effects (Ellertson, 1996; Prescott, 2011). Despite these options being far safer than DES, the risks and reputation of DES seemed to cloud the perception of any contraceptive labeled as "for use after unprotected sex" (Ellertson, 1996; Prescott, 2011). Likewise, because the Yuzpe method was again an off-label use of an oral contraceptive pill, the FDA refused to formally approve it due to concerns that it again be confused with DES or that patients would not be able to understand there were two ways to use oral contraceptives (Ellertson, 1996; Prescott, 2011).

Simultaneously, the debate over abortion access in the United States reached new heights after the Supreme Court ruled on *Roe v. Wade* in January 1973, permitting access to abortion due to the 14th Amendment's provision of the right to privacy (Prescott, 2011). Immediately after the ruling, several new anti-choice groups formed with the intention of overturning the decision and implementing state-level restrictions on abortion. Some groups also expanded the scope of their work to include looking for ways to restrict access to reproductive healthcare, including contraception, by advocating for limits on state or federal funds for these services (Prescott, 2011). Many of these groups also echoed the sentiments expressed in *Humanae Vitae* and

advocated for the idea that life begins at conception (Prescott, 2011). In response to the ruling, many of the feminist health organizations that previously focused on improving FDA regulations and research into women's health reset their focus on protecting access to abortion (Prescott, 2011).

### *1981–1990*

Ronald Reagan was inaugurated as U.S. president in January 1981 and began implementing a series of federal regulations that limited access and federal funding for abortion and reproductive health services; at the same time, the Supreme Court issued several rulings that eroded abortion access for adolescents and people in poverty and allowed states to have their own laws that would delay or reduce access to abortion (Prescott, 2011). The conservative social climate in the United States also prompted the formation of several new coalitions focused on equity and access for women of color and women in poverty (Prescott, 2011). Issues that had been raised in earlier waves of feminism in the United States regarding the centering of the experiences of white, middle- and upper-class, heterosexual women in activism were also criticized as these new policies disproportionately targeted women of color (Prescott, 2011). Concerningly, at times, some feminist health organizations such as the National Abortion Rights Action League (NARAL) used conservative economic arguments to advocate for access to abortion and contraception as a solution to a distinctly racialized idea of poverty (Hays, 2003; Prescott, 2011; Ross, 2017). This opposition to any alignment with a political viewpoint that regularly used the myth of the "welfare queen" who commits welfare fraud through schemes and having numerous children, a stereotype rife with misogynoir, to argue for cuts to social support programs, would later lay the foundations to the broader reproductive justice movement in the 1990s (Hays, 2003; Luna, 2020; Prescott, 2011; Ross, 2017).

The political climate in the United States also had a considerable chilling effect on research or development into new contraceptive technologies (Prescott, 2011). Fearing harassment or lawsuits from anti-abortion activists who also opposed contraception, many pharmaceutical companies relocated their contraceptive research and development projects to Europe (Prescott, 2011). By the end of the decade, a new abortifacient drug, mifepristone, was in trials in France and soon became another flashpoint in the abortion divide (Prescott, 2011). Advocacy for a boycott of the manufacturer, Roussel Uclaf, began almost immediately after it was discussed in U.S. media (Prescott, 2011). The hopes of this drug being a pathway out of the legal labyrinth regulating abortion in the United States diminished once the company announced it was halting worldwide distribution due to the threats (Prescott, 2011). Although the French government required distribution to resume, it was clear the influence power held by anti-choice activists in the United States was immense (Prescott, 2011).

***1991–2000***

Following the restrictions and stagnation of contraceptive technology development of the 1990s, a new caucus of feminist health organizations and leaders formed with a more inclusive focus on women of color and the need for open debate of the risks and benefits of contraceptive technologies (Prescott, 2011). This movement prompted Congress to investigate health inequities faced by women and the underfunding of research specific to women's health (Prescott, 2011). Findings reflective of the lack of systemic support for research for women's health issues prompted the creation of National Institutes of Health's (NIH's) Office of Research on Women's Health in 1990.

There was also a new wave of interest in post-coital contraception after ABC nationally broadcast a report in 1994 on the "morning-after pill" that introduced many Americans to this

contraceptive option, and explained issues with the FDA approval process for off-label uses of oral contraceptives (Prescott, 2011). A task force also formed to promote the Yuzpe method and prompted the shift to the term EC over post-coital contraception or "morning-after pill" to more accurately reflect the time frame in which ECPs could be used (Prescott, 2011). The task force worked diligently to reach policymakers, medical professionals, and the general public through a variety of outreach activities, including having instructions on how to use the Yuzpe method published in magazines and newspapers nationwide (Prescott, 2011). This campaign was followed by the publication of a book on the method called *Emergency Contraception: The Nation's Best Kept Secret*; this text provided detailed information on how to use different types of oral contraceptive pills as ECPs and a directory of healthcare providers in tandem with the launch of a website and a hotline to connect people to local providers and directions on how to use the Yuzpe method (Prescott, 2011).

Healthcare providers and ECP researchers also began advocating for oral contraceptive pills to become available over the counter and without a prescription to reduce unwanted pregnancies and make the Yuzpe method of EC far more accessible (Prescott, 2011). This movement for over-the-counter oral contraceptives prompted the FDA to schedule a hearing on the issue, but other leaders in women's healthcare had deep concerns about the potential health, financial, and access issues that could arise from over-the-counter oral contraceptives, so the meeting was dropped (Prescott, 2011). In 1997, ECPs and their role in the care for sexual assault survivors was the central plotline of an episode of *ER*, bringing another wave of interest into this contraceptive technology after the task force pursued another campaign for more awareness of this option. Despite this effort, long-term impacts on knowledge and awareness of ECPs of *ER* viewers was found to be very limited (Prescott, 2011). Research by the Kaiser Family

Foundation also found that ECPs were frequently excluded in healthcare providers' contraceptive counseling sessions with patients, in turn prompting another outreach campaign (Prescott, 2011). By 1998, the FDA had approved its first standalone ECP, Preven, which was sold as a prescription-only kit containing instructions, four progesterone-estrogen combination pills per the Yuzpe method, and a pregnancy test (Prescott, 2011). The following year, another prescription-only ECP, Plan B or levonorgestrel-EC, was launched to the U.S. market and was marketed toward college health centers and Title X clinics (Prescott, 2011). By 1999, with two options for ECP available in the United States, a push by reproductive healthcare advocates began to make ECPs available over the counter, as there was no longer the FDA-deemed "confusion" of the Yuzpe method using oral contraceptive pills (Prescott, 2011). Concerns were also raised over the fact that both national chains and local pharmacies were not consistently stocking ECPs, and some declined to stock them at all due to religious or moral objections or concern over boycotts (Prescott, 2011). The FDA again responded to these concerns by holding a series of hearings in which experts would testify on the benefits and risks of over-the-counter ECPs (Prescott, 2011). The pharmaceutical companies manufacturing ECPs had some reservations, as new over-the-counter drugs can be difficult to sell to retailers to stock if there is no evidence of high enough consumer demand (Prescott, 2011).

***2001–2011***

Between 2001–2003, the FDA engaged with advocates for over-the-counter status in a series of meetings and petitions in which Teva, the manufacturer of Plan B, requested that the committee host another Congressional hearing with experts to assess the risks and benefits of reducing barriers to ECPs (Prescott, 2011). After the 2003 hearing, over-the-counter sales of ECPs were recommended by the joint commission to the FDA director of the Center for Drug

Evaluation and Research; however, the director declined to authorize over-the-counter sales (Prescott, 2011). Such refusal was responded to with another petition for consideration, which was then turned into a lawsuit against the FDA after it was not ruled on; moreover, over-the-counter advocates believed the ECP application was being held to a higher standard than other drugs due to political motivations (Prescott, 2011). This lawsuit, along with actions in Congress taken by Senator Hillary Rodham Clinton (D-NY) and Senator Patty Murray (D-WA), prompted a deeper investigation into the processes employed by the FDA when reviewing applications (Prescott, 2011). The investigation uncovered inconsistencies and unusual processes with ECP application and prompted the resignation of several Bush-appointed FDA directors; a review by the Government Accountability Office (GAO) also affirmed that the decisions made by the FDA about the ECP application were highly unusual when compared to other over-the-counter applications in the last decade; this was the sole instance in which the director of Center for Drug Evaluation and Research had not followed the joint advisory committee's recommendations (Prescott, 2011).

Following these controversies, in August 2006, the FDA finally approved over-the-counter sales of Plan B (LNG-EC) for adults 18 years or older; they also deemed there was insufficient evidence to allow for the over-the-counter sale of ECPs to those 17 and under and had stringent requirements for how pharmacies were allowed to dispense it (Prescott, 2011). At the national level, considerable backlash ensued against another ruling and implementation of rules that felt arbitrary and solely focused on restricting access to ECPs rather than user safety (Prescott, 2011). These barriers to LNG-EC were also bolstered by state laws that permitted pharmacists to decline selling contraceptives or any other drug for personal reasons. An example of this legislative challenge that received national attention occurred in Rome, Georgia, when Dr.

Carrie Baker, a married mother of two, was refused service by a local Kroger pharmacy when she requested LNG-EC due to the personal objections of the pharmacist (Associated Press, 2007a). Kroger responded to the claim by stating the pharmacists working in their stores must "make accommodations to have the prescription filled for our customer" (Associated Press, 2007a, para. 1) at that pharmacy, but there was little done at the state level to address pharmacists declining to sell contraceptives. Pharmacists in Georgia still retain the right as of October 2022 (Associated Press, 2007b; Guttmacher Institute, 2022b).

Again, another wave of complaints, petitions, and lawsuits against the FDA were brought forward to remove barriers to ECPs for those under the age of 17, but federal decisions remained in limbo until the conclusion of the Bush administration in 2008 and the initiation of the series of bills that would become the Affordable Care Act (ACA) in 2009 (Reuters, 2013). In the Eastern District of New York, Judge Edward Korman ruled that the FDA's actions at this stage had been in bad faith, ordered the age restriction be lowered to 17, and called for the removal of the age restriction outright to be reviewed again (Reuters, 2013). In 2010, a new ECP, ellaOne (UPA-EC) received FDA approval for prescription-only sales in the United States (Prescott, 2011).

***2011–2021***

With a new administration, the manufacturers of Plan B (i.e., Teva) again reapplied to the FDA for consideration of removing all age restrictions for over-the-counter sales (Prescott, 2011). The application was rejected in December 2011 with conflicting statements given by the Director of Health and Human Services, Dr. Kathleen Sebelius, who did not support the removal of age restrictions, and another from the FDA Commissioner, Dr. Margaret Hamburg, who did support the removal of age restrictions (Reuters, 2013). A new lawsuit was filed in the Eastern District of New York by Teva against the FDA and Dr. Sebelius (Reuters, 2013). This lawsuit

was reviewed by Judge Korman and he again reiterated the lack of evidence for the age restrictions and ruled the FDA should eliminate it (Reuters, 2013). The FDA abided by Judge Korman's ruling and Plan B became available without age restrictions in June 2013; with the end of this legal battle began another series of lawsuits regarding the inclusion of a contraceptive coverage mandate in the ACA (Reddy et al., 2020; Rovner, 2013a).

Still, 14 states restrict access to ECPs through policies and do not provide coverage for ECPs in state planning programs nor contraceptive coverage mandates, and there are laws allowing both individual pharmacists or the pharmacy at-large to refuse to dispense ECPs (Guttmacher Institute, 2022b). With multiple lawsuits enacted and pending laws reducing abortion access in the United States, there has also been a return to messaging that conflates ECPs with mifepristone (Fallert, 2021). In an open House session in June 2021, Representative Marjorie Taylor Greene (R-GA) of Rome, Georgia, repeated misinformation that ECPs' mechanism of action is the same as mifepristone in opposition to a new bill that would better provider contraceptive coverage to veterans (Marcos, 2021). In Texas, where restrictions to abortion have become the most severe, there have been active campaigns as well to make sure residents know ECPs are still legal and are not the same as an abortion (Fallert, 2021; Mcgee, 2021). As of September 2021, the Department of Health and Human Services has intervened to provide extra funding for ECP access in Texas (Mcgee, 2021). After the ruling in *Dobbs v. Jackson Women's Health Organization* overturned *Roe v. Wade*, focus has returned to legal protections to contraception access and the role of ECPs in states where abortion access has been eliminated or heavily restricted (Cleland et al., 2022; Kulczycki, 2022).

Noting there have been several key decisions affecting ECP access in the last 15 years, Table 2 highlights national and state-level decisions affecting access or demand to ECPs.

**Table 2**

*Event Timeline for Emergency Contraception Access in the United States, 2006–2022*

| Year | Major policy events affecting emergency contraception access or demand |
|---|---|
| 2006 | August – FDA approves over-the-counter sales of Plan B (LNG-EC) for anyone 18 or older with age verification. FDA requires it to be stored behind the pharmacy counter and be requested by the purchaser. The decision comes after 2 years of internal debate and investigation. A prescription is required for anyone under the age of 18. |
| 2009 | June – The FDA approves prescription-only generic Plan B (LNG-EC)<br>July – Plan B (LNG-EC) single-dose pills are approved by the FDA.<br>August – FDA expands LNG-EC over-the-counter status to those 17 or older with age verification. Those under the age of 17 must have a prescription |
| 2010 | March – The Patient Protection and American Affordable Healthcare Act (ACA) is signed into law by President Obama. The passage requires insurance plans to begin covering all contraception by 2012.<br>August – Ella (UPA-EC) receives FDA approval for prescription-only sales |
| 2011 | February – Teva, the company making Plan B, applies to the FDA for approval of over-the-counter sales without age restrictions.<br>December – FDA approves the application, but the Secretary of the Department of Health and Human Services, Kathleen Sebelius issues an unprecedented overrule of the FDA's decision. LNG-EC remains unable to be sold without age restrictions. |
| 2012 | February – A federal judge rules that FDA must demonstrate cause for reinstating the age restrictions.<br>March – Teva applies for FDA approval for over-the-counter sales for those 15 years or older and to remove the requirement that it be stored behind the pharmacy counter.<br>August – The contraceptive mandate, requiring all new health insurance plans to provide contraceptive coverage, goes into effect. In response, Arkansas and North Carolina pass laws allowing the exclusion of emergency contraception from the contraceptive mandate |
| 2013 | February – The FDA permits generic LNG-EC to also be sold over-the-counter to those 17 years old or older.<br>April – A federal judge also mandates that the FDA has 30 days to reverse Sebelius' decision and allow for over-the-counter sales of LNG-EC with no age restrictions. The FDA approves Teva's application for sales to those 15 years or older. FDA also requests for Teva to reapply with no age or sales restriction requirements.<br>June – FDA finally approves Plan B sales over-the-counter with no age restrictions. |
| 2014 | February – FDA removes the prescription requirement for sales of generic LNG-EC and that it be stored behind the counter, but maintains that generics can only be sold to users 17 or older.<br>June – The Supreme Court strikes part of the contraceptive mandate by permitting some religious exemptions of the contraceptive mandate among for-profit corporations in a ruling in *Burwell v. Hobby Lobby Stores.* |
| 2017 | October – The Trump administration permits exemptions to the contraceptive mandate if an organization states they have a moral or ethical objection to paying for contraception coverage in group health insurance plans. |
| 2020 | July – The Supreme Court upholds the Trump administration's contraceptive mandate exemptions |
| 2021 | May – Texas passes laws only permitting abortions within the first 6 weeks of gestation. Texas is also the only state that does not provide coverage for ECPs in their state-funded family planning programs. |

| Year | Major policy events affecting emergency contraception access or demand |
|---|---|
| | September – Arkansas and Mississippi pass laws similar to those in Texas significantly reducing access to abortion. |
| 2022 | May – Leak of Supreme Court opinion from Justice Samuel Alito indicates ruling in *Dobbs v. Whole Women's Health* will overturn *Roe V. Wade*. |
| | June – *Roe v. Wade* is overturned due to the ruling on *Dobbs*, immediately prompting a wave of abortion restrictions or full bans |
| | October – Lower court rulings have placed stays on some proposed bans or restrictions, however, 23 states have implemented or increased restrictions to abortion access since June |

## Mechanisms of Action for ECPs

There are presently two types of FDA-approved ECPs available in the United States. One type uses levonorgestrel, which is sold under the brand name Plan B, and one type that uses ulipristal acetate, sold under the brand name Ella (Gemzell-Danielsson, 2010; Kim & Bridgeman, 2011). An estrogen-progestin ECP sold under the brand name Preven was available in the United States from 1998 until 2004 (Creinin et al., 2006; Relias Media, 2004).

### *Fertility and Window for Pregnancy*

The time frame in which an individual is at high risk of pregnancy is limited to the 5 days before and day of ovulation due to sperm's ability to live for up to 6 days in the reproductive tract (Gemzell-Danielsson, 2010). Due to the fragility of the oocyte cell, fertilization must occur within 24 hours of ovulation or else the cell will not be able to successfully form an embryo (Gemzell-Danielsson, 2010).

### *Levonorgestrel Mechanism of Action and Effectiveness*

The LNG-EC pill is a single 1.5-mg dose of the synthetic progestogen levonorgestrel (Gemzell-Danielsson, 2010). LNG-EC has been found to work by affecting follicular development and subsequently ovulation, but only before the surge of pre-ovulatory luteinizing hormone (Gemzell-Danielsson, 2010). LNG-EC can also prompt a physical barrier between sperm and passage through the cervix by increasing the thickness of cervical mucus (Gemzell-

Danielsson, 2010; Kim & Bridgeman, 2011). LNG-EC has no effect on human sperm cell function nor the function or release of an oocyte by the ovaries or their passage down the fallopian tubes (Gemzell-Danielsson, 2010). LNG-EC also cannot prevent fertilization or reverse the implantation of a blastocyst into the uterine wall or disrupt an existent pregnancy (Gemzell-Danielsson, 2010).

The FDA has approved LNG-EC for use within 72 hours of unprotected vaginal intercourse or contraceptive failure (Gemzell-Danielsson, 2010). When taken within the 72-hour window, LNG-EC decreases the chances of pregnancy by 57–93%, with greater effectiveness the sooner it is taken (Gemzell-Danielsson, 2010).

### *Side Effects and Contraindications of LNG-EC*

Commonly experienced side effects that resolve within approximately 1 day among LNG-EC users include: dizziness, headaches, breast pain or tenderness, nausea, vomiting, and abdominal cramping or pain (Haeger et al., 2018). There also can be some effects on the length of the menstrual period, with users who took LNG-EC before ovulating having a shorter cycle and those who took it post-ovulation experiencing a longer cycle (Haeger et al., 2018).

LNG-EC is safe for users who may otherwise be unable to use a hormonal type of contraception due to the small amount of hormones used in LNG-EC, and the short half-life of LNG-EC means only a limited exposure to LNG (Haeger et al., 2018). The sole contraindication of LNG-EC is currently being pregnant; although LNG-EC will not disrupt or harm a current pregnancy or cause birth defects, usage during a pregnancy is considered a contraindication because the drug will not be effective (Haeger et al., 2018). LNG-EC is also safe for users who are breastfeeding and has not been found to have any negative effects on future pregnancies (Haeger et al., 2018).

### *Ulipristal Acetate Mechanism of Action and Effectiveness*

Ulipristal acetate (UPA-EC) is a progesterone receptor modulator that is given in a single 30-mg dose (Cameron et al., 2017; Creinin et al., 2006; Gemzell-Danielsson, 2010; Kim & Bridgeman, 2011; Rosato et al., 2016). UPA-EC works by preventing or disrupting ovulation by binding to progesterone receptors and either suppressing or delaying progesterone's stimulation of the follicle to release an oocyte and begin ovulation (Creinin et al., 2006; Gemzell-Danielsson, 2010; Kim & Bridgeman, 2011; Rosato et al., 2016). UPA-EC has also been demonstrated to be effective in preventing ovulation even if it is taken close to the start of ovulation and after rises in luteinizing hormone, which is the point in time at which conception is most likely to occur—making it more effective than LNG-EC in this regard (Rosato et al., 2016; Wilcox, 2004). UPA-EC as a progesterone antagonist also appears to reduce movement of sperm cells inside the reproductive tract and inhibit the acrosome reaction sperm undergo to penetrate the oocyte's outer layer and allow for fertilization (Ko et al., 2014; Patrat et al., 2000; Rosato et al., 2016).

The FDA has approved UPA-EC for use within 120 hours of unprotected vaginal intercourse or contraceptive failure (Cameron et al., 2017; Rosato et al., 2016). When taken within the 120-hour window, UPA-EC decreases chances of pregnancy by 85–98% (Cameron et al., 2017; Rosato et al., 2016). Presently UPA-EC is only available in the United States as a prescription, despite advocacy from healthcare providers that it become as accessible as LNG-EC by being sold over the counter (Cameron et al., 2017; Haeger et al., 2018; Richardson & Maltz, 2012; Shigesato et al., 2018; N. K. Smith et al., 2017).

### *Side Effects and Contraindications of UPA-EC*

The most common side effects resulting from using UPA-EC are similar to that of LNG-EC and include: headaches and dizziness, fatigue, abdominal pain and cramping, and back pain

(Haeger et al., 2018). Similarly, there is no risk for birth defects or loss of pregnancy if UPA-EC is taken if the user is already pregnant. Both U.S. and European manufacturers of UPA-EC advise for users to discontinue breastfeeding for a range of 1 to 7 days after UPA-EC use before resuming breastfeeding (Haeger et al., 2018).

### *Weight and ECP Effectiveness*

In the United States, changes in the label of a European pharmaceutical company's LNG-EC due to the results of a study completed by Glasier et al. (2011) became a major news story. The findings from the study described potential loss of efficacy in LNG-EC in users of higher weights (Glasier et al., 2011; Redden, 2013). The changes on the LNG-EC packaging with updated guidance on weight and effectiveness were inaccurately described by *Mother Jones* in 2013 as meaning those who weigh 165 pounds or more should opt to use prescription-only UPA-EC or the copper IUD to use a product with a higher level of efficacy (Cameron et al., 2017; Glasier et al., 2011; Redden, 2013). The 165 pound "weight limit" claim was repeated in stories run by NPR and CNN (Rovner, 2013b; Wilson, 2013). However, further investigation by the European Medicines Agency recommended the company delete this guidance form their packaging and advised that using ECPs, regardless of weight, had notable benefits when contrasted with the risks (European Medicines Agency, 2014). This news coverage highlighting the dearth of comprehensive research about the relationship between weight and ECP effectiveness highlighted a notable health disparity requiring further investigation, as the majority of U.S. women as of the story's publication in 2013 weighed approximately the same weight or more as the "weight limit" (Cleland et al., 2020; Fryar et al., 2012).

A considerable concern about ECP usage is its effectiveness in relationship to users' body mass index (BMI; Cameron et al., 2017; Festin et al., 2017). The dearth of research on the

effectiveness of drugs among people designated as “overweight” (i.e., BMI between 25 kg/m$^2$ to 29.9 kg/m$^2$) “obese” (i.e., BMI > 30 kg/m$^2$ ) by their BMI had already posed an issue, as the FDA does not require evaluations that factor in the impact weight may have on drug effectiveness or if a higher dosage would be appropriate for people with higher BMIs (Gordon, 2020). This issue was also compounded by the fact that people designated “overweight” or “obese” are more likely to receive inadequate care due to weight bias, avoid healthcare settings due to prior poor treatment, or receive no care at all, as physicians are permitted to have weight limits on patients they accept (Alegria Drury & Louis, 2002; Foster & Wynn, 2012; Gordon, 2020; Hebl et al., 2003; Mensinger et al., 2018).

A 2015 practice bulletin issued by the ACOG noted the handful of studies on the impact of weight on effectiveness of either LNG-EC or UPA-EC have suggested these drugs are less effective in users with BMIs above 25 kg/m$^2$; the bulletin also emphasized neither drug should be withheld from these patients, as the lack of adequately powered research could not identify a threshold weight or BMI at which either type were ineffective (American College of Obstetricians and Gynecologists, 2015; Boyce & Neiterman, 2021; Cleland et al., 2014; Glasier et al., 2011; Grimes & Shields, 2005; Kapp et al., 2015; Moreau & Trussell, 2012; Stowers & Mestad, 2019). In these smaller studies, research has indicated the effectiveness of LNG-EC decreases in patients weighing 75 kg or more or who have a BMI of 25 kg/m$^2$ or greater (Festin et al., 2017; Glasier et al., 2011; Haeger et al., 2018; Praditpan et al., 2017). The presumed thresholds for UPA-EC efficacy appeared to be higher, with aforementioned studies finding efficacy appeared to decrease at a BMI of 35 kg/m$^2$ or higher (Praditpan et al., 2017).

Ongoing research has also sought to determine if a double dose of LNG-EC could be effective in people with higher BMIs (Haeger et al., 2018). Research completed by Edelman et

al. (2016) and Praditpan et al. (2017) found a double dose of LNG-EC does appear to provide enough of a dose to adjust for any differences in pharmacokinetics due to weight. As patients with higher BMIs face myriad challenges in accessing healthcare—and 73.6% of Americans 20 years old or older have BMIs at or above 25 $kg/m^2$, along with the issue of the window of time in which either type of EC is effective—reducing barriers to UPA-EC is of utmost importance for reproductive health equity (Cleland et al., 2020; Fryar et al., 2021).

***Gender and Sexual Minorities and Emergency Contraceptive Access and Care***

It has been well documented that gender and sexual minorities often experience stigma and significant barriers when seeking healthcare (Dean et al., 2000; Institute of Medicine, 2011; Kertzner et al., 2009; Stuber et al., 2008; Young & Meyer, 2005). Nuanced understanding of the distinctions between sex, sexual orientation, gender identity, and sexual behavior has also historically been excluded from medical training; in some cases, such a lack of understanding has promoted stigmatizing stereotypes about both sexual and gender minorities, in turn also contributing to health inequities (Dean et al., 2000; Logie et al., 2018; Salkind et al., 2019; Sawning et al., 2017; Turan et al., 2019). When seeking reproductive healthcare and contraception, many sexual and gender minority Americans receive inadequate care ranging from not being offered appropriate counseling due to assumptions about their gender or their sexual orientation to outright denial of service (Dean et al., 2000; Everett, Higgins, et al., 2019; Krempasky et al., 2020; Light et al., 2018; Macapagal et al., 2016).

For individuals whose gender identity is transmasculine or nonbinary, barriers often exist to simply getting access to providers who readily understand that their reproductive health needs are diverse and can still include contraception, desires to preserve their fertility, or plans for pregnancy (Gomez et al., 2020; Light et al., 2018; Stark et al., 2019). Hormone-based forms of

contraception have at times been seen by gender minority patients as a way to prevent gender dysphoria by preventing menstruation if testosterone or other gender-affirming health services are inaccessible, whereas others have reported avoiding hormonal contraceptives completely due to concerns of how it would interact with testosterone therapy (Gomez et al., 2020; Krempasky et al., 2020; Light et al., 2018; Stark et al., 2019). Surveys of prior contraceptive use have shown similar trends in using ECPs among transmasculine or nonbinary identified adolescents and youth and cisgender women (Gomez et al., 2020; Krempasky et al., 2020; Reynolds & Charlton, 2021; Stark et al., 2019). One in five transmasculine or nonbinary identifying youth reported using ECPs at least once, whereas 1 in 4 cisgender youth reported ever using ECPs (Gomez et al., 2020; Krempasky et al., 2020; Reynolds & Charlton, 2021; Stark et al., 2019). However, attitudes and knowledge about ECPs among transmasculine and nonbinary youth and adults have not yet been studied, despite the evidence that approximately 1 in 5 members of this subpopulation have used ECPs at least once in their lifetime (Gomez et al., 2020; Krempasky et al., 2020; Stark et al., 2019). Similar issues exist with a lack of formal guidance on counseling transmasculine or nonbinary individuals who are able to become pregnant after reporting using ECPs or seeking a prescription for UPA-EC (Krempasky et al., 2020; Reynolds & Charlton, 2021).

Similarly concerning disparities exist among sexual minority cisgender women, who are more likely to report ever using ECPs than heterosexual, cisgender women in tandem with reporting a greater likelihood of having been forced to have sex and endure intimate partner violence (Tornello et al., 2014). Sexual minority cisgender women are also at a more elevated risk for unintended pregnancies during both adolescence and adulthood while simultaneously being less likely to receive counseling regarding their intentions for pregnancy (Carpenter et al.,

2020; Everett, Higgins, et al., 2019; Higgins et al., 2019). Sexual minority cisgender women are also less likely to use highly effective forms of contraception and report having contraceptive counseling and other sexual health screenings included in consults with physicians due to presumptions or stereotypes about their sexual partners or sexual behaviors (Blunt-Vinti et al., 2018; Everett, Higgins, et al., 2019; Solazzo et al., 2019; Tornello et al., 2014). These disparities also persist when sexual minority cisgender women report having cisgender male partners (Everett, Higgins, et al., 2019; Everett, Turner, et al., 2019).

Drastic improvements in contraceptive and reproductive health counseling of sexual minority cisgender women are needed to improve their sexual and reproductive health outcomes and access to the most effective contraceptives (Carpenter, 2021; Carpenter et al., 2020; Charlton, Hatzenbuehler, et al., 2019; Charlton, Janiak, et al., 2019; Higgins, 2014; Higgins et al., 2019; Tornello et al., 2014). Research specific to the improvement of counseling in situations in which ECPs may be desired has not yet been conducted, again highlighting the need for deeper investment in research into the sexual and reproductive healthcare needs and experiences of sexual minority cisgender women.

### *Timing of Usage of ECPs and Sexual Assault*

The fact ECPs can be used reactively after unprotected intercourse, rather than other forms of contraception, is a unique benefit of this form of contraception, but also requires users be aware of timing related to when the unprotected intercourse occurred versus the likelihood they are near ovulation, along with delays in use reducing ECPs' ability to prevent pregnancy (Glasier et al., 2011; Mikolajczyk & Stanford, 2005; Stirling & Glasier, 2002). As mentioned in discussions of both LNG-EC and UPA-EC, there are also differences in the windows of effectiveness for each drug, with LNG-EC most effective if taken within 72 hours of protected

intercourse and UPA-EC 120 hours after unprotected intercourse (Gemzell-Danielsson, 2010; Rosato et al., 2016). However, especially if the user suspects they are about to ovulate or are ovulating, taking ECPs as quickly as possible after the intercourse better guarantees effectiveness (Glasier et al., 2011; Rosato et al., 2016; Stirling & Glasier, 2002).

Considerations of barriers to access, timing, and its impact on effectiveness is of particular importance for when ECPs are used after sexual assault. There are also considerations to be made of where and when survivors of sexual assault seek care, if they seek care after all, or if there is a preference for self-managed use of ECPs (Choi et al., 2013; Haeger et al., 2018; Linden, 2011). A 1996 study established the rate of pregnancy after sexual assault is approximately 5% or 32,000 pregnancies annually in the United States (Holmes et al., 1996).

Research completed by Choi et al. (2013) demonstrated the high level of effectiveness of LNG-EC if it is dispensed in emergency departments, reporting a failure rate of just 0.68% after follow up and provision of ECPs for sexual assault survivors in emergency departments, which is an expected standard of care in the United States for emergency room physicians (Choi et al., 2013; Linden, 2011). There remain, however, disparities in how this standard of care is implemented, and only 17 states and the District of Columbia require emergency departments to inform survivors about ECPs, with a smaller subset of those states and the District mandating ECPs be dispensed upon the request by the survivor (Haeger et al., 2018). For survivors who would benefit from the extended time period of effectiveness of UPA-EC, but do not want to meet with a healthcare provider, there currently are no alternative pathways to accessing this form ECP (Rosato et al., 2016).

**Religious, Philosophical, Cultural Concerns, and Implications regarding ECPs**

Beginning with the initial research that would lead to the development of ECPs, there has been a perennial debate about moral and ethical concerns with the mechanism of action of hormonal contraception tied to religious and cultural beliefs of when human life begins and how a form of contraception could be perceived as an abortifacient (Prescott, 2011). Although the full breadth of both historical and contemporary perspectives on contraception, abortion, and ECPs fell outside the scope of this dissertation, prior knowledge of these perspectives was essential to understand later issues with hesitancy and underutilization toward ECPs, despite the inclusion of consideration of different beliefs about contraception and abortion in the development of currently available ECPs. The scientists and doctors who have been part of the research on the development of oral contraceptives and ECPs approached their development not with a singular point of view; instead, they brought a variety of attitudes, beliefs, and intentions to their research (McLaughlin, 1982; Prescott, 2011).

John Rock, a Catholic obstetrician-gynecologist from Massachusetts, was part of the research team that developed the first oral contraceptive pill in the 1950s (Prescott, 2011). Rock felt usage of contraception was not in conflict with his faith's doctrine on fertility and marriage and instead, usage of contraception could improve marital satisfaction (Prescott, 2011). Rock was deeply concerned over the issue, prompting him to write a book entitled, *The Time Has Come: A Catholic Doctor's Proposals to End the Battle Over Birth Control* in 1963 to appeal directly to Catholic clergy. Rock made the argument that the mechanism of action of oral contraceptives extending the period before ovulation was similar to that of the sanctioned rhythm method, where the tracking of the menstrual cycle allows for knowing when to avoid sex during ovulation if pregnancy is not desired (McLaughlin, 1982; Prescott, 2011). Rock's attempt to

make his arguments supporting contraception directly to the Roman Catholic Church clergy was possible due to Pope John XXIII creating the Pontifical Commission on Birth Control in 1963 to reevaluate the Roman Catholic Church's moral theology on use of contraception by having a non-theological commission study it, as he noted that the introduction of oral contraceptives had prompted considerable debate among Church leaders and members on doctrine (Shannon, 1970). However, shortly after the start of the commission, Pope John XXIII died and Pope Paul VI was elected to the papacy (Shannon, 1970). Pope Paul VI continued the commission and expanded it to include theologians along with women; however, despite the commission's findings supporting use of contraception, Pope Paul VI published the encyclical *Humanae Vitae* ("Of human life"), which reaffirmed traditional moral teachings that both abortion and use artificial forms were in conflict with the Roman Catholic Church's teachings on the sanctity of life and marriage (Prescott, 2011; Shannon, 1970; von Geusau, 1970; Wolk & Snead, 2021). The publication yielded a wide range of reactions across the Roman Catholic diaspora, but also prompted myriad debates and discussions from clergy, scientists, and doctors from other Christian denominations as well as others representing perspectives of Judaism, Islam, Hinduism, and Humanism (von Geusau, 1970). *Humanae Vitae* primed the world for a global discussion about the religious and ethical considerations of contraception, abortion, and population control as medical and scientific understanding of conception, fetal development, and impacts of population growth had expanded considerably (Prescott, 2011).

Likewise, with some other religious denominations not having the same structure as the Roman Catholic Church's clergy, there was more room for varying opinions on social issues in other faiths, again prompting discussions that included many different interpretations and bioethical considerations when it came to the relationship between religion and contraception

(Foster & Wynn, 2012; von Geusau, 1970; Wynn & Trussell, 2006). The core of the debates on the ethics of contraception has focused on the definition of when human life, or ensoulment, begin (Caplan & Marino, 2007; Williams, 1982; Wynn & Trussell, 2006). Historically, different faith and cultural beliefs have designated human life as beginning at birth or after the first trimester of pregnancy (Aramesh, 2019; Asai et al., 2021; Barilan, 2009; Bhardwaj, 2021; Caplan & Marino, 2007; Crane, 2021; Eich, 2021; Gill, 2021; Kwon, 2021; Mikirtichan et al., 2021; Mitra, 2021; Stadlan, 2021; Williams, 1982; Wolk & Snead, 2021). Later, as understanding of how conception works was furthered through scientific research, emphasis was placed in some traditions on life beginning at conception, or the fusion of the egg and sperm cell, which is called fertilization in scientific research (Caplan & Marino, 2007; Mikirtichan et al., 2021; Mitra, 2021; Williams, 1982; Wolk & Snead, 2021; Wynn & Trussell, 2006). In contrast, due to the fact approximately 30–50% of fertilized eggs do not implant in the uterus, the vast majority of medical providers and researchers who study pregnancy specified the completion of implantation as the beginning of pregnancy (Benson Gold, 2005; Caplan & Marino, 2007; Wynn & Trussell, 2006). This difference in understanding between the scientific and religious perspectives of when life begins has remained the core issue in debates over the ethics of abortion, contraceptive use, and artificial means of conception (Turok, 2017).

The religious debate around the mechanism of action of ECPs or broader rejection of sexual and reproductive health services has not remained static, but instead has been enacted into numerous policies across the United States (Turok et al., 2011; Williams, 1982; Wynn & Trussell, 2006). Legislation, law enforcement, and the court system of the United States have rarely been required to create or abide by policies that reflect current scientific evidence and the safest practices for Americans' sexual and reproductive health; instead, these debates and

contentions have far more often yielded laws or judicial rulings reflective of cultural norms, prior non-evidence based legislation or law, or other opinions at the cost of affordable, accessible high quality healthcare (Brownson et al., 2009, 2018; Cameron et al., 2017; Espey et al., 2019; Lynch et al., 2017; Turok et al., 2011; Wynn & Trussell, 2006). When policies and laws are not centered in science-based evidence, it is not surprising that across the United States, there continues to be contentions between federally protected rights, state policy, and the decision of whether or not legal rights and enforcement of laws and statutes translate into actual access to sexual and reproductive health services (Lynch et al., 2017; Prescott, 2011; Turok et al., 2011).

In an article documenting the impacts of conscientious objection, Yang (2020) argued healthcare providers have a parallel ethical objection due to the Hippocratic Oath. Yang (2020) noted denials of service due to moral objection exacerbate health inequities due to the likelihood that they will more severely impact people already facing high barriers to healthcare. However, despite research demonstrating objection rights could increase health disparities, these laws have rarely been paired with others that could still permit access without undue burden or prevent broader negative effects on public health and disintegrating the integrity of the practice of medicine (Chavkin et al., 2013;Yang, 2020;Yang & Sawicki, 2017).

Furthermore, there has rarely been consideration of inequities that already exist in who can lobby lawmakers and file lawsuits in pursuit of protection or establishment of their rights—the way in which legislation is enacted and for whom has been and remains a deeply inequitable system in the United States (Z. D. Bailey et al., 2021; Berwick, 2020; Kyriacou, 2019; Stiglitz, 2013). Perhaps only with the adoption of evidence-based policies, rather than partiality to selective policy-based evidence, will the United States be able to address health inequity at the federal level (Brownson et al., 2009, 2018; Ibrahim et al., 2017; Marmot, 2004).

## Awareness, Knowledge, and Usage of ECPs in the United States

### *Healthcare Providers*

When looking at the perceptions healthcare providers have about ECPs, misinformation, a lack of training about how ECPs work, and personal values and attitudes appear to have influence over healthcare providers' and pharmacists' knowledge and willingness to dispense ECPs (Lawrence et al., 2010; Rafie et al., 2017; Richman et al., 2012; Sable et al., 2006; Shrader et al., 2010; Wall & Brown, 2006). Numerous studies have been completed to demonstrate the knowledge and attitudes toward ECPs among various healthcare providers, with some focusing solely on one type of provider and others reflecting an entire healthcare site (Batur et al., 2016; Chung, 2016; Simonds & Ellertson, 2004; Wagner et al., 2019). In this section, the results of these studies and surveys tracking shifts in knowledge, attitudes, and willingness to use or dispense ECPs are discussed.

A study completed between 1997 and 1998, in which healthcare workers at 21 different Planned Parenthood clinics across the United States were interviewed, found although the healthcare workers were well informed of the mechanism of action of ECPs, they often found themselves dealing with challenging conversations with clients who believed ECPs were akin to abortion (Simonds & Ellertson, 2004). Healthcare providers in this study felt it would be beneficial to receive more training on how to navigate the political and social contexts of ECPs to better meet their clients where they were and offer counseling that would be both medically accurate, but also meet the moral and ethical beliefs of their client (Simonds & Ellertson, 2004). A 2008 study in which healthcare workers in a military hospital were surveyed on their knowledge and attitudes about ECPs found those with more knowledge and a positive perception of ECPs were more likely to prescribe ECPs (Chung-Park, 2008). Chung-Park (2008) concluded

there was an opportunity for intervention with healthcare providers to provide further education about the time frames to use ECPs, and for ECPs to be included as a regular part of contraceptive counseling. A study completed between 2012 and 2013 found generally that providers had become much more aware of LNG-EC, but fewer were aware of or prescribing UPA-EC and copper IUDs despite these being more effective options for a greater swath of the population (Batur et al., 2016). A survey of healthcare providers between 2013 and 2014 found that healthcare providers' willingness to prescribe or dispense ECPs was associated with their own views on when life begins (i.e., conception versus implantation) along with the sociopolitical contexts in which their practices were located; the study found providers who personally identified with life beginning with conception and who practiced in counties in which Mitt Romney received the majority of votes in the 2012 election were less likely to prescribe ECPs than providers with a similar viewpoint who practiced in counties that favored Barack Obama in 2012 (Wagner et al., 2019). The results of this study emphasized the impact of both the provider's viewpoints and the sociopolitical context of where someone may seek care in limiting ECP access (Wagner et al., 2019).

The availability and how to access ECPs has changed multiple times in the last 2 decades, and pharmacists' willingness to dispense ECPs is essential for this form of contraception to be an option for potential users. Research conducted to understand how pharmacists are educated on ECPs, along with their own knowledge and beliefs about it, have had widely varying results. A 2002 study in which random pharmacies in Pennsylvania were called to determine if they stocked LNG-EC found only 35% would be able to fill a prescription for it within 24 hours and only 12% of contacted pharmacists recommended LNG-EC over the Yuzpe method, despite it being the more effective option (Bennett et al., 2003). There were also notable regional

differences in the ability to find a pharmacist who stocked LNG-EC, with rural pharmacies being less likely to stock it (Bennett et al., 2003). Approximately 13% of the Pennsylvania pharmacists surveyed also misidentified ECPs as a method of abortion (Bennett et al., 2003). A study in New Mexico completed in 2003 found pharmacists who completed the state's ECP certification training program had significantly more knowledge on ECPs than those who had not, but overall ECP was perceived positively by pharmacists in the state despite the knowledge gaps (Borrego et al., 2006). Similar to the Wagner study, willingness to dispense ECP was found to be influenced both by pharmacists' own political and religious views and those of their immediate communities (Borrego et al., 2006).

A survey of ECP knowledge in Arkansas conducted in 2006, before FDA approval of over-the-counter sales of LNG-EC, found there were significant knowledge gaps, with 42% of survey respondents misidentifying the mechanism of action, and only 45% affirming they would be willing to dispense the drug if requested to (Hopkins & West, 2008). A 2008 survey of pharmacists in Florida found 56% of those surveyed believed ECP caused birth defects and 46% also believed usage of ECP caused an abortion, misidentifying that ECP causes a delay or inhibition of ovulation to prevent pregnancy (Richman et al., 2012). Knowledge about ECP was also found to be the strongest predictor of a pharmacists' willingness to dispense ECP (Richman et al., 2012). A similar survey of Nevada pharmacists found religious affiliation significantly predicted pharmacists' willingness to dispense emergency contraception (Davidson et al., 2010).

***Awareness and Knowledge of ECPs in the United States Among General Public***

Surveys to understand how non-medical professionals understand ECPs have also been conducted to demonstrate the unique contexts in which Americans may find themselves when seeking information and access to ECPs. Studies on how the general public understands ECPs

have historically focused on women of reproductive age, particularly when ECPs became available in the early 2000s. Two studies focused on women, conducted in California and Massachusetts, found approximately 40% of respondents could correctly identify what ECPs were (Chuang & Freund, 2005; Foster et al., 2004). By 2016, a national survey of cisgender women found 85% of respondents had heard of ECPs, but only 50.8% believed they were very or somewhat safe to use (Heller et al., 2019). A qualitative study also completed in 2016 that included a more expansive sample of gender identities found about half of the respondents correctly described one of the mechanisms of action of ECP, but 60% also indicated they believed ECPs primarily worked by preventing implantation after fertilization, despite this claim not being well-supported by prior studies on both LNG-EC and UPA-EC (Cleland et al., 2021). Amid these findings and the persistence of misunderstandings of the ECP's mechanism of action, continued research is needed on how people believe ECPs work and where they receive information about ECPs, even though these drugs have been available for over 20 years in the United States.

Smaller subpopulations of the public have been also surveyed about their knowledge and attitudes toward ECPs. Beginning with the first studies to develop ECPs at Yale University, college students have been prioritized by researchers as a key demographic to promote awareness and uptake of ECPs (Prescott, 2011). Despite efforts to make this population aware of ECPs, uptake and understanding of ECPs among college students after FDA approval varied widely as it became more accessible in the late 2000s, with most students reporting uncertainty around how to obtain ECPs and not knowing if ECPs were prescription only (Corbett et al., 2006; Hickey, 2009; Miller, 2011). A 2006 study of college students aged 18–21 found the majority of students had heard of ECP and believed it to be a safe, effective method as a backup

for other contraceptives (Corbett et al., 2006). However, nearly half of the respondents believed ECP was the same as mifepristone/RU-486, the first drug used to complete a medication abortion (Corbett et al., 2006). Female respondents also indicated they had concerns about feeling embarrassed or being shamed for asking for ECP and indicated a preference for having a doctor write a prescription for ECP as a precautionary measure in case it may be needed in the future (Corbett et al., 2006).

Of the women who had a gynecological exam in the last year, only 1 in 3 reported having their medical provider discuss ECPs with them (Corbett et al., 2006). A similar survey conducted among female college students in 2008 found nearly all had heard about ECPs, but 4 in 10 respondents were not sure of the difference between ECPs and RU-486 (Hickey, 2009). One in three respondents believed ECPs required a prescription to access, and 6 in 10 respondents believed they could not successfully obtain ECPs; however, 28% of respondents reported using ECPs and 27% of those respondents had obtained ECPs over the counter (Hickey, 2009). Another 2008 survey of both male and female college students found similar results, with 3 out of 4 students reporting they knew what ECPs were and approximately 1 in 6 female respondents indicating they had used ECPs at least once (Miller, 2011). Despite availability of ECPs at this university's health center, only 1 in 6 of both male and female students knew it was available over the counter there (Miller, 2011). Both Miller and Hickey concluded more concerted efforts were needed to educate college students about how to access ECPs to increase use among a population that frequently indicated they had experienced an unintended pregnancy or had been seriously concerned about becoming pregnant (Hickey, 2009; Miller, 2011).

### *Predictors of Usage of ECPs*

After ECPs became readily available, concerns emerged about ECPs being underutilized in the United States (Devine, 2012). The main driver of these concerns has shifted over time, with initial concerns being most commonly about the lack of knowledge and awareness of ECPs among people who could become pregnant and their partners to issues of access and health insurance and communication with partners, and perceived safety of ECP use (Ellertson et al., 2000; Heller et al., 2019). Most studies on predictors of use have been cross-sectional surveys, and no causal pathways between specific experiences or characteristics and ECPs have been formally proposed; in reviewing the literature, it was clear that both willingness to use and use of ECPs are the result of interactions between a broad range of circumstances, beliefs, and knowledge (Ellertson, 2003; Heller et al., 2019; Waltermaurer et al., 2013). To track the impact of the diffusion of understanding and awareness of ECPs, the predictors of ECP use are presented in chronological order.

**Predictors of ECP Use, 1991–2000.** Ellertson et al. (2000) compiled a comprehensive literature review of 30 years' worth of research on ECP knowledge and awareness, interventions, and advertising campaigns. Although most early studies were completed in the United Kingdom, this review highlighted that ECP knowledge and awareness was quite limited in the United States in the 1990s; frequently, women believed ECPs had significant health risks (Ellertson et al., 2000). Likewise, as of the publication of the study in 2000, only one study had been conducted prior on the need for ECPs, and the review was completed specifically to prompt further research into the "where?" and "why?" of accessing and using ECPs in the United States (Ellertson et al., 1997, 2000). These early studies highlighted that younger women were more aware of ECPs than their older counterparts globally and more likely to use ECPs (Ellertson et al., 2000). However,

usage at this time remained low globally, with 4% to 12% of participants reporting using ECP, and users reporting only using ECPs once (Ellertson et al., 2000). Once made aware of ECPs, a study of youth in New York found 87% of them believed ECPs would be a good option if their usual form of contraception failed (Cohall et al., 1998).

**Predictors of ECP Use, 2001–2009.** An incongruity around ECP usage was found in a study completed by Baldwin and colleagues in California in 2003, where young age was the strongest predictor of ECP usage while also being found to be the age group least likely to report knowledge about ECPs (Baldwin et al., 2008). There were no notable differences in usage by race or ethnicity, but Hispanic women residing in California were less likely to indicate awareness of ECPs when compared to White, Black, and Asian women (Baldwin et al., 2008). A 2003 study found among a sample of U.S. women found both levels of education and the dynamics of sexual relationships and both partners' desire to avoid pregnancy were associated with ECP usage (Harper et al., 2003). Unlike other forms of contraception, higher relationship commitment, satisfaction, and communication were not associated with ECP use (Harper et al., 2003). Relationships in which the male partner was the final decision maker were associated with ECP usage, as were relationships in which women were pressured into sex by male partners (Harper et al., 2003).

A review of the National Survey of Family Growth (NSFG) data from 2002 also found that clinical counseling was the strongest predictor of ECP usage, with respondents who received ECP counseling in the last 12 months being the most robust overall predictor (Kavanaugh & Schwarz, 2008). Although 67% of survey respondents had seen a reproductive healthcare provider in the last year, only 3% reported receiving any counseling about ECPs (Kavanaugh & Schwarz, 2008). Hispanic women and women who had ever been married were the most likely

groups to receive ECP counseling during medical visits (Kavanaugh & Schwarz, 2008). Other notable predictors of usage from the 2002 NSFG included being a college graduate, having had a prior abortion, having more than one male sexual partner in their lifetime, never having given birth before, and having prior hormonal contraceptive usage or usage of condoms (Kavanaugh & Schwarz, 2008). The authors also noted their findings suggested that because ECPs were only available with a prescription at this time and counseling would be a requirement to access ECPs, there should be further evaluation of the potential barriers caused by keeping ECPs prescription-only (Kavanaugh & Schwarz, 2008).

**Predictors of ECP Use, 2010–2015.** After Plan B became available over the counter in 2009 to those 17 and older, researchers anticipated there would be notable shifts in predictors of ECP usage (Waltermaurer et al., 2013). A study among college students in 2010 found being a 1st-year college student, binge drinking, not using condoms, and being Black or Asian were associated with ECP use (Waltermaurer et al., 2013). In this study, 60% of the 942 participants had considered using ECPs at least once, and 46.5% of respondents had used ECPs (Waltermaurer et al., 2013). Semistructured in-depth interviews completed with 30 emergency contraception users in 2011 found four key domains in ECP use: personal context, contraceptive context, sexual context, and relationship context (Neustadt et al., 2011). Most respondents identified that delaying childbearing was the key motivator to using EC in their personal context (Neustadt et al., 2011). Current contraceptive contexts were found to vary more among ECP users (Neustadt et al., 2011). ECP users were more likely to report a favorable attitude toward ECPs, but also were less likely to want to use hormone-based contraception (most often the oral contraceptive pills), have positive perceptions and inconsistent usage of barrier methods, and a greater likelihood of using withdrawal as a contraceptive method (Neustadt et al., 2011). Despite

hormone-based contraception being perceived as having more side effects, these participants were still willing to take a short-acting hormonal form of contraception (Neustadt et al., 2011). Poor communication with partners about the usage of barrier methods, or a partner's preference for sex without condoms was also a persistent issue for ECP users (Neustadt et al., 2011). Other factors associated with ECP usage included not having a long-term sexual partner and having long breaks between sexual partners (Neustadt et al., 2011). Overall, participants in Neustadt et al.'s study found even with some deficits in understanding the mechanisms of action of ECPs and their concerns about hormone-based contraception, the benefits of using ECPs outweighed the risks (Neustadt et al., 2011).

**Predictors of ECP Use, 2016–Present.** Data from the Urban Institute's 2016 Survey of Family Planning and Women's Lives reported approximately 1 in 4 respondents had used ECPs at least once, and Hispanic women were more likely to have used ECPs than their Black or White counterparts by approximately 10%, with just over 1 in 3 Hispanic respondents reporting use (Heller et al., 2019). When looking at associations between individual characteristics and ECP usage, this study also found women who used any form of contraception, had a recent male sexual partner, were concerned about becoming pregnant, were familiar with ECPs, and believed ECPs were safe to use were associated with higher levels of use (Heller et al., 2019). Further analyses using a multivariate model found that usage of barrier methods of contraception, prior unplanned pregnancy, high levels of awareness of ECPs, and beliefs that ECPs were either safe or effective were found to be associated with higher odds of ever using ECPs (Heller et al., 2019). Although a causal pathway between knowledge and belief in effectiveness and ECP use could not be determined due to the cross-sectional nature of the survey, both knowledge and belief in the effectiveness of ECPs were the strongest predictors of use (Heller et al., 2019).

In sum, existing literature demonstrates that both healthcare professionals in the United States, along with the public, have become more aware of ECPs as time has progressed and policies have allowed over-the-counter sales. Still, there remains a persistent issue with misinformation about the mechanism of action of ECPs. Numerous shifts in how and to whom ECPs have been available likely has also played a part in why there has continued to be confusion around access and the mechanism of action. Understanding how this persistent misunderstanding affects willingness to use or uptake of ECPs remains an important questions to explore further.

The disruption, or impact of misinformation or perceived barriers to access, is addressed through both Aim 1 and Aim 2 of this study. In Aim 1, I describe national trends, which includes descriptive statistics of characteristics of individuals using ECPs, along with between-group comparisons used to describe what, if any, differences exist in how cisgender, heterosexual women use ECPs versus their sexual and/or gender minority counterparts. Understanding these difference are especially important for sexual and gender minority women and people who can get pregnant whose experiences with contraception have been understudied. Aim 2 explored latent factors impacting willingness and use of ECPs through evaluation of different patterns in key covariates. The completion of both Aim 1 and Aim 2 yielded a comprehensive overview of this health issue in the United States along with determining more unique factors influencing individual-level decisions around ECP uptake.

## Chapter 3: Manuscript 1 – A National Survey of Factors Influencing Americans' Willingness to Use and Uptake of Emergency Contraceptive Pills and Comparisons Between Sexual Minority Cisgender Women and Cisgender Heterosexual Women

Research has shown that sexual and gender minorities assigned female at birth often receive inadequate counseling from healthcare providers regarding emergency contraception (EC) (Carpenter et al., 2021; Higgins et al., 2019; Everett et al., 2019;. Reynolds & Charlton, 2021). Similar issues existed with studies focused on the willingness to use and usage of types of contraception and pregnancy intentions, with sexual and gender minority individuals often not included in these studies or underrecruited. With the knowledge that members of these groups do not receive adequate care to prevent unintended pregnancy, understanding if and how sexual and gender minorities assigned female at birth use emergency contraceptive pills (ECPs) is important to address this disparity. Establishing baseline understanding of how sexual and gender minorities who could become pregnant view and use EC is necessary to addressing health inequities and improving the continuum of reproductive and sexual healthcare.

### Methods

A web survey was completed by simultaneously recruiting two groups of cisgender, heterosexual women ($n$ = 351) and a group of sexual and/or gender minority participants ($n$ = 408), for a total of 759 participants overall. Comparisons between cisgender sexual minority participants and cisgender heterosexual participants were completed using chi-square and $t$ tests to determine if there were differences in willingness to use and uptake of ECPs.

### Results

On average, 1 in 3 respondents had used ECPs at least once. Cisgender, sexual minority participants had higher willingness to use ECPs when compared to cisgender heterosexual

participants and gender minority participants ($F$[2, 753] = 3.19, $p$ = .042). Cisgender, sexual minority participants who used ECPs previously also were found to be less willing to reuse ECPs again when compared to their cisgender, heterosexual counterparts ($\chi^2$ [2] = 6.35, $p$ = .042), with the most common reason of not using again being because respondents would want to become pregnant.

**Conclusions**

The high levels in which sexual minority women were willing to use ECPs but also were less likely to reuse again should be explored more in depth to understand underlying factors in decision making around contraceptive uptake and pregnancy intentions. The desire to become pregnant was the most common reason as to why sexual minority women would not use ECPs again, highlighting the need for healthcare providers to have regular conversations with their patients about sexual behavior, contraceptive use, and pregnancy intentions.

**Introduction**

ECPs have a unique place within the spectrum of available contraceptive options, as it can be used after unprotected sex and one version is sold over the counter in the United States (Batur et al., 2016; Cleland et al., 2020; Kreitzer et al., 2021; Wagner et al., 2019). The efficacy of ECPs, however, are highly dependent on the timing of usage, with both levonorgestrel (brand name Plan B) and ulipristal acetate (brand name Ella) being more effective at preventing pregnancy the sooner it is taken (Batur et al., 2016; Gemzell-Danielsson, 2010; Peck et al., 2013; Rosato et al., 2016). Both levonorgestrel and ulipristal acetate can prevent pregnancy due to their ability to disrupt the hormonal processes preceding ovulation, either delaying it or inhibiting the process outright for that menstrual cycle (Gemzell-Danielsson, 2010; Peck et al., 2013; Rosato et al., 2016; Wagner et al., 2019). Due to the importance of timing of use and the hormone-based

mechanism of action that can have contraindications, discussing ECPs during contraceptive counseling and providing an advance provision in anticipation of potential barriers to access is considered a best practice (Batur et al., 2016; Dehlendorf et al., 2013, 2014). However, for sexual and gender minorities who were assigned female at birth, contraceptive counseling is often inadequate if not completely missing from their experiences with healthcare providers due to assumptions (Carpenter, 2021; Carpenter et al., 2020; Crissman et al., 2022; Everett, Turner, et al., 2019; Reynolds & Charlton, 2021).

Barriers to comprehensive and inclusive healthcare for sexual and gender minorities assigned female at birth have been well-documented and have been associated with decreased engagement with healthcare providers, fewer healthcare screenings, and lower rates of contraceptive counseling and use (Ayhan et al., 2020; Carpenter, 2021; Crissman et al., 2022; Everett, Turner, et al., 2019; Greene et al., 2019; Higgins et al., 2019; Reynolds & Charlton, 2021; Solazzo et al., 2019; Tabaac et al., 2018). In turn, these barriers and low-quality treatment can result in sexual and gender minorities who were assigned female at birth internalizing stigmatizing messages or feeling unable to assert their need for contraception due to assumptions about their sexual orientation and/or gender identity rather than prompting conversations about their sexual partners, behaviors, and interests in becoming pregnant (Carpenter, 2021; Carpenter et al., 2020; Greene et al., 2019; Higgins et al., 2019). Without adequate, inclusive support in healthcare settings, it is not surprising to find that the most effective forms of contraception, the majority of which require a prescription, are used less frequently among sexual minority women when compared to their heterosexual counterparts (Blunt-Vinti et al., 2018; Carpenter, 2021; Carpenter et al., 2020; Greene et al., 2019; Higgins et al., 2019).

The small number of studies focused on contraceptive uptake among gender minorities assigned female at birth have found concerning results, with gender minority identifying individuals reporting lower usage of any type of contraception, including EC—even when respondents reported having a male sexual partner (Crissman et al., 2022; Reynolds & Charlton, 2021). Studies intending to describe how healthcare providers engage gender minority patients have found similarly concerning results, with providers indicating they did not receive adequate training about gender identity as it related to contraception counseling; many providers were not aware pregnancy was still a risk among gender minorities or that pregnancy may be desired by gender minority patients (Gomez et al., 2020; Krempasky et al., 2020; Light et al., 2018; MacLean, 2021; Moseson et al., 2020).

Inclusion of sexual and gender minorities in studies about ECPs is a relatively recent development (Ayhan et al., 2020; Blunt-Vinti et al., 2018; Crissman et al., 2022; Gomez et al., 2020; Higgins et al., 2019; Reynolds & Charlton, 2021). Once over-the-counter sales were approved for individuals 18 years old or older in 2006, most surveys focused on female college students, and questions about sexual orientation and gender identity were not included (Corbett et al., 2006; Hickey, 2009; Lehan Mackin et al., 2015; Miller, 2011; Mollen et al., 2012, 2013). Recommended best practices for clinicians also did not include guidance specific to sexual and/or gender minority patients (Cleland et al., 2014; Raymond & Cleland, 2015; Stirling & Glasier, 2002). Only a small number of studies exist regarding the usage and beliefs about contraception among either sexual minority and/or gender minorities assigned female at birth; thus, this current study was designed to gain more descriptive information about knowledge, willingness to use, and uptake of ECPs among this group as well as be inclusive of a wider age range of potential ECP users given the commercial availability of these products for over 25

years in the United States. Additionally, although ECs have been commercially available for over 25 years in the United States, most studies have examined only a small age range of potential ECP users (Carpenter, 2021; Corbett et al., 2006; Hickey, 2009; Lehan Mackin et al., 2015; Reynolds & Charlton, 2021).

## Study Aims and Hypotheses

To address the dearth of information regarding the usage and beliefs about contraception among either sexual minority and/or gender minorities assigned female at birth, this study examined knowledge, willingness to use, and uptake of ECPs among gender and sexual minorities to be inclusive of a wider age range of potential ECP users. I hypothesized gender and sexual minorities would have less knowledge and lower willingness to use and uptake of ECPs compared to non-gender and sexual minority counterparts.

## Methods

### *Data and Sample*

The survey was distributed through Prolific, a United Kingdom-based platform that recruits potential participants from its user base and distributes cash incentives on behalf of researchers. Noting that most research on user experience and knowledge of EC has sampled cisgender, heterosexual young women, simultaneous recruitment occurred for both cisgender heterosexual women and sexual and gender minorities assigned female at birth. Prolific also allows researchers to know the number of users on the platform who match their recruitment criteria. Before the survey was launched in March 2022, there were approximately 10,000 cisgender, heterosexual women, 5,000 cisgender sexual minority women, and 1,000 gender minority potential participants who had participated in research in the last 90 days who lived in the United States. Noting the gender minority participant group on the platform was much

smaller than the other two groups, recruitment was combined with the sexual minority group; I anticipated there would not be the same level of statistical power for that group and solely descriptive statistics would be calculated for this group.

Participants had to meet the rescreened inclusion criteria of (a) their biological sex being female, (b) current residence in the United States, and (c) being between the ages of 18 years and 70 were sent emails via Prolific once the survey was available to complete. The opportunity to take the survey also appeared on participants' dashboards on the Prolific website. Interested participants were then linked to a Qualtrics consent waiver before proceeding to the survey. Participants indicating they consented to participate were then linked to the survey, whereas participants who opted out were redirected back to Prolific. Participants received a cash payment through Prolific of £1.09 ($1.11 USD) for completion of the survey after it was reviewed by the researcher for completion and passing attention checks. Study materials and protocol were reviewed and approved by the University of Maryland, College Park Internal Review Board (IRB).

***Measures***

Respondents were asked to answer questions from previously evaluated measures about their sexual and reproductive health knowledge and experiences with healthcare providers, sexual empowerment, experiences with reproductive coercion, perceived accessibility of ECPs in their communities, and thoughts about the acceptability of using ECPs for others and themselves (Brenick et al., 2017; Lehan Mackin et al., 2015; McCauley et al., 2017; Upadhyay et al., 2021; Williams et al., 2021). Respondents who reported using ECPs were asked questions to provide additional context about their usage, including how many times they have taken ECPs, the approximate year and age they first took ECPs, what type(s) of ECPs they had used, and where

they first obtained ECPs. Respondents were also asked if they were willing to use ECPs again and provide their reasons as to why they would or would not use again.

### *Dependent Variables*

Willingness to use ECP and the number of times ECP has been used were the two primary outcomes of interest. A four-question survey about under what circumstances someone would be willing to use ECPs, and if they had ever used ECPs, was adapted from Lehan Mackin et al. (2015). Between-groups comparisons on experiences in healthcare settings, sexual empowerment, reproductive coercion, perceived accessibility of ECPs, concerns about using ECPs, and questions specific to ECP use were also completed.

### *Independent Variables*

Statistical evaluation of between-groups differences were made between cisgender heterosexual participants and cisgender sexual minority participants across measures of knowledge, sexual and reproductive health empowerment, experiences of reproductive coercion, mistreatment in medical settings, and internalized stigma about ECP usage.

## Data Analysis

All analyses were completed using IBM SPSS Statistics 28. Participants were categorized into three groups based on their sexual orientation and gender identity: cisgender heterosexual participants, cisgender sexual minority participants, and gender minority participants. Comparisons between groups by demographic characteristics were completed using paired *t* -tests when continuous variables were evaluated and chi-squared tests were used for comparisons on categorical variables. These comparisons were made to identify what, if any, imbalances existed in distribution on demographic characteristics across three groups.

Between-group comparisons among cisgender heterosexual participants and cisgender sexual minority participants on mean scores of key measures and the outcomes of interest, willingness to use ECPs and number of times ECPs were used were completed using *t* tests. A between-group comparison on the uptake of ECPs as a binary was evaluated using chi-square tests. Group membership and the outcomes of willingness to use ECPs and number of times ECPs were tested using linear regression models. Binary logistic regression was used to evaluate whether or not group membership predicted the usage of ECPs.

## Results

### *Descriptive Participant Characteristics by Group*

The three groups of participants—cisgender heterosexual women ($n$ = 351), cisgender sexual minority women ($n$ = 362), and gender minority participants ($n$ = 46)—together comprised a total sample of 759 participants. Most participants were white, cisgender women. Approximately 1 in 2 participants identified as heterosexual and 32% identified as bisexual.

Age, when compared across groups using ANOVA ($F$[2, 756)] 3.082, $p$ = .046), was found to be a statistically significant difference between participant groups. Gender minority participants have a statistically significant higher mean age of 38.5 years old when compared to cisgender, sexual minority participants who averaged 33.7 years old ($p$ = .03). The difference in mean age between gender minority participants and cisgender heterosexual participants whose mean age was 34.9 years old was not statistically significant when evaluated using a *t* test ($p$ = .096). No statistically significant findings were associated with group differences in region of residence, education, insurance status, or household income. Table 3 shows demographic characteristics of participants in the study.

**Table 3**

*Participant Characteristics by Group*

| Variable | Cisgender, heterosexual participants ($n$ = 351) | Cisgender sexual minority participants ($n$ = 362) | Gender minority participants ($n$ = 46) |
|---|---|---|---|
| Age (mean, std. dev) | 34.9 (13.2) | 33.7 (12.3)* | 38.5 (13.6)* |
| Region of residence | | | |
| East | 81 (23.1%) | 74 (20.4%) | 6 (13%) |
| Midwest | 73 (20.8%) | 81 (22.4%) | 10 (21.7%) |
| South | 131 (37.3%) | 128 (35.4%) | 17 (37%) |
| West | 66 (18.8%) | 79 (21.8%) | 13 (28.3%) |
| Education | | | |
| Some higher education experience or more | 240 (68.4%) | 251(69.3%) | 25 (54.3%) |
| No higher education experience | 111 (31.6%) | 111 (30.7%) | 21 (45.7%) |
| Gender identity | | | |
| Cisgender female | 351 (100%) | 362 (100%) | - |
| Transmale or transman | - | - | 7 (15.2%) |
| Genderqueer or gender nonconforming | - | - | 34 (73.9%) |
| Other gender identity | - | - | 3 (6.5%) |
| Sexual orientation | | | |
| Heterosexual | 351 (100%) | - | 28 (60.9%) |
| Homosexual | - | 53 (14.7%) | 3 (6.5%) |
| Bisexual | - | 241 (67%) | 13 (28.3%) |
| Asexual | - | 34 (9.4%) | 2 (4.3%) |
| Other | - | 32 (8.9%) | - |
| Race and ethnicity | | | |
| African | 1 (0.3%) | - | - |
| African American/Black | 21 (6%) | 17 (4.7%) | 4 (8.4%) |
| Caribbean | 2 (0.6%) | 2 (0.6%) | - |
| East Asian/South Asian/Southeast Asian | 19 (5.4%) | 26 (7.2%) | 4 (8.4%) |
| Latino/Hispanic | 22 (6.3%) | 18 (5%) | 2 (4.2%) |
| Middle Eastern | 3 (0.9%) | 1 (0.3%) | 1 (2.1%) |
| Mixed | 20 (5.7%) | 15 (4.1%) | 6 (12.5%) |
| Native American or Alaska Native | 1 (0.3%) | 3 (0.8%) | - |
| Other | 3 (.9%) | 2 (0.6%) | 1 (2.1%) |
| White | 259 (73.8%) | 279 (77.1%) | 28 (60.9%) |

| Variable | Cisgender, heterosexual participants ($n$ = 351) | Cisgender sexual minority participants ($n$ = 362) | Gender minority participants ($n$ = 46) |
|---|---|---|---|
| Household income | | | |
| Between $0 and $19,000 | 60 (17.1%) | 71 (19.6%) | 5 (10.9%) |
| Between $20,000–$29,000 | 38 (10.8%) | 26 (7.2%) | 3 (6.5%) |
| Between $30,000–$39,999 | 27 (7.7%) | 34 (9.4%) | 7 (15.2%) |
| Between $40,000–$49,999 | 30 (8.5%) | 34 (9.4%) | 4 (8.7%) |
| Between $50,000–$59,999 | 32 (9.1%) | 31 (8.6%) | 4 (8.7%) |
| Between $60,000–$69,999 | 28 (8%) | 26 (7.2%) | 4 (8.7%) |
| Between $70,000–$79,999 | 22 (6.3%) | 19 (5.2%) | 4 (8.7%) |
| Between $80,000–$89,999 | 22 (6.3%) | 11 (3%) | 2 (4.3%) |
| Between $90,000–$99,999 | 15 (4.3%) | 25 (6.9%) | 2 (4.3%) |
| $100,000 or more | 71 (20%) | 82 (22.7%) | 11 (29.9%) |
| Health insurance status | | | |
| Insured | 302 (86%) | 305 (84.2%) | 37 (80.4%) |
| No insurance | 37 (10.5%) | 37 (10.2%) | 6 (13.1%) |
| Not sure | 12 (3.4%) | 13 (3.6%) | 3 (6.5%) |

* $p = <.05$

### *Descriptive ECP Behaviors By Group*

Overall, members of each group were highly willing to use ECPs. The range of participants in each group who reported ever using ECPs fell between 30.1% and 39.1%. This finding aligned with trends reported in the National Survey of Family Growth that have shown steady increases in usage, with 1 in 20 respondents reporting ever using ECPs in 2002, 1 in 10 in 2010, and 1 in 4 in 2018 (Daniels et al., 2013; Daniels & Abma, 2018, 2020). The majority of ECP users across groups reported using it between one and two times. LNG-EC (Plan B) is by far the most commonly used ECP, with the majority of ECP users in each group reporting using the over-the-counter form far more frequently than UPA-EC.

Willingness to use ECPs again varied by group, with 92.4% cisgender heterosexual participants being most willing to use again, followed by 82.6% of cisgender sexual minority participants, and 77.8% of gender minority participants. The most common reasons given for

being willing to use ECPs again were that ECPs had worked well for them before and not wanting to be pregnant. Among those who would decline using ECPs again, the most common reason was they desired a pregnancy. Table 4 shows differences in ECP behaviors by the three subgroups of cisgender, heterosexual participants, cisgender sexual minority participants, and gender minority participants.

**Table 4**

*Willingness and Uptake of ECPs*

| Variable | Cisgender heterosexual participants (*n* = 351) | Cisgender sexual minority participants (*n* = 362) | Gender minority participants (*n* = 46) |
|---|---|---|---|
| Willingness to use ECPs | *Mean Score (Std. Dev.)* | | |
| | 7.12 (2.1) | 7.45 (1.5) | 7.39 (1.2) |
| Ever used ECP | | | |
| Yes | 119 (33.9%) | 109 (30.1%) | 18 (39.1%) |
| No | 232 (66.1%) | 253 (69.9%) | 28 (60.9%) |
| Sexual and/or gender identity subgroup | Cisgender heterosexual ECP users (*n* = 119) | Cisgender sexual minority ECP users (*n* = 109) | Gender minority ECP users (*n* = 18) |
| Age at first ECP use | | | |
| 12 years old or younger | – | – | – |
| 13 to 17 years old | 16 (13.4%) | 16 (14.7%) | 2 (11.1%) |
| 18 to 22 years old | 62 (52.1%) | 58 (53.2%) | 8 (44.4%) |
| 23 to 27 years old | 15 (12.6%) | 21 (19.3%) | 4 (22.2%) |
| 28 to 33 years old | 16 (13.4%) | 7 (6.4%) | 2 (11.1%) |
| 34 to 39 years old | 5 (4.2%) | 43 (39.4%) | 2 (11.1%) |
| 40 years old or older | 5 (4.2%) | 4 (3.7%) | – |
| Year of first ECP use | | | |
| Before 1996 | 5 (4.3%) | 1 (.9%) | - |
| 1997–2000 | 4 (3.4%) | 2 (1.8%) | 1 (5.6%) |
| 2001–2004 | 9 (7.6%) | 7 (6.4%) | – |
| 2005–2008 | 11 (9.2%) | 13 (11.9%) | 4 (22.2%) |
| 2009–2012 | 23 (19.3%) | 13 (11.9%) | 5 (27.8%) |
| 2013–2016 | 24 (20.2%) | 26 (23.8%) | 2 (11.1%) |
| 2017–2020 | 30 (25.2%) | 33 (30.3%) | 4 (22.2%) |
| 2021–2022 | 10 (8.4%) | 12 (11%) | 2 (11.1%) |
| Don’t remember | 3 (2.5%) | 2 (1.8%) | – |

| Variable | Cisgender heterosexual participants ($n$ = 351) | Cisgender sexual minority participants ($n$ = 362) | Gender minority participants ($n$ = 46) |
|---|---|---|---|
| Number of times used ECP | | | |
| 1 time | 53 (44.5%) | 47 (43.1%) | 7 (38.9%) |
| 2 times | 27 (22.7%) | 29 (26.6%) | 4 (22.2%) |
| 3 times | 20 (16.8%) | 13 (11.9%) | 4 (22.2%) |
| 4 times | 9 (7.6%) | 7 (6.4%) | 1 (5.6%) |
| 5 or more times | 10 (8.4%) | 13 (11.9%) | 2 (11.1%) |
| Type(s) of ECP ever used | | | |
| LNG-EC (Plan B) | 105 (88.2%) | 85 (78%) | 15 (83.3%) |
| UPA-EC (ella) | 3 (2.5%) | 5 (4.6%) | – |
| Don't remember | 13 (10.9%) | 23 (21.1%) | 3 (16.7%) |
| Willing to use ECP again | | | |
| Yes | 110 (92.4%) | 90 (82.6%) | 14 (77.8%) |
| No | 9 (7.6%) | 19 (17.4%) | 4 (22.2%) |
| Reasons for willing to use ECP again | | | |
| ECPs worked for me before | 96 (87.3%) | 79 (87.8%) | 12 (85.7%) |
| Had few side effects from ECPs | 75 (68.2%) | 65 (72.2%) | 7 (50%) |
| Easy to access | 67 (60.9%) | 58 (64.4%) | 10 (71.4%) |
| Privacy | 15 (13.6%) | 15 (16.7%) | 2 (14.3%) |
| Cost | 7 (6.4%) | 8 (8.9%) | 3 (21.4%) |
| Ease of use | 50 (45.5%) | 46 (51.1%) | 6 (42.9%) |
| Currently do not want to be pregnant | 92 (83.6%) | 70 (77.8%) | 11 (78.6%) |
| Other | 4 (3.6%) | 5 (5.6%) | – |
| Reasons for not being willing to use ECPs again | | | |
| ECPs did not work for me | 1 (11.1%) | 1 (5.3%) | 1 (25%) |
| Side effects | 3 (33.3%) | 3 (15.8%) | – |
| No longer able to become pregnant | 3 (33.3%) | 3 (15.8%) | – |
| Using a LARC | – | 3 (15.8%) | – |
| Moral or ethical concerns | 1 (11.1%) | 2 (10.6%) | 1 (25%) |
| Unable to locate ECPs | – | - | – |
| ECP costs | 2 (22.2%) | - | – |
| Want to become pregnant | 3 (33.3%) | 7 (36.8%) | 1 (25%) |
| Unsafe for to Use ECPs due to Other Medical Condition | – | - | – |
| Other | – | 4 (21%) | 1 (25%) |

***Descriptive Scale Scores by Group***

Similarly to ECP behaviors, there were relatively minimal differences in mean scores and standard deviations across the three groups. Medical mistreatment, experiences of reproductive coercion, ECP knowledge, and internalized stigma were low across all three groups. Knowledge scores were overall lower than anticipated, with mean scores being in the middle of the range for the measure. Sexual and reproductive empowerment remained high across the groups. Table 5 shows mean scores by subgroup.

**Table 5**

*Mean Scale Scores by Group*

| Variable | Mean | Std. Dev. | Std. Error | 95% CI Lower Bound | 95% CI Upper Bound |
|---|---|---|---|---|---|
| Medical mistreatment | | | | | |
| Cisgender heterosexual participants | .81 | 1.21 | .06 | .68 | .93 |
| Cisgender sexual minority participants | .85 | 1.38 | .07 | .71 | .99 |
| Gender minority participants | .63 | 1.53 | .23 | .18 | 1.08 |
| Sexual and reproductive empowerment | | | | | |
| Cisgender heterosexual participants | 23.88 | 3.61 | .19 | 23.5 | 24.26 |
| Cisgender sexual minority participants | 24.29 | 3.46 | .18 | 23.93 | 24.26 |
| Gender minority participants | 24.1 | 3.54 | .53 | 23.25 | 25.4 |
| Reproductive coercion | | | | | |
| Cisgender heterosexual participants | 4.65 | .83 | .05 | 4.56 | 4.74 |
| Cisgender sexual minority participants | 4.63 | .87 | .05 | 4.54 | 4.72 |
| Gender minority participants | 4.51 | .94 | .14 | 4.23 | 4.79 |
| ECP knowledge | | | | | |
| Cisgender heterosexual participants | 4.9 | 1.73 | .1 | 4.71 | 5.09 |
| Cisgender sexual minority participants | 4.84 | 1.62 | .09 | 4.67 | 5.02 |
| Gender minority participants | 5.0 | 1.92 | .29 | 4.41 | 5.59 |
| Internalized stigma | | | | | |
| Cisgender heterosexual participants | .47 | .89 | .05 | .37 | .56 |
| Cisgender sexual minority participants | .47 | .93 | .05 | .37 | .56 |
| Gender minority participants | .46 | .78 | .12 | .22 | .69 |

***Comparisons Between Cisgender Sexual Minority and Cisgender Heterosexual Participants***

When comparing differences between cisgender heterosexual participants and cisgender sexual minority participants, there was a statistically significant difference ($t$ = -2.46, $p$ < .001) in willingness to use ECPs, with sexual minority participants' average of 7.45 willingness score being .33 higher than their heterosexual counterparts at 7.12. Similar to the three-group descriptive comparison, no statistically significant differences on mean scores were found on the other measures.

For the subgroup of ECP users among the two groups, cisgender sexual minority participants were less likely to report willingness to use ECPs again ($\chi^2$ [1] = 5.14, $p$ = .023) than cisgender heterosexual ECP users. The most common reason given as to why sexual minority ECP users would decline using ECPs again was a desire to become pregnant. Table 6 shows between group comparisons among cisgender heterosexual participants and cisgender sexual minority participants on key variables.

**Table 6**

*Mean Scale Score Comparisons*

| Variable | Cisgender heterosexual participants | | Cisgender sexual minority participants | | | |
|---|---|---|---|---|---|---|
| | Mean | *SD* | Mean | *SD* | *p* | Cohen's *d* |
| Medical mistreatment | .81 | 1.21 | .85 | 1.38 | .12 | 1.3 |
| Sexual and reproductive empowerment | 23.88 | 3.61 | 24.29 | 3.46 | .26 | 3.53 |
| Reproductive coercion | 4.65 | .84 | 4.63 | .87 | .53 | .85 |
| ECP knowledge | 4.9 | 1.73 | 4.84 | 1.62 | .59 | 1.68 |
| Internalized stigma | .47 | .89 | .47 | .93 | .69 | .91 |
| Willingness to use ECPs | 7.12 | 2.05 | 7.45 | 1.48 | <.001 | 1.79 |

There were no statistically significant differences between groups regarding having ever used ECPs ($\chi^2$ [2] = 2.18, $p$ = .336) and the average number of times ECPs were ever used by participants, $t$(226) = -.274, $p$ = .392.

***Age Stratified Sensitivity Analysis***

Further analysis to determine if age, and potentially recall bias, had an impact on the reported rates of ECP use were completed comparisons by sexual orientation and gender identity. Table 7 shows cumulative incidences for ECP use do show some variability when compared between the two age groups. Participants who were 50 years or older and heterosexual, bisexual, or asexual had higher cumulative incidences. Additional measurements to estimate the variability in recall accuracy were not completed by participants; cross-sectional studies related to contraceptive uptake have indicated higher age may be associated with underreporting using contraception. Without additional data, these findings are presented as solely descriptive rates of incidence.

**Table 7**

*Age-Stratified Sensitivity Analysis for ECP Uptake by Sexual Orientation*

| Current Age | Participants 18–49 years old | | | Participants ≥ 50 years old | | |
|---|---|---|---|---|---|---|
| Sexual Orientation | ECP Users | Non ECP Users | Cumulative Incidence | ECP Users | Non ECP Users | Cumulative Incidence |
| Heterosexual | 98 | 211 | 31.7% | 32 | 38 | 45.7% |
| Homosexual | 15 | 34 | 30.6% | 1 | 6 | 14.3% |
| Bisexual | 59 | 158 | 27.2% | 13 | 24 | 35.1% |
| Asexual | 13 | 15 | 46.4% | 4 | 4 | 50% |
| Other Sexual Orientation | 10 | 17 | 37% | 1 | 4 | 20% |

Similar variability in reported incidence was also found by gender identity. In Table 8, participants 50 years or older who identified as cisgender female or a different gender identity

reported higher rates of incidence. The proportion of participants identifying as a gender minority (transmale or trans man, genderqueer or gender nonconforming, or a different identity) is also smaller, again suggesting that these rates of cumulative incidence should be approached with an understanding that both under sampling and recall bias both have an influence on these cumulative incidences.

**Table 8**

*Age-Stratified Sensitivity Analysis for ECP Uptake by Gender Identity*

| Current Age | Participants 18–49 years old | | | Participants ≥ 50 years old | | |
|---|---|---|---|---|---|---|
| Gender Identity | ECP users | Non ECP Users | Cumulative Incidence | ECP Users | Non ECP Users | Cumulative Incidence |
| Cisgender Female | 180 | 416 | 30.2% | 48 | 69 | 41% |
| Trans male/trans man | 2 | 2 | 50% | 0 | 3 | 0% |
| Genderqueer/gender non conforming | 12 | 16 | 42.9% | 2 | 4 | 33.3% |
| Different identity | 0 | 2 | 0% | 1 | 0 | 100% |

## Discussion

Overall, the findings from this study suggested that experiences predictive of willingness to use ECPs and ECP uptake by group were only notably different on a few measures. The few distinctions found when comparing groups indicates there may be other patterns of factors influencing uptake that could be more thoroughly explained through integration of analysis that permits for an intersectional approach, such as latent class analysis (LCA).

The underperformance of all groups on the knowledge about ECPs scale, contrasted with the overall high willingness to use ECPs, contradicted much of the earlier findings about underutilization of ECPs that suggested increased knowledge would increase willingness to use and uptake (Ahern et al., 2010; Chuang & Freund, 2005; Foster et al., 2004; Hickey, 2009). Instead, it appeared participants may be willing to take a perceived risk using a form of

contraception they know less about if it means preventing other outcomes they are most concerned about, including an undesired pregnancy. Because emergency contraception has become the last option for many Americans to prevent an unwanted pregnancy after the overturn of *Roe v. Wade*, understanding the role of knowledge in ECP decision making, especially as the perceived risks or consequences from not using ECPs are likely higher for many, is particularly important to guide public health interventions and contraceptive counseling.

The findings of this study demonstrate that the pathways between multiple aspects of one's identity, and sexual and reproductive health decisions, are complex. The finding that sexual minority women both were the most willing group to use ECPs but also least willing to reuse due to pregnancy desires reiterates that these decisions are rarely linear. Moreover, assumptions that there is no variance in the risk or desire for pregnancy among sexual minority women flatten complex identities and experiences into simple stereotypes. Because of prior research establishing that cisgender sexual minority women often are not given adequate, if any, counseling regarding contraception, the lack of support may mean these participants instead found themselves having to invest more time independently researching and learning about contraception and pregnancy to meet their own needs and concerns (Carpenter, 2021; Carpenter et al., 2020; Everett, Higgins, et al., 2019; Higgins et al., 2019). Similar nuances have often been missing from health messaging and counseling of individuals outside of the reproductive age window of 15–49 years old. The age stratification sensitivity analysis found the older cohort of participants above the age of 50 had a comparatively higher relative risk of both using ECPs and willingness to use ECPs again than the younger cohort. Most literature on age and contraceptive counseling has focused on pregnancy prevention among adolescents (Higgins et al., 2016; Khorsandi et al., 2021; Mann et al., 2022).

## Study Strengths and Limitations

The analytic sample consisted of over 750 participants, with over half of the participants being cisgender sexual minority women and gender minorities. The diversity of backgrounds allowed me to address a critical gap in the literature examining contraceptive willingness and behaviors among gender and sexual minorities. The sample was composed of participants who engaged in online research studies with median ages between 34–39 years. Thus, the results may not generalize to older or younger participants nor those who have limited access to the internet. Some qualitative comments left by participants indicated those who were outside of reproductive age or were a sexual minority did not think of themselves as needed as a part of a sample on contraceptive attitudes and behaviors, with some stating they believed their abilities to participate was an error. Reflecting on these comments, it is likely that participants who have been historically excluded from contraceptive research saw the survey and did not take it out of belief that the topic did not merit participants from diverse identities. Though online surveys are more likely to have overrepresentation of respondents with a minimum of some higher education experience, the findings of this survey may also not be fully representative of those who have not been able to pursue higher education (Sterrett et al., 2017). Similarly, aspects of intersectional identities and subsequent experiences with healthcare providers may not have been captured due to the majority of participants identifying as white and cisgender. Implications on the influence recall bias on the reported incidence of ECP usage by participants 50 years or older also place a limitation on the degree of accuracy that can be extrapolated from these descriptive findings.

## Conclusions

Factors influencing willingness to use ECPs, their usage, and willingness to use again varied when comparing heterosexual and sexual minority women. Further evaluation of the

motivations, intentions, and other decision-making factors sexual minority women consider when deciding to use ECPs should be evaluated more in-depth through qualitative methods. The contraceptive and family planning needs of gender minorities and the known deficits in medical training also must be addressed to target health inequities.

## Chapter 4: Manuscript 2 – Examination of the Factors Associated with Emergency Contraceptive Pill Use in the United States through Latent Class Analysis

Limited research has been completed to understand willingness and uptake of emergency contraceptive pills (ECPs) among a more inclusive sample of Americans who can become pregnant. Understanding different factors driving attitudes and uptake can help identify barriers to ECP uptake, especially as barriers or protective factors may have heterogeneous patterns based on aspects of identity or stigma.

**Methods**

A web survey was completed by 759 participants who identified as American and biologically female. Latent class analysis (LCA) was completed to identify subgroups among the respondents. The latent class model was then used to determine if these experiences predicted willingness to use ECPs and the number of times ECPs were used. Differences between classes on these two outcomes of interest were compared using chi-square tests.

**Results**

The LCA final model had three classes: high reproductive coercion/low stigma (Class 1), low reproductive coercion/low stigma (Class 2), and low reproductive coercion/high stigma (Class 3). The model did not predict willingness to use ECPs, but did find that membership in Class 3 was associated with statistically significant higher usage of ECPs.

**Conclusions**

Individuals who experienced higher levels of stigma toward their use of ECPs nonetheless had higher prevalence of use. Further investigation of this phenomenon can inform practice and policy to understand the impact of stigma and promote reproductive justice.

## Introduction

In the United States, a paradox exists around contraception and reproductive rights: there are more types of highly effective contraceptive methods available than ever before, including emergency contraception (EC), yet the rate of unintended pregnancies has remained stable despite a notable increase in policies restricting or limiting access to affordable contraception in the last two decades (Finer & Zolna, 2014; Guttmacher Institute, 2021, 2022b; Higgins, 2014; Hussain & Kavanaugh, 2021; Kavanaugh & Jerman, 2018). Currently, 1 in 2 pregnancies in the United States is unplanned, a percentage that has not shifted significantly in the last 25 years (Daniels & Abma, 2018; Finer & Zolna, 2014; Higgins, 2014). These disparities are not equitably distributed among Americans who could become pregnant; the burden disproportionately falls upon those with limited access to healthcare, people of color, gender and sexual minorities, those with lower socioeconomic status, and people living in the South (H. N. Bailey et al., 2012; Cleland et al., 2020; Crear-Perry et al., 2021; Prather et al., 2018; Smith, 2017b; E. Smith et al., 2020; Sweeney & Raley, 2014).

With consideration of reproductive rights and justice to access contraception, it is essential to consider the political influences on the social determinants of health that have yielded the wide disparities in reproductive health outcomes that are still present in the United States (Atkins & Bradford, 2014; Beal & Illingworth Plake, 2020; Pace et al., 2019; Sweeney & Raley, 2014; Tschann & Soon, 2015). The perennial tension between state and federal governments regarding access to reproductive health services has dictated that place and an intersectional approach to personal identity be centered in the discussion of contraceptive access, selection, and uptake (Atkins & Bradford, 2014; Beal & Illingworth Plake, 2020; Briggs, 2018; Pace et al., 2019; Tschann & Soon, 2015). Access to ECPs has been more strictly regulated at the

state level than other forms of contraception after the Federal Drug Administration (FDA) approved their distribution as prescriptions in 1998 (Prescott, 2011). Further state-level regulations followed the U.S. Food and Drug Administration's (FDA's) approval for ECPs to be sold over the counter in 2013 without age restrictions, and researchers have raised concerns about such policies resulting in the under-utilization of ECPs, which in turn affects rates of unintended pregnancy (Bosworth et al., 2014; Devine, 2012; FDA, 2013). Noting that ECPs are unique because they can be used reactively after unprotected sex as another option to prevent pregnancy—but also only work within a relatively short window of 72 to 120 hours—additional restrictions limiting access to ECPs can effectively derail the opportunity to exercise one's reproductive agency to choose to use ECPs (Croxatto & Fernández, 2006; Smith, 2017b).

The impact of restrictions on affordable reproductive healthcare and contraception in the United States means as of 2020, 19 million people who could become pregnant reside in "contraception deserts," counties where there is no reasonable access to low-cost providers offering a full range of contraceptive options (Barber et al., 2019). Because ECPs are used reactively, accessing this form of contraception when residing in a contraceptive desert or facing other barriers to reproductive health care is of the utmost importance in maintaining self-determination and agency around one's reproductive health. Likewise, descriptive trend data are needed to serve as a foundation for addressing the myriad inequities among people seeking reproductive healthcare in the United States. Given these considerable barriers to high-quality reproductive healthcare, this study explored current knowledge and beliefs about the accessibility of ECPs and their use in the United States through a national survey.

LCA was selected as the analytical methodology for Aim 2 based on its congruence with the health stigma and discrimination framework's multidimensional approach to understanding

how stigma interacts with multiple aspects of one's identity and experiences to create varying levels of barriers. The impact of stigma on health decisions has consistently found that regardless of the area of health, underutilization of health services is a common way to manage and reduce exposure to stigma and stress (Logie et al., 2018; Stangl et al., 2019; Stuber et al., 2008; Turan et al., 2019). Stigma is also known to be a barrier for individuals who are sexual and or gender minorities in accessing healthcare, yielding increased disparities among these groups (Hussein & Ferguson, 2019; Layland et al., 2022; Logie et al., 2012, 2018; Stangl et al., 2019).

Because ECPs are underutilized, using a framework that focused on one of the main drivers of underutilization was necessary to understand the scope of this issue and how underutilization may vary based on multiple aspects of identity or experience (Devine, 2012; Layland et al., 2022; Stangl et al., 2019). Considering that gender and sexual minorities who could become pregnant have historically been excluded from research about contraception, implementation of methodologies that work in the health stigma and discrimination framework assists in creating a more inclusive research approach to the topic (Carpenter, 2021; Everett, Higgins, et al., 2019; Layland et al., 2022; Stangl et al., 2019).

Stigma researchers have emphasized that the multiple dimensions of this construct and its relationship to intersectional identities requires approaches that are additive and inclusive of multiple aspects of identity and experience rather than the more common practice of looking at the association between a singular mutually exclusive group and an outcome variable (Bauer, 2014; Bowleg, 2012; Layland et al., 2022; Logie et al., 2021; Turan et al., 2019). I applied a unidimensional approach in this study by parsing participants into cisgender heterosexual participants, cisgender sexual minority participants, and gender minority participants into regression models to determine if there was a predictive relationship between this sole aspect of

identity and willingness to use ECPs and ECP usage; in doing so, only two predictive relationships were found.

Between-group comparisons on a sole aspect of identity have similarly been found to not fully represent the heterogeneity in both health outcomes and stigma experiences, especially among sexual and gender minorities (Coulter et al., 2019; Logie et al., 2021; Plöderl & Tremblay, 2015). Instead, LCA can be used to show patterns across known predictors of underutilization or uptake of ECPs (e.g., mistreatment in medical settings, sexual and reproductive empowerment, knowledge, internalized stigma about ECP use) and aspects of identity and experience to be fully inclusive of how all these constructs may interact and vary to understand the underutilization of ECPs. For this study, detecting more facets of what drives underutilization was prioritized to accurately describe the compound effect of multiple aspects of experience and identity and identify subgroups who would experience barriers due to differing factors. Prior research has established these compounding effects of multiple aspects of identity and experience yield disparities in health, providing a fuller context to these disparities beyond those found when only comparisons between groups are based on a single aspect of identity, such as gender identity or race (Assi et al., 2022; Kinney et al., 2022; Layland et al., 2022; LoSchiavo et al., 2020; Nguyen et al., 2021; Raifman et al., 2021; Xiao et al., 2022).

## Methods

### *Data and Sample*

The survey was designed to create a comprehensive, national survey regarding Americans' willingness to use or uptake ECPs. Survey data were collected in March 2022. The sample was recruited using Prolific, a United Kingdom-based online survey recruitment and incentive distribution platform. Potential participants were rescreened on key demographic

questions and were eligible to participate if they matched the following criteria: (a) lived in the United States, (b) their biological sex was female, and (c) they were between 18 and 70 years old at the time of the survey. The age range was kept as broad as possible to capture a full range of experiences among people who could become pregnant from when the first ECP became available in 1996 to present time.

To recruit equally from both sexual and/or gender minority participants as well as their cisgender heterosexual peers, the two recruitments occurred concurrently with the additional criteria of either identifying as a sexual and/or gender minority or as a cisgender heterosexual female. The concurrent recruitment resulted in 404 sexual and/or gender minority participants and 355 cisgender heterosexual female participants, yielding a total of 759 participants. Individuals who met the screening criteria for either arm of the study received an email invitation and a message on their Prolific dashboard notifying them of their eligibility to participate. Consent was received after participants opted to take the survey on Prolific as their first set of screening questions. Micropayments of approximately £1.09 ($1.11) were distributed to participants who completed the survey and passed attention checks. The University of Maryland, College Park Internal Review Board (IRB) reviewed and approved the study protocol.

Prior survey studies about willingness to use ECPs and uptake have often focused on cisgender heterosexual women in college and only a small group of more recent surveys have used more expansive inclusion criteria (Blunt-Vinti et al., 2018; Everett, Higgins, et al., 2019; Gomez et al., 2020; Krempasky et al., 2020; Stark et al., 2019). After reviewing the literature, this study was designed to capture contemporary trend data on participants' willingness to use ECPs and their uptake to be inclusive of the experiences of sexual and gender minority Americans with ECPs.

### *Measures and Constructs*

For this study, established predictors of ECP use were selected as key constructs to be included in the model, including prior experiences of reproductive coercion; knowledge of ECPs; sexual and reproductive empowerment; and known barriers to sexual and reproductive healthcare, including being ignored or mistreated in medical settings and enduring internalized stigma about ECP use (Brenick et al., 2017; Carpenter, 2021; Ellertson et al., 1997; Everett, Higgins, et al., 2019; Harper et al., 2003; Heller et al., 2019; Lehan Mackin et al., 2015; McCauley et al., 2017; Neustadt et al., 2011; Upadhyay et al., 2021; Williams et al., 2021). Measures of mistreatment or being ignored in medical settings were selected specifically in response to literature indicating that receiving ECP counseling predicts use, yet sexual and gender minorities who could become pregnant often do not receive any contraceptive counseling (Carpenter, 2021; Everett, Higgins, et al., 2019; Higgins et al., 2019; Kavanaugh & Schwarz, 2008; Reynolds & Charlton, 2021).

Respondents were asked to answer questions from previously evaluated measures about sexual and reproductive health knowledge and experiences, stigmatizing experiences in healthcare settings, accessibility of ECPs in their communities, and their thoughts about the acceptability of using ECPs for others and themselves (Brenick et al., 2017; Lehan Mackin et al., 2015; McCauley et al., 2017; Upadhyay et al., 2021; Williams et al., 2021). Respondents who reported using ECPs were asked questions about their first time using ECPs, their willingness to use ECPs again, and what reason(s) they had for determining if they would or would not use ECPs again. Measures applying an intersectional approach in their design and development (e.g., that the investigator recognized that multiple aspects of one's identity including gender identity, sex, race or ethnicity, religion, sexual orientation, weight can yield different health outcomes and

were inclusive of the impact of a stigmatized identity) were also sought out (Brenick et al., 2017; Lehan Mackin et al., 2015; McCauley et al., 2017; Turan et al., 2019; Upadhyay et al., 2021; Williams et al., 2021).

### *Dependent Variables*

Willingness to use ECP and the number of times ECP has been used were the two outcomes of interest. Questions specific to these outcomes included a four-question survey about under what circumstances someone would be willing to use ECPs, and if they had ever used ECPs, as adapted from Lehan Mackin et al. (2015). Lehan Mackin et al. (2015) constructed willingness to use ECPs as the degree to which an individual agrees that ECP use is acceptable with consideration of different circumstances including cost or reason why ECP is needed. Respondents are asked to respond to a question such as "Would you use emergency contraception pill if insurance covered the entire cost?" with a three-point response option of either *yes*, *no*, or *not sure*.

Questions specific to ECP usage were not based on scales, but self-reported on whether or not the respondent had ever used ECPs (*yes* or *no*) and then for those identifying as having used ECPs to report on the number of times they had used ECPs (1 to 5 or more times).

### *Independent Variables*

I collected measures of sexual and reproductive empowerment, ECP knowledge, experiences of discrimination in healthcare settings, experiences of reproductive coercion, and internalized stigma regarding circumstances in which respondents considered using ECPs (Brenick et al., 2017; Lehan Mackin et al., 2015; McCauley et al., 2017; Upadhyay et al., 2021; Williams et al., 2021).

Upadhyay et al. (2021) created the sexual and reproductive empowerment scale specifically identify the factors that comprise an overall sense of empowerment in sexual and reproductive health decision making, which the authors identified as being a multidimensional latent construct comprised of several domains. The construct of sexual and reproductive empowerment is comprised of nine domains: bodily esteem, awareness and autonomy; recognition of voice and opinions; voice; self-efficacy; future orientation; social support; safety/protection; education and knowledge/awareness; access to health care; and access to money/resources. Questions asked included "My sexual needs or desires are important" (i.e., sexual pleasure domain) and "I have the power to control if and when I have children" (i.e., choice of partners, marriage, and children domain; Upadhyay et al., 2021). Respondents rated these statements on a five-point scale reflecting on how true the statement was for them, from not true at all (1) to extremely true (5). The responses to these questions were summed and a higher score was indicative of higher levels of sexual and reproductive empowerment.

Lehan Mackin et al. (2015) created the knowledge scale comprised of short statements about ECPs for participants to designate whether they believed them to be true or false or if they were unsure, indicating their familiarity with facts about ECPs. Questions asked included "emergency contraception pills can be bought over-the-counter, regardless of age or gender" (Lehan Mackin et al., 2015, p. 16). Responses to these questions were summed with correct answers being worth 1 point, unsure answers being worth zero points, and incorrect answers being a negative 1 point, yielding a final sum score indicative of the total number of questions answered correctly by the respondent.

Brenick et al. (2017) defined stigmatizing experiences in healthcare settings as situations when participants reported perceived stigma where they were either ignored or mistreated by a

healthcare provider based on their race and sexual orientation. Respondents were asked to reflect on a scenario, for example, “I have been mistreated by healthcare providers due to my race” (Brenick et al., 2017, p.5). Respondents then rated their agreement with these statements on a 4-point Likert-like scale from strongly disagree (1) to strongly agree (4; Brenick et al., 2017). These responses were then summed to create a total score for each respondent.

A refined version of McCauley et al.’s (2017) Reproductive Coercion Scale was used to measure experiences of reproductive coercion, with the two domains comprising the construct of reproductive coercion being pregnancy coercion by a partner and manipulation of a condom by a partner. Questions asked in this shortened version of the scale included describing situations such as “ have you ever had a partner who has taken your birth control (like pills) away from you or kept you from going to the clinic to get birth control” (pregnancy coercion domain) and “taken off the condom while you were having sex, so you would get pregnant” (condom manipulation by a partner) and indicating if *yes* or *no* in response to each scenario (McCauley et al., 2017, p. 6). Responses of *yes* were given a value of 1 point and no responses zero; a higher sum score is indicative of higher reproductive coercion.

Williams et al. (2021) defined internalized stigma as a construct as identifying with having considered ECPs in certain situations but having concerns about the perceived risk of judgement of others. Questions asked in this scale included “there have been times when I felt like I should use emergency contraception but I was too embarrassed to buy it or ask someone for help” and “there have been times when I felt like I should use emergency contraception but I was worried what my partner might think of me” (Williams et al., 2021, p. 11). Respondents were asked to indicate whether they had felt this way before or not. Responses indicating having

felt this way were assigned a 1-point value and summed; a higher sum score on this scale meant the respondent had multiple instances of internalized stigma regarding ECP use.

### *Class Validation Variables*

After finalizing the class model, additional analyses were run to determine the probabilities of members of each class belonging to different demographic groups related to their age, region of residence, education, race or ethnicity, sexual orientation, gender identity, and income level. These analyses were completed to assess the distribution of demographic groups across the three classes and, if unequal distributions were found, integrating these characteristics into the labels for each respective class (Weller et al., 2020).

## Data Analysis

Descriptive statistics were completed using counts and percentages for each categorical demographic question. Mean and median were calculated for age. LCA was selected as the primary statistical analysis technique as it allowed for the identification of commonalities in responses among participants that are highly distinct from other groups response patterns (Goldberg & Halpern, 2017; Layland et al., 2022). These otherwise unseen groupings (latent classes) in turn can be used to identify heterogeneity in health outcomes that are intersectional identities, and the impact of community or system-level differences that otherwise would not be seen in completing between-groups comparisons (Layland et al., 2022). For health behaviors where policy and accessibility and community stigma must be considered, as is the case with the ECPs, it was even more important to select an approach that allowed for an intersectional evaluation (Layland et al., 2022). After completion of the LCA and application of the model to multinomial regressions to determine if membership in each class  predicted willingness to use

ECPs or the number of times ECPs were used, class membership probabilities were calculated for class validation for each categorical demographic question.

## Results

### *Participant Characteristics*

A total of 759 participants completed the survey (see Table 9). Most participants were White (74.5%), were between the ages of 18 and 39 (69.7%), identified as cisgender females (94.2%), and had health insurance (86.2%). The sexual orientation of participants was split between heterosexual participants (50.1%) and sexual minorities (49.9%), with most sexual minority participants identifying as bisexual (33.6%). Household income levels varied widely, with both the lowest income level of between $0 to $19,999 (18.1%) and the highest level of income of $100,000 or more annually (22%) having the largest proportions of participants.

**Table 9**

*Participant Demographics*

| Variable | Mean | Median | Range |
|---|---|---|---|
| | 34.1 | 31 | 18–70 |
| Age | *n* | *%* | |
| 18–28 years old | 311 | 41 | |
| 29–39 years old | 218 | 28.7 | |
| 40–49 years old | 103 | 13.6 | |
| 50–59 years old | 89 | 11.7 | |
| 60 years old and older | 38 | 5 | |
| Residence | *n* | *%* | |
| Northeast | 161 | 21.2 | |
| Midwest | 164 | 21.3 | |
| South | 276 | 36.4 | |
| West | 158 | 21 | |
| Education | *n* | *%* | |
| No higher education experience | 243 | 32 | |
| Some higher education experience or more | 516 | 68 | |
| Gender identity | *n* | *%* | |
| Female | 713 | 94.2 | |

| Variable | Mean | Median | Range |
|---|---|---|---|
| Transmale or transman | 7 | .9 | |
| Genderqueer or gender nonconforming | 34 | 4.5 | |
| Other gender identity | 3 | .4 | |
| Sexual orientation | | *n* *%* | |
| Heterosexual | 379 | 50.1 | |
| Homosexual | 56 | 7.4 | |
| Bisexual | 254 | 33.6 | |
| Asexual | 36 | 4.7 | |
| Other | 32 | 4.2 | |
| Race and ethnicity | *n* | *%* | |
| African | 2 | .26 | |
| African American/Black | 43 | 5.4 | |
| Caribbean | 4 | .5 | |
| East Asian/South Asian/Southeast Asian | 48 | 6.3 | |
| Latino/Hispanic | 42 | 5.5 | |
| Middle Eastern | 5 | .7 | |
| Mixed | 41 | 5.4 | |
| Native American or Alaska Native | 4 | .5 | |
| Other | 6 | .8 | |
| White | 566 | 74.6 | |
| Health insurance status | *n* | *%* | |
| Insured | 648 | 86.2 | |
| Not insured | 80 | 10.5 | |
| Unsure | 24 | 3.2 | |
| Household income | *n* | *%* | |
| Between $0 and $19,999 | 136 | 18.1 | |
| Between $20,000–$29,999 | 67 | 8.9 | |
| Between $30,000–$39,999 | 68 | 9 | |
| Between $40,000–$49,999 | 68 | 9 | |
| Between $50,000–$59,999 | 67 | 8.9 | |
| Between $60,000–$69,999 | 58 | 7.7 | |
| Between $70,000–$79,999 | 45 | 6 | |
| Between $80,000–$89,999 | 35 | 4.8 | |
| Between $90,000–$99,999 | 42 | 5.6 | |
| $100,000 or more | 165 | 22 | |

Specific to behaviors and attitudes toward ECPs (see Table 10), willingness to use ECPs was extremely high, with a mean score of 7.29 on a scale of 0–8. One in 3 respondents ($n$ = 246) reported using ECPs at least once, and the majority (82.9%) of those who reported using ECPs

used them between 1 and 3 times. LNG-EC (brand name Plan B) was the most used type of ECP, with 83.3% of respondents reporting using it.

**Table 10**

*Attitudes and Usage of Emergency Contraception Pills*

| Variable | Mean (*SD*) | Median | Range |
|---|---|---|---|
| Willingness to use ECPs | 7.29 (1.77) | 8 | 0–8 |
| Ever used ECPs | *n* | *%* | |
| Yes | 246 | 32.4 | |
| No | 513 | 67.6 | |
| Number of times used ECPs | | | |
| 1 time | 107 | 43.5 | |
| 2 times | 60 | 24.4 | |
| 3 times | 37 | 15 | |
| 4 times | 17 | 6.9 | |
| 5 or more times | 25 | 10.2 | |
| Age at first ECP use | *n* | *%* | |
| 12 years old or younger | 0 | 0 | |
| 13–17 years old | 34 | 13.8 | |
| 18–22 years old | 128 | 52 | |
| 23–27 years old | 40 | 16.3 | |
| 28–33 years old | 25 | 10.2 | |
| 34–39 years old | 10 | 4.1 | |
| 40 years old or older | 9 | 3.7 | |
| Year of first ECP use | | | |
| Before 1996 | 6 | 2.5 | |
| Between 1997 and 2000 | 7 | 2.9 | |
| Between 2001 and 2004 | 16 | 6.7 | |
| Between 2005 and 2008 | 28 | 11.6 | |
| Between 2009 and 2012 | 41 | 17 | |
| Between 2013 and 2016 | 52 | 21.6 | |
| Between 2017 and 2020 | 67 | 27.8 | |
| Between 2021 and 2022 | 24 | 9.9 | |
| Don’t remember | 4 | 1.6 | |
| Type(s) of ECP ever used | *n* | % | |
| LNG-EC (Plan B) | 205 | 83.3 | |
| UPA-EC (ella) | 8 | 3.2 | |
| Don’t remember the type | 39 | 15.5 | |

### *Model Selection*

Model fit was guided by the best practices recommended by leading statistical experts in LCA (King et al., 2019; Nylund et al., 2007; Nylund-Gibson & Choi, 2018; Weller et al., 2020). All four articles emphasized that no singular statistic can be used to determine fit. This consensus informed the decision to use Mplus version 8.8 to generate sequential iterations of class models and fit statistics, beginning with a two-class model and ending with a seven-class model. Models were assessed by using Akaike Information Criteria (AIC), Bayesian Information Criteria (BIC), Entropy, Vuong-Lo-Mendell-Rubin Likelihood Ratio Test, Lo-Mendell-Rubin Adjusted Likelihood Ratio Tests, and reviewing the size of each class in each model. Noting best practices, model fit was assessed by looking for progressive decreases in both AIC and BIC, high entropy (within the .8 to 1 range), statistically significant results from both likelihood ratio tests to indicate an additional class had improved the model, and for no class to be less than 5% of the total sample.

After comparisons across all models, a three-class model was selected (see Table 11). The four- and seven-class models were not statistically significant, indicating poor parsimony (King et al., 2019). The five- and six-class models were found to each contain small classes of 20–30 participants and did not meet the requirement that no class was less than 5% of the total sample; interpretability became more limited with each additional class (Weller et al., 2020).

**Table 11**

*Class Model Comparisons*

| Model | Akaike information criteria (AIC) | Bayesian information criteria (BIC) | Entropy | Vuong-Lo-Mendell-Rubin Likelihood Ratio Test (*p* value) | Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (p value) |
|---|---|---|---|---|---|
| 2 classes | 24222.4 | 24338.2 | .987 | < .001 | < .001 |
| 3 classes | 23674.2 | 23831.7 | .986 | < .001 | < .001 |
| 4 classes | 22786.6 | 22985.8 | .997 | .412 | .416 |

| | | | | | |
|---|---|---|---|---|---|
| 5 classes | 22411.2 | 22652.0 | .986 | .013 | .014 |
| 6 classes | 22274.8 | 22274.8 | .97 | .016 | .017 |
| 7 classes | 22206.92 | 22206.9 | .967 | .508 | .508 |

Median scores on each of the measures for each class were then compared to one another to create qualitative descriptors of each class. Upon review, experiencing reproductive coercion and perceived stigma toward using ECPs emerged as the most distinguishing variables between the three groups. Members of Class 1 ($n$ = 53) reported high reproductive coercion, but low stigma toward using ECPs. Class 2 ($n$ = 601) reported low reproductive coercion and low stigma, and Class 3 ($n$ = 105) reported low reproductive coercion but high levels of stigma. Differences between the three groups on other variables including knowledge of ECPs, sexual empowerment and boundaries, prior mistreatment in medical settings, worries about using ECPs, ECP accessibility in their community, and acceptance of the use of ECPs by other people were not notably different (see Table 12).

**Table 12**

*Mean Scores Across Classes*

| Scale used | Range for scale sum scores | Class 1 mean scale score | Class 2 mean scale score | Class 3 mean scale score |
|---|---|---|---|---|
| Stigma and medical mistrust scale (Brenick et al., 2017) | 0–8; 8 high mistreatment/ignored | 0.89 | 0.81 | 0.82 |
| Sexual and reproductive empowerment scale (Upadhyay et al., 2021) | 0–28; 28 high sexual empowerment | 25.7 | 24.1 | 23.6 |
| Reproductive coercion scale – short form (McCauley et al., 2017) | 0–5; 5 low reproductive coercion | 2.03 | 4.84 | 4.76 |
| Emergency contraceptive knowledge & willingness to use scale (Lehan Mackin et al., 2015) | 0–9; 9 high knowledge of ECPs | 4.35 | 4.93 | 4.85 |
| Internalized stigma about ECPs scale (Williams et al., 2021) | 0–4; 4 high internalized stigma | 0.17 | 0.14 | 2.45 |

### *Classes and Willingness to Use ECPs and Uptake of ECPs*

After the three-class model was selected, two multinomial regression models were run to determine if class membership predicted either willingness to use ECP or the number of times ECP was used and complete class validation (see Table 13).

**Table 13**

*Class Model Regression Outcomes*

| Outcome variable | | Class 1 high reproductive coercion/ low stigma ($n$ = 53, 7%) | Class 2 low reproductive coercion / low stigma ($n$ = 601, 79%) | Class 3 low reproductive coercion / high stigma ($n$ = 105, 14%) |
|---|---|---|---|---|
| Mean (SE) score of willingness to use ECP overall test ($\chi 2$, $p$ value) | .73 (.69) | 7.47 (.22) | 7.28 (.07) | 7.31 (.16) |
| Test across all classes ($\chi 2$, $p$ value) | | Class 1 | Class 2 | Class 3 |
| | Class 1 | - | .74 (.69) | .35 (.55) |
| | Class 2 | .74 (.69) | - | .04 (.85) |
| | Class 3 | .35 (.55) | .04 (.85) | - |
| Mean (SE) number of times used ECPs overall rest ($\chi 2$, $p$ value) | 28.95 (< .001) | .56 (.15) | .56 (.05) | 1.56 (.18) |
| Test across all classes ($\chi 2$, $p$ value) | | Class 1 | Class 2 | Class 3 |
| | Class 1 | - | 0.0 (.99) | 18.53 (<.001) |
| | Class 2 | 0.0 (.99) | - | 30.67 (<.001) |
| | Class 3 | 18.53 (<. 001) | 30.67 (< .001) | - |

When the three-class model was regressed on the dependent variable of willingness to use ECPs, there were no statistically significant findings for the overall model ($\chi^2 = .72$, $p = .69$) and subsequently differences between classes were minimal when mean scores across all three groups were compared.

The three-class model when regressed on the dependent variable of number of times ECPs were used was found to be statistically significant for the overall model ($\chi^2 = 28.95$, $p < .001$). Class 3 (low reproductive coercion, high stigma) was significantly different from Class 1 and Class 2 when comparing mean scores of numbers of times ECPs had been used, with members of Class 3 averaging using ECPs 1.56 times versus Class 1 and Class 2 both averaging .56 times use (see Table 14).

**Table 14**

*Demographic Probabilities by Class*

| Variable | Class 1 high reproductive coercion/ low stigma ($n$ = 53, 7%) | Class 2 low reproductive coercion/ low stigma ($n$ = 601, 79%) | Class 3 low reproductive coercion/ high stigma ($n$ = 105, 14%) |
|---|---|---|---|
| Age | | | |
| 18–19 | 0.038 | 0.052 | 0.067 |
| 20–29 | 0.283 | 0.409 | 0.295 |
| 30–39 | 0.283 | 0.26 | 0.257 |
| 40–49 | 0.113 | 0.135 | 0.143 |
| 50–59 | 0.226 | 0.1 | 0.171 |
| 60–69 | 0.057 | 0.042 | 0.067 |
| 70 or older | 0 | 0.003 | 0 |
| Region of residence | | | |
| Northeast | .189 | .203 | .276 |
| Midwest | .245 | .215 | .210 |
| South | .245 | .383 | .314 |
| West | .321 | .200 | .200 |
| Education | | | |
| No higher education experience | .302 | .319 | .333 |
| Some higher education experience or more | .698 | .681 | .667 |
| Gender Identity | | | |
| Female | .906 | .945 | .943 |
| Transmale or transman | 0 | .01 | .01 |
| Genderqueer or gender nonconforming | .094 | .04 | .048 |
| Other gender identity | 0 | .005 | 0 |

| | | | |
|---|---|---|---|
| Sexual orientation | | | |
| Heterosexual | .472 | .511 | .457 |
| Homosexual | .094 | .073 | .067 |
| Bisexual | .34 | .326 | .39 |
| Asexual | .057 | .047 | .048 |
| Other | .038 | .043 | .038 |
| Sexual and/or gender minority binary | | | |
| Yes | .566 | .524 | .562 |
| No | .434 | .476 | .438 |
| Race and ethnicity | | | |
| African | 0 | .002 | 0 |
| African American/Black | .038 | .052 | .086 |
| Caribbean | 0 | .007 | 0 |
| East Asian/South Asian/Southeast Asian | .057 | .065 | .057 |
| Latino/Hispanic | .075 | .043 | .114 |
| Middle Eastern | 0 | .008 | 0 |
| Mixed | .113 | .053 | .029 |
| Native American or Alaska Native | 0 | .007 | 0 |
| Other | 0 | .007 | .019 |

To better understand the differences between classes, probabilities of demographic characteristics were calculated for each class. In reviewing these calculations to again evaluate any notable differences in probability of membership by demographic characteristic between the three classes, some probabilities of class membership were unequally distributed. Age distribution probabilities varied by among those aged 20–29, who had a 41% probability of being in Class 2 rather than Class 1 (28%) or Class 3 (30%). Those aged 50–59 had a slightly higher probability of being in Class 1 (23%) when compared to Class 2 (10%) and Class 3 (17%). Distribution among the other five age groups by class were relatively equal otherwise.

Region of residence varied from the sample proportions, with Class 1 members being more likely to live in the West (32.1%) or the Midwest (24.5%) than the sample average of 21% of respondents living in the West or Midwest. Region of residence probabilities were consistent

to the sample for Class 2. Members of Class 3 had a higher than sample likelihood of living in the Northeast (27.6% versus sample 21.2%) and were less likely to live in the South (31.4% versus 36.5%).

Probabilities of having some higher education experience and no higher education experience remained consistent across groups. Approximately 2 in 3 members of each group had some higher education experience, which aligned with descriptive findings of the entire survey sample, where 68% of respondents had some higher education experience.

Differences between probabilities of membership by sexual and gender identity were small, with Class 1 having a higher probability of genderqueer or gender nonconforming members (9.4%) than Classes 2 and 3 (4 and 5% respectively). Those identifying as either a sexual and/or gender minority had slightly higher probability to be in Classes 1 and 3 (57% and 56%) than in Class 2 (52%). Ethnic and racial minority participants also have a higher probability of being in Class 3 (31%) than Class 1 (26%) and Class 2 (24%). Probabilities of class membership by household income had some noticeable differences, with Class 1 having higher probabilities of membership for those both at the low (31%) and highest end (23%) of the household income scale.

**Discussion**

The primary aim of this study was to determine what, if any, factors influenced willingness to use ECPs and their uptake. After a review of the literature and consideration of health models around contraception decision making and uptake, the measures selected reflected what prior studies had found to be influential on these decisions at different levels of the socioecological model. The two variables that distinguished the three classes from one another, however, reflected the impact of interpersonal experiences of reproductive coercion and one's

relationship to the stigmatizing perceptions of what participants believed others would think if they used ECPs and accessibility issues.

Although laws restricting access to ECPs are located in states in the South or West, Class 3 members who experienced higher levels of stigma and higher levels of ECP use were more likely to reside in the Northeast and less likely to reside in the South (Guttmacher Institute, 2022b). Location and barriers due to state policies were anticipated as being significant influence in uptake; the finding that more Class 3 members reside in a region that has the fewest restrictions on ECP access demonstrated that place has an influence on ECP usage (Guttmacher Institute, 2022b). However, further evaluation is needed to determine the relationship between stigma and place.

Experiencing more feelings of stigma predicting using ECPs more times in particular stood out as an association that requires much deeper evaluation. Earlier research when ECPs were first introduced frequently noted stigma and embarrassment as reasons for the underutilization of ECPs (Fitzpatrick & Walton-Moss, 2011; Raymond et al., 2007); this finding of an opposite effect, where stigma was instead associated with uptake, suggests a potential shift in how ECP use can be seen as a tool to mitigate against other experiences or decisions that could prompt more stigma. One study focused on young women in Alabama found anticipated disapproval of an unintended pregnancy by close members of their social network was associated with higher likelihood of using contraception (Rice et al., 2018). There is the potential, however, for another effect in which more frequent use of ECPs causes higher internalized stigma. This potential directional effect aligned with prior findings about internalized stigma after abortion (Cockrill et al., 2013; Cowan, 2017; Hanschmidt et al., 2016; Purcell et al., 2020).

Participants left some qualitative comments that ECP usage was more "responsible" than an abortion, but ECPs were still frequently misidentified as being the same drugs used in medication abortion, mifepristone and misoprostol. In this study, 32% of respondents to the survey misidentified that ECPs could be used at any time during a pregnancy to terminate it. Only 68% knew ECPs do not cause a miscarriage or abortion, with 21.5% indicating they were unsure of the mechanism of action for ECPs, and 12.6% of respondents incorrectly believing ECPs do cause either a miscarriage or abortion. The view that ECPs are an abortifacient or are proximal to an abortion may explain in part why the findings from the LCA aligned more with findings among people who had abortions reporting higher levels of stigma after the procedure (Cockrill et al., 2013; Cowan, 2017; Hanschmidt et al., 2016; Purcell et al., 2020). Understanding more about the associations and assumptions Americans have about abortion and ECPs would help isolate specific constructs to further evaluate through causal evaluation.

Qualitative evaluation of how ECP users describe how they believe they are perceived by others and where they receive these messages would also be important to understanding this change. Amid misinformation about ECPs functioning as a medication abortion remains pervasive over 10 years since they became available over the counter, or that there is a "responsible" number of times ECPs can be used, in-depth interviews about where this information was received, how one comes to believe there is a certain threshold of acceptable use of ECPs, among other aspects of internalized stigma, will be important to determine to reduce stigma and promote more accurate information. Health messaging around ECPs and how people have been counseled to use them should also be evaluated more in depth. Efforts to reduce unintended pregnancy remain focused on those who are assigned female at birth, tying their biological sex inextricably to being the primary partner, if not the only partner, responsible for

preventing unintended pregnancy (James-Hawkins et al., 2019; Littlejohn, 2021). A more inclusive understanding of how sexual minority and gender minority partners communicate and make decisions about ECPs independently or with their partners along with the social norms surrounding contraceptive decision making will be essential to reducing stigma as well.

This study has several critical implications for the research, policy, and practice domains of public health. Leveraging a study guided by theories driven to understand how social norms and attitudes become accepted across society and understanding the impact of stigma in creating health inequities, public health research will benefit from the development of new inclusive measures. The data found during the first inclusive survey about ECPs in the United States will also provide key contemporary descriptions of where the United States currently stands regarding ECPs. Public health practice, in turn, can be improved after the completion of this project by being able to pinpoint key populations, regions, or other demographic characteristics that may need further health education outreach and access to ECPs. The descriptive findings can be used to improve public health policies by serving as the evidence base for new approaches to reduce barriers to ECPs through policies supporting improved access (i.e., pharmacists permitted to dispense ulipristal acetate without a prescription authorization), introducing new requirements for healthcare professionals' education on ECPs, and require all medical professionals to provide medically accurate information on ECPs when providing sexual and reproductive health counseling. Documentation of shifts willingness and uptake to use ECPs in the United States can also demonstrate how Americans support reproductive healthcare service access and reproductive justice broadly. In sum, more concise and up-to-date information on the current state of how Americans perceive and access ECPs serves as an essential foundation for a future in which reproductive health equity is a reality in the United States.

## Limitations

As this study's participants were recruited using a web survey platform, the influence of self-selection bias and its impact on the accuracy of causal claims must be noted. Although an association was found between internalized stigma and higher average use of ECPs, prior models about stigma and health decisions along with models of contraception uptake indicate these causal pathways are often intricate and cannot be extrapolated by cross-sectional studies alone. Likewise, stigma is the result of multiple influences, beliefs, and experiences and should be parsed out into specific, measurable constructs to accurately investigate a causal pathway.

## Conclusions

Understanding the relationship between higher stigma and higher prevalence of ECP usage is critical to the broader movement of reproductive justice. The implications of what may be driving decisions focused on how one may be perceived rather than one's own desires and needs and reproductive goals are considerable and need to be understood to promote justice and equity in research, policy, and practice as the challenges brought on by the reversal of *Roe v. Wade* will vary widely across the nation.

# Chapter 5: Integrative Discussion

This final chapter provides further analysis regarding the findings of both research papers, strengths and weaknesses of this study, and their broader implications for research, policy, and practice.

## Discussion of Results Across Articles

### *Willingness to Use Emergency Contraceptive Pills*

The findings of both Manuscript 1 (i.e., summary survey results and between-groups comparisons) and Manuscript 2 (i.e., latent class analysis [LCA]) demonstrated an overall very high willingness to use emergency contraceptive pills (ECPs), with a mean score of 7.5 (range 0–8) among all participants. Identifying the factors that predict this high level of willingness to use, however, will need more evaluation. None of the evaluated factors of knowledge, sexual empowerment, experiences of sexual coercion, stigma, or barriers to access predicted willingness to use ECPs when evaluated using linear regression models. Reflecting on this finding, a review of how contraception broadly became socially acceptable and perceived as a "responsible" choice is needed to understand this norm. Many of the comments submitted by participants at the end of the survey referred to using ECPs as a way to be "responsible;" better defining this construct within reproductive decision making is needed. A study completed by Littlejohn (2021) probed the perceptions of responsibility between sexual partners through a series of semistructured qualitative interviews. Littlejohn (2021) that gendered approaches to contraception and perceptions of "responsibility" have been reinforced through many school-based sexual health education programs and interventions for pregnancy prevention. Littlejohn (2021) found that participants whose biological sex is male were frequently excluded from these programs or felt that contraception decision-making and uptake is the responsibility of their

female partners (Littlejohn, 2021). Littlejohn's (2021) findings indicate there is a gendered dynamic related to perceptions of "responsibility" in contraceptive decision-making and uptake that would also require further evaluation.

## Strengths and Limitations of the Study

### *Strengths*

This study provided an updated understanding of how ECPs are perceived and used by Americans and is the first study specific to ECPs to have actively recruited both sexual and gender minority participants. ECPs and their acceptability and accessibility are an important component of sexual and reproductive healthcare and this study addressed a need to understand how all people who could become pregnant view this option. Considering the recent rulings by the Supreme Court allowing bans or extreme restrictions to access safe abortion, the role of ECPs in the broader reproductive healthcare continuum in the United States has become even more important. Documenting that ECPs are well accepted and known, but barriers exist to accessing them, can inform policies and practice that can reduce a part of the burden faced by Americans who can become pregnant. As of the writing of this final chapter in October 2022, 13 states have effectively banned abortion (Guttmacher, 2022b).

The findings of these manuscripts as they relate to the experiences and needs of sexual minority cisgender women expanded upon earlier findings indicating this population's needs are not often adequately met and their decisions around contraceptive use and pregnancy intention require more attention (Carpenter, 2020, 2021; Everett, Higgins, et al., 2019; Greene et al., 2019). The similar sample sizes between the cisgender heterosexual participants and cisgender sexual minority participants allowed for adequate statistical power to make more accurate between-groups comparisons. Two novel findings from these studies are that cisgender sexual

minority women were more willing than their cisgender heterosexual counterparts to use ECPs, and that cisgender sexual minority ECP users would decline using ECPs again due to pregnancy intentions. These findings compliment previous qualitative and smaller quantitative studies on contraception and pregnancy intentions (Carpenter, 2021; Everett, Higgins, et al., 2019; Greene et al., 2019; Kazyak et al., 2016; Stoffel et al., 2017).

### *Limitations*

As this study used a cross-sectional survey design, there are limitations to how these data can be used to assess temporal relationships and causal inferences (Wang & Cheng, 2020). Likewise, the quota sampling strategy implemented through the Prolific platform introduced nonresponse bias into the sample due to participants being able to review the study topic before agreeing to participate. Some written feedback from sexual minority participants suggested some may have opted out of the study due to believing their inclusion in the study was a mistake, or the perception that the topic at hand was not relevant to their experiences. Similar comments were made by participants who were post-menopausal, suggesting older participants may also have perceived their invitation to participate to be an error on the part of the researcher. The unequal sample of gender minority participants in comparison to cisgender heterosexual and sexual minority participants also limits the generalizations that can be made from this study.

This study intended to capture contemporary data regarding how Americans who could or have used ECPs perceive this method of contraception as it sits in a unique position of being one of two options to prevent pregnancy after unprotected sex. This survey was completed in early March 2022, after the oral arguments in *Dobbs v. Jackson Women's Health Organization* had been completed. Although the Supreme Court Justices posed questions during the hearing that suggested *Roe* was at risk of being overturned, there was not yet any information indicating

which parts of *Roe* could be ruled unconstitutional through *Dobbs*. Following the leak of Justice Samuel Alito's opinion on *Dobbs* in early May 2022 and the ruling in *Dobbs* in June 2022 overturning *Roe v. Wade,* it would be naïve to assume that perceptions of ECPs remain the same as before, as reproductive healthcare accessibility rapidly erodes across the United States and laws criminalizing abortion go into effect. The changes in attitudes and perception of accessibility will continue to fluctuate as laws restricting or banning abortion are challenged throughout the country. This study cannot capture these changes, but the findings suggested there is still a need to increase knowledge and accessibility of ECPs in the face of confusing and changing laws. These shifts likewise could be tracked through use of large-scale, publicly available data, such as completing Twitter sentiment analysis. It should likewise be anticipated state-specific measures would be advisable due to myriad changes in state laws.

## Practice Implications

### *For Sexual and Reproductive Healthcare Providers*

For all healthcare providers, the findings of this study reiterated other findings demonstrating there is a significant need for improvements in training and inclusion when it comes to counseling sexual minority cisgender women and gender minority patients who were assigned female at birth (Carpenter, 2021; Everett, Turner, et al., 2019; Gomez et al., 2020; Greene et al., 2019; Morrison et al., 2021; Moseson et al., 2020; Solazzo et al., 2019; Stark et al., 2019). For gender minority patients, access to sexual and reproductive healthcare already can be quite challenging. Depending on when the providers received training, inclusion of gender minorities in gynecological or obstetric care may have been quite limited not included at all (Fix et al., 2020; Harb et al., 2019; Moseson et al., 2020, 2021; Obedin-Maliver & Makadon, 2016; Peitzmeier et al., 2014). Making reproductive healthcare approachable and inclusive through

continuing education and shadowing experiences that demonstrate the best practices and supports for sexual and gender minorities will be particularly important as access to safe abortion is reduced.

### *For Pharmacists and Pharmacy Staff*

Pharmacists and pharmacy staff also can play a significant role in reducing barriers to ECPs by providing accurate, comprehensive counseling with ECPs and creating a nonjudgmental space during all conversations and transactions with customers (Moore et al., 2019; Rafie et al., 2017; Stone et al., 2020; Wilkinson et al., 2012).

## Policy Implications

The full policy implications of this study in the context of a post-*Dobbs* ruling will likely not be known until the majority of ongoing legal proceedings regarding the legality and accessibility of abortion have been resolved; as of October 2022, it is clear that *Dobbs'* effects vary based on the state in which one resides. For millions of Americans, ECPs are now the final option for pregnancy prevention available in their state of residence (Guttmacher Institute, 2022b).

There has been confusion on whether or not ECPs are legal after *Dobbs* as well (Varney, 2022). Misinformation about ECPs have also been shared on social media in light of *Dobbs*, with some of these videos or posts misidentifying ECPs as being the same as mifepristone and misoprostol which are used in medication abortions (Varney, 2022). With these realities in mind, there are several actions policy makers can take to protect access to ECPs that have been outlined by leading researchers and policy experts on reproductive rights (Cleland et al., 2022). These include improving access through scaling up of telehealth services and vending machines selling ECPs, and changes to insurance coverage to allow policyholders to use their benefits for ECPs

and reduce cost without requiring prior authorizations or a prescription for an over-the-counter drug (Cleland et al., 2022).

The U.S. Food and Drug Administration (FDA) is the regulator of all drug sales in the United States and determines whether or not a drug can be sold over the counter or needs to be age restricted. With abortion access being more limited, being able to guarantee people can access ECPs as soon as possible is even more critical as the final option to prevent a pregnancy (Cleland et al., 2022). Changes in laws regulating pharmacies that protect customer or patient access to contraception would also protect access and reduce the barriers caused by refusal of service by pharmacists or staff who have a personal opposition to contraception (Cleland et al., 2022).

## Research Implications

### *Future Research Prompted by Qualitative Comments*

Although the data were not used in the analyses of this dissertation project, over 100 participants in this study provided some qualitative comments on their experience taking the survey, their thoughts on ECPs, or reflections on their own lives and reproductive health. Similar to Littlejohn's (2021) qualitative findings indicating there are notable gaps in the burden of reproductive decision making in the United States, some comments submitted by participants note how challenging and frustrating it is to navigate these decisions alone or how they wished they would have had access to ECPs when they were younger. Several of these comments also focused on how the participant used ECPs to mitigate the impact of their male partner's desire to have unprotected sex. Others indicated that they were in support of ECPs because it was a "better" option than abortion. More in-depth interrogation of these perceptions and how they are

impacted by one's own identity, their relationships, and where they live are especially needed post-*Dobbs*.

**Conclusions**

Americans are highly willing to use ECPs and view them as a helpful tool to prevent a mistimed or unwanted pregnancy. Although ECPs cannot be used as a substitute for safe abortion, they are perceived as an effective stopgap measure and remain accessible to most Americans. As reproductive rights and access will continue to be in flux for the foreseeable future, improving understanding of ECPs and accessibility will remain an important part of reproductive healthcare.

# Appendix A

# Methods

## Methods

The primary research question guiding the current study is: What are historical and contemporary trends in how Americans perceive emergency contraceptive pills (ECPs)? In this project, I completed analyses to describe current sentiments, knowledge, and attitudes toward ECPs through a national survey using descriptive, bivariate, and latent class analyses (LCAs). The selected approach is non-experimental and was selected to address the need for more descriptive data about ECP usage, attitudes, and other experiences potentially influencing the uptake of ECPs.

A cross-sectional survey on ECP usage and their associations with measures of stigma, sexual empowerment, and agency, among other constructs, was conducted to create a more inclusive representative dataset of how ECPs have been used by American women and people who can get pregnant. Descriptive statistics by group were completed and between groups comparisons were made between cisgender heterosexual participants and cisgender sexual minority participants using chi-squared and *t*-tests. LCA was completed to determine if there are underlying clusters of traits or experiences associated with greater likelihood of using ECPs. Once the latent model was selected, regression models were completed to determine if class membership predicted number of times ECPs were used or willingness to use ECPs. The results of these analyses were reported into two different manuscripts, the first reporting descriptive data about ECP use and making between group comparisons among cisgender sexual minority participants and cisgender heterosexual participants. A second manuscript was written to discuss the findings of the LCA.

## Survey Methodology

Surveys have been a commonly used tool to understand the knowledge and attitudes of healthcare providers and the general public toward ECPs since they first became commercially available in the late 1990s. Review of prior survey results has, however, demonstrated there has been a persistent deficit in knowledge or misunderstanding of the mechanisms of action of ECPs, which in turn seems to influence attitudes towards ECPs. Many of the surveys completed before also limited their sampling frames either by restricting to certain professions (e.g., pharmacist) or to heterosexual cisgender women. Noting the need for more investigation into the health needs of sexual and gender minorities, this survey's sample frame was inclusive of sexual and gender minority participants who identify their sex as female but include transmasculine and gender nonbinary gender identities and all sexual orientations. A cross-sectional design was selected to capture participant's experiences, knowledge, and attitudes at a singular time point; no follow-up with participants was needed as there were no errors with Prolific or Qualtrics platforms that prevented completion of the survey.

### *Recruitment Strategy & Sample*

The survey platform Prolific was used to recruit participants. Prolific is able to provide exact numbers of potential participants who are active users on their website in the last 90 days who meet certain demographic characteristics. By already being able to establish the total population of potential participants, it was much easier to then complete an appropriate power analysis to determine the appropriate sample size. The level of precision in which Prolific can find potential participants is also quite specific and is a better match than other survey platforms to be able to recruit sexual and gender minority participants who have historically been excluded from these studies. The inclusion criteria for this study required participants be 18 years or older,

reside in the United States, and identify their biological sex as female. Participants of all gender identities and expressions and sexual orientations were included in the sample frame. Table 15 provides a summary table of active users residing in the United States who meet demographic criteria and the needed sample size for a survey with a 95% confidence level and 5% margin of error.

**Table 15**

*Summary of Sample Frame Based on Prolific's Current Users and Sample Calculation*

| Demographic characteristics | Prolific population Size | Needed sample for 95% CL / 5% margin of error |
|---|---|---|
| Residency: United States<br>Gender identity: female<br>Biological sex: female<br>Sexual orientation: heterosexual | 28,559 | 380 |
| Residency: United States<br>Gender identity: female<br>Biological sex: female<br>Sexual orientation: homosexual, bisexual, asexual, other | 12,670 | 373 |
| Residency: United States<br>Gender identity: transman, gender queer, gender nonconforming, different identity<br>Biological sex: female<br>Sexual orientation: heterosexual | 59 | 52 |
| Residency: United States<br>Gender identity: transman, gender queer, gender nonconforming, different identity<br>Biological sex: female<br>Sexual orientation: homosexual, bisexual, asexual, other | 1,381 | 301 |
| Total eligible participants when collapsed together: | 42,669 | 381 |

Random sampling was not used to recruit for this survey; instead, the surveys remained open until the sample thresholds were met. Because of the demographic prescreening Prolific provides, the survey was only available to those who meet the predefined characteristics. Prolific also operates in a way that only when a user is sent their own unique link to the survey can they

complete it for compensation, which prevented the repeat submissions or sharing of links. To better guarantee a balance between the historically underrepresented groups in contraception research, there were two versions of the survey actively recruiting at the same time, one for heterosexual cisgender identifying participants and those who identify as either a sexual and/or gender minority. Each survey remained open until 380 high quality responses are captured for each respective arm of the survey. Online surveys typically have rates of completions between 40 and 50% (LaRose & Tsai, 2014). Noting there were likely many participants who started but did not complete or submit the survey, recruitment allowed for 570 enrollees in each arm to begin the survey before enrollment was is halted. Overall, there were very few drop-outs during the survey and participants response quality was excellent

***Data Collection & Measures***

Participants were linked to a UMD-managed Qualtrics survey to complete through a link provided in Prolific. The study was only available to individuals who meet the prescreening criteria of being between the ages of 18 to 75, currently living in the United States, and their biological sex being female. Participants received a randomly assigned completion code from Prolific that they submitted at the end of their survey to serve as their participant ID number.

Several validated measures specific to sexual and reproductive health behaviors, attitudes, knowledge, and experiences were selected to measure covariates hypothesized to increase the likelihood of using ECPs. All selected measures are listed in Table 16 of Appendix A along with their respective response options. Some modifications were made to the measures to be cognizant of the impact of COVID-19 pandemic on healthcare access and employment, the age of the participants, or to include additional constructs under a broader definition of stigma. A

brief description of whether or how the scales and measures were modified is provided in Table 16.

**Table 16**

*Description of Measures and Modifications*

| Authors | Title of measure | Number of items | Description and justification for modifications to scale |
|---|---|---|---|
| Brenick et al. (2017) | Stigma and medical mistrust by race, gender, sexual orientation and weight | 12 | Validated questions were for race and sexual orientation only, four additional questions using the same format were added for weight and gender identity |
| Upadhyay et al. (2021) | Sexual and reproductive empowerment (SRE) scale for adolescents and young adults | 7 | Questions related to parent/guardian relationships dropped as all participants will be 18 years or older |
| McCauley et al. (2017) | Reproductive coercion scale (RCS) - short form | 5 | Removed "In last 3 months" for question to capture any lifetime experience of reproductive coercion |
| Lehan Mackin et al. (2015) | Knowledge and use of emergency contraception in college women | 8 | Questions specific about stigma and willingness to use ECPs were taken, other questions were redundant to the survey |
| Williams et al. (2021) | Adolescents' emergency contraception usage, knowledge, and perception | 14 | Questions specific to knowledge and perceptions about ECPs, other questions were redundant to the survey |
| Jasczynski | Demographic and ECP usage questions | 11 | Created specifically for the dissertation project |

**Analysis**

Most analyses undertaken using the survey responses were descriptive in nature to establish current knowledge and attitudes towards ECP and associations between covariates and the outcomes of interest. Univariate statistics describing demographic characteristics and covariate measures by gender and sexual orientation were completed to determine if there is equal distribution between the two groups across the variables. Chi-square and *t*-tests were used to complete initial between-group comparisons between ECP users and non-users as well as sexual and gender minority women versus their heterosexual cisgender counterparts. LCA was completed using the key covariates listed in Table 17 to determine the best fit model and number of classes. A three-class model was selected, and class membership was used in regression models to determine if class membership had any predictive relationship with number of times ECPs were used or willingness to use them.

**Table 17**

*Covariates and Outcomes of Interest*

| Variable type | Title of Measure |
|---|---|
| Covariate | Sexual and reproductive empowerment (SRE) scale for adolescents and young adults |
| Covariate | Reproductive coercion scale (RCS) - short form |
| Covariate | Stigma and medical mistrust by race, gender, sexual orientation and weight |
| Covariate | Knowledge of emergency contraception |
| Covariate | Gender identity |
| Covariate | Sexual orientation |
| Covariate | Age |
| Covariate | State of residence |
| Covariate | Race/ethnicity |
| Covariate | Insurance status |
| Covariate | Employment status |
| Covariate | Highest level of education completed |

| | |
|---|---|
| Covariate | Stance on abortion access |
| Covariate | Number of children |
| Covariate | Household income |
| Outcome | Lifetime ECP usage |
| Outcome | Willingness to use ECP |

Noting the assumptions needed to correctly evaluate causality cannot be met due to the cross-sectional nature of this survey, further analyses were completed to understand underlying subgroups among sexual and gender minority participants versus their cisgender heterosexual counterparts as well as those who have opted to use ECPs.

Research reviewing best practices in LCA methodology indicate that a minimum of 300 participants are needed for each group and this threshold was met with the sampling procedures (Nylund-Gibson & Choi, 2018). LCA models were used to establish the number of latent classes and then subsequently evaluated by reviewing each model's performance using relative fit indices. Review of these fit indices found that a three-class model was the most robust. Once the optimal number of latent classes was found, comparisons were made between class groups on key covariates using chi-square and *t*-tests. Multinomial regressions were run by class to estimate the association between latent covariate classes and the outcome variables of interest.

## Protection of Human Subjects

### *Consent, Incentives, and Quality Assessment*

For the survey potential participants were prompted to review a consent form including a description of the study, potential risks and benefits, and information on how to contact the principal investigator and her supervising faculty member, Dr. Elizabeth Aparicio. Participants were given the option to enroll or to opt out; participants who opted out were redirected back to Prolific. For participants who completed the survey, the principal investigator completed quality

assessment checks to determine if the survey was thoughtfully completed and not using an automated process intended to "farm" compensation from responding to surveys. The survey contained two attention check questions and the time it took for participants to complete the survey was used in the response quality assessment process. Extremely quick (less than 2 minutes) or incorrect answers to the attention check questions resulted in the submission being rejected. Participants who opted into the study and completed the survey without any automated processes were compensated at a rate of $9.50/hour per Prolific's requirements. It took participants between 5 to 10 minutes to complete the survey and participants were provided $1.11 as a thank you for their time.

### *Data Storage and Privacy*

The survey and data collection was hosted on the secured Qualtrics and Prolific websites, in which instruments and survey management were protected through dual-factor authentication procedures. Once data collection was completed, raw and cleaned data files were stored in GoogleDrive folders protected with dual-factor authentication.

### *Risks and Benefits*

There were no direct benefits from participating in this research. However, possible indirect benefits included being able to share experiences that could help inform improvements in healthcare policy and practices to reduce barriers to reproductive and sexual healthcare in the United States. Risks for participants in the survey included discomfort due to the nature of the questions being specific to sexual and reproductive health and their personal experiences. To mitigate risk of discomfort reflecting on the topic or their own experiences, a list of national resources for sexual and reproductive health, safe relationships, and experiences with stigma in healthcare settings were provided to all participants after completion of the survey. Potential

benefits to participants included contributing to the knowledge base on ECPs, which may result in improved healthcare for others in the future.

**Strengths & Limitations of Approaches**

Although this dissertation had the potential to yield a dataset that enriched the understanding of how Americans perceive and opt to use ECPs, there are significant limitations to note when it comes to primarily descriptive approaches. There is no publicly available dataset representing ECP usage in the United States; cross-sectional survey designs such as those used in this dissertation have noted limitations. Any findings from this survey and associations found between covariates cannot be used to make causal claims due to the approach not establishing temporal relationships between the covariates. Likewise, other assumptions commonly needed to be met for causal evaluation, such as normally distributed data and truly independent samples, cannot be met due to the sampling technique. Although the survey methodology has limitations, this was the first survey to provide insights into the relationships between understudied characteristics and covariates and ECP use. The results from the LCA provided insight into the impact of the intersectional identities of Americans and how interactions between different aspects of one's identity and community impact decisions about ECPs.

**Appendix B**

**Consent Form**

## CONSENT TO PARTICIPATE

**Project Title** Application of a Multi-Method Approach to Identify Americans' Historical and Contemporary Sentiments toward Emergency Contraceptive Pills

**Purpose of the Study** This research is being conducted by Michelle Jasczynski at the University of Maryland, College Park. We are inviting you to participate in this research project because your experiences and opinions about emergency contraception and barriers to sexual and reproductive healthcare are important healthcare and policy issues. The purpose of this research project is to examine how American adults feel and may choose to use emergency contraception.

**Procedures** This research project involves the completion of an anonymous survey regarding your own experiences with emergency contraception and accessing sexual and reproductive healthcare. This survey should take approximately 7 to 10 minutes to complete. There will also be attention checks throughout the survey. Incomplete or incorrect answers to attention check questions will result in not receiving compensation.

You will be asked to share your own experiences and thoughts about emergency contraception, pregnancy, relationships, and experiences seeking and receiving sexual and reproductive healthcare. This survey can be completed using either your computer, phone, or tablet device.

Types of topics that may be discussed include: contraception use, relationships, pregnancy, and experiences in healthcare settings. Types of questions to be asked include:

1. Have you ever used emergency contraceptive pills (ECPs)?
2. Are you comfortable talking about sexual health with a doctor or nurse?
3. Would you like to get pregnant at some point?

You will also be asked questions about your age, biological sex, gender identity, sexual orientation, and current state of residence. These demographic questions will not include any personally identifying information such as birthdate, name, or address to keep participation confidential.

**Potential Risks and Discomforts** We want you to know about possible risks to participating so you can make the best choice for yourself about whether or not to

participate in this research project. There is a possibility that you may feel uncomfortable with some of the questions asked during the survey as they relate to sexual and reproductive health or due to prior healthcare experiences that were stressful or stigmatizing. Regardless of your decision to participate in this study or not, you will be provided with a resource guide to connect you to resources to connect you to services or find support through national organizations, hotlines, and text lines.

**Potential Benefits** There are no direct benefits from participating in this research. However, possible indirect benefits include being able to share experiences that could help inform improvements in healthcare policy and practices to reduce barriers to reproductive and sexual healthcare in the United States.

**Confidentiality** Keeping your information confidential is important to us. We will work to keep the information you share with us confidential by keeping all materials in password-protected files on UMD-managed electronic storage systems that require dual-factor authentication to access. Personally identifying information such as your name, address, and birth date will not be collected during this study; instead, your randomly generated Prolific ID number will be used as your identifier in all study data. If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park, or governmental authorities if you or someone else is in danger or if we are required to do so by law.

**Medical Treatment** The University of Maryland does not provide any medical, hospitalization or other insurance for participants in this research study, nor will the University of Maryland provide any medical treatment or compensation for any injury sustained as a result of participation in this research study, except as required by law.

**Compensation** You will receive a $1.11 digital payment through Prolific for your participation. Please note that payments earned through your use of Prolific may constitute income for which you have personal tax liabilities which may be notifiable to your local tax authority. You warrant and undertake that you will pay any applicable taxes on all income derived from payments from Prolific.

**Right to Withdraw and Questions** Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify. If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigators:

**Michelle Jasczynski** [Address redacted]
xxxxx@umd.edu XXX-XXX-XXXX

**Dr. Liz Aparicio** [Address redacted]
xxxx@umd.edu XXX-XXX-XXXX

**Participant Rights** If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:

**University of Maryland College Park Institutional Review Board**
Office 1204 Marie Mount Hall College Park, Maryland, 20742
E-mail: irb@umd.edu Telephone: 301-405-0678

For more information regarding participant rights, please visit: https://research.umd.edu/irb-research-participants
This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.

**Statement of Consent** By selecting "I agree" below, this indicates that you are 18 years or older; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction; and you voluntarily agree to participate in this research study.

You can request a copy of the consent form by contacting the research team using the "contact the researcher" button and using your Prolific ID email.

**If you agree to participate, please select "I agree" below.**
**If you do not want to participate, please exit the survey now.**

# Appendix C

# IRB Approval Letter

UNIVERSITY OF MARYLAND
INSTITUTIONAL REVIEW BOARD

1204 Marie Mount Hall
College Park, MD 20742-5125
TEL 301.405.4212
FAX 301.314.1475
irb@umd.edu
www.umresearch.umd.edu/IRB

| | |
|---|---|
| DATE: | February 17, 2022 |
| TO: | Michelle Jasczynski |
| FROM: | University of Maryland College Park (UMCP) IRB |
| PROJECT TITLE: | [1824780-1] Application of a Multi-Method Approach to Identify Americans' Historical and Contemporary Sentiments Toward the Uptake of Emergency Contraceptive Pills |
| SUBMISSION TYPE: | New Project |
| ACTION: | APPROVED |
| APPROVAL DATE: | February 17, 2022 |
| REVIEW TYPE: | Expedited Review |
| REVIEW CATEGORY: | Expedited review category *# 7, Waiver of consent documentation, 45CFR46.117(c)* |

Thank you for your submission of New Project materials for this project. The University of Maryland College Park (UMCP) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

Prior to final approval of this project scientific review was completed by the IRB Member reviewer.

This submission has received Expedited Review based on the applicable federal regulations.

This project has been determined to be a MINIMAL RISK project.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Unless a consent waiver or alteration has been approved, Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate Amendment forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed. All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Please note that all research records must be retained for a minimum of seven years after the completion of the project.

## Appendix D

## Attitudes and Willingness to use Emergency Contraceptive Pills Questionnaire

**Start of Block: QQ Prolific ID**

Q1 Please confirm your ProlificID Below:

_____

**End of Block: QQ Prolific ID**

---

**Start of Block: Healthcare Experiences and Stigma**

Q2 Was there any time in the past 2 years where you were completely without any health plan or insurance coverage?

- Yes (1)
- No (2)

Q3 Do you have a regular doctor or other health professional, such as a nurse or physician's assistant, you usually go to when you are sick or need healthcare?

- Yes (1)
- No (2)

Q4 Are you comfortable talking about sexual health with a healthcare provider (i.e., doctor, nurse) ?

- Yes (1)
- No (2)

Q5 Do you have a healthcare provider who you can talk with about sexual health with?

- ○ Yes (1)
- ○ No (2)

Page Break

Q6 **Select all personal characteristics that apply** to the following statements about your experiences in healthcare settings.

If none apply, leave the boxes empty.

| | Personal Characteristics | | | |
|---|---|---|---|---|
| | Race (1) | Gender Identity (2) | Sexual Orientation (3) | Weight (4) |
| I have been **ignored** by healthcare providers due to my (1) | ☐ | ☐ | ☐ | ☐ |
| I have been **mistreated** by healthcare provides due to my (2) | ☐ | ☐ | ☐ | ☐ |

**End of Block: Healthcare Experiences and Stigma**

**Start of Block: Sexual and Reproductive Empowerment Scale**

Q7 - Boundaries

Please rate how **true** each statement is for you.

| | Not True At All (1) | A Little True (2) | Moderately True (3) | Very True (4) | Extremely True (5) |
|---|---|---|---|---|---|
| **If I had a romantic partner, I would feel comfortable talking about whether or not I want to have children with them** (1) | ○ | ○ | ○ | ○ | ○ |
| **If I had a sexual partner, I would feel comfortable telling that person if I wanted to use a method to protect against infection or pregnancy, even when they didn't want to** (2) | ○ | ○ | ○ | ○ | ○ |
| **If I had a romantic partner, I would feel comfortable voicing disagreements with them** (3) | ○ | ○ | ○ | ○ | ○ |
| **I have the power to control if and when I have children** (4) | ○ | ○ | ○ | ○ | ○ |

Page Break

Q8 - Sexual Empower Please rate how **true** each statement is for you.

| | Not True At All (1) | A Little True (2) | Moderately True (3) | Very True (4) | Extremely True (5) |
|---|---|---|---|---|---|
| **My sexual needs or desires are important** (1) | ○ | ○ | ○ | ○ | ○ |
| **Please select very true** (4) | ○ | ○ | ○ | ○ | ○ |
| **I think it would be important to focus on my own pleasure as well as my partner's during sexual experiences** (2) | ○ | ○ | ○ | ○ | ○ |
| **I expect to enjoy sex** (3) | ○ | ○ | ○ | ○ | ○ |

**End of Block: Sexual and Reproductive Empowerment Scale**

**Start of Block: Reproductive Coercion**

Q9 **Has someone you were dating or in a relationship with ever** told you not to use any birth control (like the pill, shot, ring, condom, etc.)

○ Yes (1)

○ No (2)

Q10
**Has someone you were dating or in a relationship with ever** taken your birth control (like

pills) away from you or kept you from going to the clinic to get birth control

- Yes (1)
- No (2)

Q11 **Has someone you were dating or in a relationship with ever** made you have sex without a condom so you would get pregnant

- Yes (1)
- No (2)

Q12 **Has someone you were dating or in a relationship with ever** taken off the condom while you were having sex, so you would get pregnant

- Yes (1)
- No (2)

Q13 **Has someone you were dating or in a relationship with ever** put holes in the condom or broken the condom on purpose so you would get pregnant

- Yes (1)
- No (2)

**End of Block: Reproductive Coercion**

**Start of Block: ECP Knowledge & Intention To Use - Lehan Mackin et al. / Williams et al.**

Q14
To the best of your knowledge, please answer the following true or false questions.

Use the black arrows on the right and left side of the box to navigate between questions.

| | True (1) | False (2) | Not Sure (3) |
|---|---|---|---|
| **Emergency contraception pills can be bought over the counter, regardless of age or gender** (1) | ○ | ○ | ○ |
| **Using emergency contraception pills may make it difficult to have pregnancies in the future** (2) | ○ | ○ | ○ |
| **There are two types of emergency contraceptive pills** (3) | ○ | ○ | ○ |
| **Emergency contraceptive pills work by causing a miscarriage or abortion** (4) | ○ | ○ | ○ |
| **Emergency contraceptive pills can be used at any point in a pregnancy as a way of ending that pregnancy** (5) | ○ | ○ | ○ |
| **Please select True** (6) | ○ | ○ | ○ |
| **Emergency contraceptive pills work by stopping a woman from releasing an egg** (7) | ○ | ○ | ○ |
| **Emergency contraception pills work best when it is taken as soon as possible** (8) | ○ | ○ | ○ |
| **Emergency contraceptive pills may cause you to throw up or have irregular bleeding** (9) | ○ | ○ | ○ |

Page Break

Q15 Emergency contraceptive pills are a way to prevent pregnancy after unprotected sex. Often called the morning-after pill, emergency contraceptive pills (ECPs) are pills that can be taken up to 120 hours (5 days) after having unprotected sex and are taken by swallowing a single dose pill. They do not work if someone is already pregnant.

**Based on this information, have you heard of emergency contraception pills (ECPs) before participating in this survey?**

- ○ Yes (1)
- ○ No (2)
- ○ Not Sure (3)

Page Break

Q16 Consider the following situations:

| | Yes (1) | No (2) | Not Sure (3) |
|---|---|---|---|
| **Would you approve of someone using emergency contraception pills if they had been raped?** (1) | ○ | ○ | ○ |
| **Would you approve of someone using emergency contraception pills if a condom broke during sex?** (2) | ○ | ○ | ○ |
| **Would you approve of someone using emergency contraception pills if no other type of birth control was used?** (3) | ○ | ○ | ○ |
| **Would you approve of someone using emergency contraception pills as their primary method of birth control?** (4) | ○ | ○ | ○ |

Page Break

Q17
Consider the following situations:

| | Yes (1) | No (2) | Not Sure (3) |
|---|---|---|---|
| **Would you consider using ECP if you needed to?** (1) | ○ | ○ | ○ |
| **Would you use emergency contraception if you had to pay for a portion of the cost?** (2) | ○ | ○ | ○ |
| **Would you use emergency contraception pill if insurance covered the entire cost?** (3) | ○ | ○ | ○ |
| **Would you use emergency contraception under any circumstances?** (4) | ○ | ○ | ○ |

Page Break

Q18 Think about your own experiences and your community. If you were thinking about using emergency contraceptive pills, **sort the following statements into boxes whether they are things you would worry a lot about, worry a little about, or wouldn't worry at all about.**

You do not need to put a statement in each box, only place the statements in the box or boxes that makes sense for you and your experiences.

| I would worry a lot about: | I would worry a little about: | I would not worry about: |
|---|---|---|
| _____ Being judged by people at the pharmacy or clinic if I request or buy emergency contraceptive pills (1) | _____ Being judged by people at the pharmacy or clinic if I request or buy emergency contraceptive pills (1) | _____ Being judged by people at the pharmacy or clinic if I request or buy emergency contraceptive pills (1) |
| _____ My religious beliefs tell me that it is wrong to use emergency contraception (2) | _____ My religious beliefs tell me that it is wrong to use emergency contraception (2) | _____ My religious beliefs tell me that it is wrong to use emergency contraception (2) |
| _____ I will get in trouble if I use emergency contraception (3) | _____ I will get in trouble if I use emergency contraception (3) | _____ I will get in trouble if I use emergency contraception (3) |
| _____ People close to me would judge me for using emergency contraceptive pills (4) | _____ People close to me would judge me for using emergency contraceptive pills (4) | _____ People close to me would judge me for using emergency contraceptive pills (4) |
| _____ Emergency contraceptive pills will harm my body in some way (5) | _____ Emergency contraceptive pills will harm my body in some way (5) | _____ Emergency contraceptive pills will harm my body in some way (5) |
| _____ Emergency contraceptive pills will make me unable to have children in the future (6) | _____ Emergency contraceptive pills will make me unable to have children in the future (6) | _____ Emergency contraceptive pills will make me unable to have children in the future (6) |

Page Break

Q19 Williams et al. **Read the following statements below, they may describe feelings you've had in response to certain situations.**

If any of these experiences do not match any experience you've had, please select “I haven't felt this way before".

| | I've felt this way before (1) | I haven't felt this way before (2) |
|---|---|---|
| **There have been times when I felt like I should use emergency contraception but the cost of the medication was too high** (1) | ○ | ○ |
| **There have been times when I felt like I should use emergency contraception but I did not have a way of getting emergency contraception. (For example, I do not have transportation to a pharmacy)** (2) | ○ | ○ |
| **There have been times when I felt like I should use emergency contraception but I was worried what my partner might think of me** (13) | ○ | ○ |
| **There have been times when I felt like I should use emergency contraception but I was too embarrassed to buy it or ask someone for help** (12) | ○ | ○ |

**End of Block: ECP Knowledge & Intention To Use - Lehan Mackin et al. / Williams et al.**

**Start of Block: ECP Experiences**

Q20 Have you ever used emergency contraceptive pills before?

○ Yes (1)

○ No (2)

Page Break

*Display This Question:*

*If Q20 = Yes*

Q21 How many times have you used emergency contraceptive pills before?

- ○ 1 time (1)
- ○ 2 times (2)
- ○ 3 times (3)
- ○ 4 times (4)
- ○ 5 or more times (5)

Page Break

*Display This Question:*

*If Q20 = Yes*

*And Q21 != 1 time*

Q22 What type of emergency contraceptive pills have you used before?

- [ ] Brand Names: Plan B / New Day / Take Action / Next Choice One Dose / My Way (Levonorgestrel EC) (1)
- [ ] Brand Name: Ella (Ulipristal Acetate EC) (2)
- [ ] I can't remember the specific type (3)

*Display This Question:*

*If Q20 = Yes*

*And Q21 = 1 time*

Q23 What type of emergency contraceptive pill have you used before?

- ○ Brand Names: Plan B / New Day / Take Action / Next Choice One Dose / My Way (Levonorgestrel EC) (1)
- ○ Brand Name: Ella (Ulipristal Acetate EC) (2)
- ○ I can't remember the specific type (3)

Page Break

*Display This Question:*

*If Q20 = Yes*

*And Q21 != 1 time*

Q24 Where have you gotten emergency contraceptive pills from before? Select all that apply

- ☐ Filled a prescription from a healthcare provider (1)
- ☐ Emergency room visit (2)
- ☐ Bought it at pharmacy or store (3)
- ☐ Ordered it online (4)
- ☐ Used a Telehealth service (NURX, Lemonade, PRJKT RUBY) (5)
- ☐ School-based Health Center (8)
- ☐ Sexual and reproductive healthcare clinic (9)
- ☐ Other - please describe (6) _____

*Display This Question:*

*If Q20 = Yes*

*And Q21 = 1 time*

Q25 Where did you get emergency contraceptive pills from before?

- ○ Filled a prescription from a healthcare provider (1)
- ○ Emergency room visit (2)
- ○ Bought it at pharmacy or store (3)
- ○ Ordered it online (4)
- ○ Used a telehealth service (NURX, Lemonade, PRJKT RUBY) (5)
- ○ School-based Health Center (8)
- ○ Sexual and reproductive healthcare clinic (9)
- ○ Other - please describe (6) _____

Page Break

*Display This Question:*

*If Q20 = Yes*

Q26 How old were you when you **first** took emergency contraceptive pills?

- 12 years old or younger (1)
- 13 to 17 years old (2)
- 18 to 22 years old (3)
- 23 to 28 years old (4)
- 28 to 33 years old (5)
- 34 to 39 years old (6)
- 40 years old or older (7)

*Display This Question:*

*If Q20 = Yes*

Q27 Approximately what year was it when you **first** took emergency contraceptive pills?

- 1996 or earlier (1)
- Between 1997 and 2000 (2)
- Between 2001 and 2004 (3)
- Between 2005 and 2008 (4)
- Between 2009 and 2012 (5)
- Between 2013 and 2016 (6)
- Between 2017 and 2020 (7)
- Between 2021 and 2022 (8)
- I can't remember the specific year (9)

Page Break

*Display This Question:*

*If Q20 = Yes*

Q28 Based on your prior experiences, **would you use emergency contraceptive pills again in the future?**

- ○ Yes (1)
- ○ No (2)

*Display This Question:*

*If Q20 = Yes*

*And Q28 = No*

Q29 Why would you **not** use emergency contraceptive pills again? **Select all that apply.**

- ☐ Emergency contraceptive pills did not work for me (1)
- ☐ I had side effects from using emergency contraceptive pills before (2)
- ☐ I can no longer become pregnant (3)
- ☐ I am using long-acting reversible birth control (LARC) like Skyla, Miren, Nexplanon (4)
- ☐ I have moral or ethical concerns with using them (5)
- ☐ I am not sure I would be able to find emergency contraceptive pills where I live (7)
- ☐ The cost of emergency contraceptive pills (9)
- ☐ I would want to become pregnant (11)
- ☐ I have a medical condition that would make using emergency contraceptive pills unsafe (12)
- ☐ Other reasons - please describe (6) _____

*Display This Question:*

*If Q20 = Yes*

*And Q28 = Yes*

Q30 Why would you use emergency contraceptive pills again? **Select all that apply.**

- ☐ Emergency contraceptive pills worked for me before (1)
- ☐ Emergency contraceptive pills gave me few or no side effects (5)
- ☐ Emergency contraceptive pills are easy for me to get (2)
- ☐ Using emergency contraceptive pills gives me more privacy when choosing birth control (6)
- ☐ The cost of emergency contraceptive pills (4)
- ☐ Emergency contraceptive pills are easy for me to use (10)
- ☐ I do not want to be pregnant now (7)
- ☐ Other - please describe (9) _____

Page Break

Q31 How difficult would it be for you to get emergency contraceptive pills where you live **if you needed them right now?**

- Extremely difficult (1)
- Somewhat difficult (2)
- Neither easy nor difficult (3)
- Somewhat easy (4)
- Extremely easy (5)

Page Break

Q32 Think about your own experiences and your community. **What would be a big challenge, small challenge, or not a challenge in getting emergency contraceptive pills if you needed them right now?**

You do not need to put a statement in each box, only place the statements in the box or boxes that makes sense for you and your experiences.

| Big Challenge | Small Challenge | Not a Challenge |
|---|---|---|
| _____ The cost of emergency contraceptive pills (1) | _____ The cost of emergency contraceptive pills (1) | _____ The cost of emergency contraceptive pills (1) |
| _____ Knowing where to buy emergency contraceptive pills (2) | _____ Knowing where to buy emergency contraceptive pills (2) | _____ Knowing where to buy emergency contraceptive pills (2) |
| _____ My current insurance plan or not being insured (3) | _____ My current insurance plan or not being insured (3) | _____ My current insurance plan or not being insured (3) |
| _____ Another health issue or diagnosis (4) | _____ Another health issue or diagnosis (4) | _____ Another health issue or diagnosis (4) |
| _____ COVID-19 mandates or guidance (5) | _____ COVID-19 mandates or guidance (5) | _____ COVID-19 mandates or guidance (5) |
| _____ Transportation (6) | _____ Transportation (6) | _____ Transportation (6) |
| _____ Laws or regulations about contraception where I live (7) | _____ Laws or regulations about contraception where I live (7) | _____ Laws or regulations about contraception where I live (7) |
| _____ Judgement from others (8) | _____ Judgement from others (8) | _____ Judgement from others (8) |
| _____ My job (9) | _____ My job (9) | _____ My job (9) |

**End of Block: ECP Experiences**

**Start of Block: Q34**

Q32 **Optional:** If you have any thoughts or comments about the survey, please share them below

_____

_____

_____

_____

_____

## Appendix E

### Resource List for Participants

Some of the questions asked today were challenging. If you are in need of support, please refer to the following free resources:

**Mental Health & Relationship Resources**

- **National Suicide Prevention Lifeline**: 1-800-273-TALK (8255).
  - This hotline is available 24 hours per day, 7 days per week. In case of an emergency, call 911 or go to the nearest hospital emergency room.
- **Crisis Text Line**: Text 741741 from anywhere in the U.S. to text with a trained Crisis Counselor
- **National Domestic Violence Hotline & Text Line**: 1-800-787-3224 or text "START" to 88788
  - Both hotline and chat line are available 24 hours per day, 7 days per week; can provide referral services in 170 languages.
- **National Sexual Assault Hotline & Online Chat**: 1-800-656-4573 & https://hotline.rainn.org/online

**Reproductive Health Resources**

- Department of Health & Human Services Clinic Locator - find your local federally qualified health centers for free or low cost sexual and reproductive healthcare, including birth control
- Bedsider.org - overview of different birth control options that allows comparing and contrasting to help you find the best options for your unique needs

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