Title

An examination of patient experience with telehealth medication abortion services in the United States

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Publication Date

2023

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

An examination of patient experience with telehealth medication abortion services in the United States

A dissertation submitted in partial satisfaction of

the requirements for the degree Doctor of Philosophy

in Community Health Sciences

by

Anna Fiastro

2023

ABSTRACT OF THE DISSERTATION

An examination of patient experience with

telehealth medication abortion services in the United States

by

Anna Fiastro

Doctor of Philosophy in Community Health Sciences

University of California, Los Angeles, 2023

Professor Jessica D. Gipson, Chair

Background

Abortion is very common - about one in four women will terminate a pregnancy during their lifetime - but access to clinic-based care is heavily restricted in the United States. Medication abortion is a safe, effective, and non-invasive option for terminating early pregnancies, and has become more widely available via telehealth services, with medications mailed directly to patients. Abortion services that improve service to communities in need of care warrant careful evaluation to ensure that best practices are followed and improve upon. Specifically, little today is known about the patient experience with telehealth abortion options, perspectives on these services, and how these models of care impact access to care.

Aims

(1) Examine how sociodemographic characteristics differ between those who received telehealth versus in-clinic care, (2) understand how patients choose between modalities of care and their

subsequent satisfaction with their experience, and (3) examine how patients communicate with providers when receiving asynchronous telehealth abortion care.

Methods

This mixed-methods study consists of multivariate cross-sectional regression analyses with electronic medical record patient data of individuals who received medication abortions from two clinics (quantitative) and thematic coding of patient-provider email communication and in-depth interviews with a subset of patients (qualitative).

Findings

Study 1: Nearly one-quarter received a telehealth visit (n=383, 22.7%). Participants were ethnically/racially diverse: self-identifying as 17.7% Asian/Native Hawaiian/Other Pacific Islander, 18.9% Black/African American, 15.3% Hispanic/Latino, 29.7% White. Compared to White individuals, those who identified as Multi-racial/Other race were more likely to receive telehealth (aOR=4.35, 95% CI: 2.80-6.76). Likelihood of choosing telehealth was higher for those who lived farther from the clinic (aOR=1.02, 95% CI: 1.01-1.03), and who had at least one prior abortion (aOR=1.54, 95% CI: 1.16-2.05). Likelihood of choosing in-clinic medication abortion services was higher among non-English speakers, participants with at least one health issue (Non-English vs. English speakers aOR=0.06, 95% CI: 0.02-0.27; one health issue aOR=0.23, 95% CI:0.15-0.36; 2+ issues aOR=0.16, 95% CI: 0.10-0.25 vs. No issues) and younger individuals (aOR=0.44, 95% CI:0.24-0.80 for patients <20 years; aOR=0.34, 95% CI: 0.22-0.54 for 21-25-year-olds; aOR=0.59, 95% CI: 0.40-0.86 for 26-30-year-olds vs. 30-35-year-olds).

Study 2: Of our racially/ethnically diverse sample, the majority were aged 30-35 (range: 20-38) and half were in the first 6 weeks of pregnancy at the time of care. Across all participants, the

most important consideration for choosing modality of medication abortion care was how soon a clinic appointment was available. Participants preferred telehealth services due to convenience, ease of access, comfort, and familiarity with telemedicine healthcare. Other than challenges with completing online paperwork prior to appointments, telehealth patients were highly satisfied with their care. Some participants preferred in-clinic services over telehealth options to ensure their care was from a "legitimate" healthcare provider. Many found the clinic-based experience to be unpleasant and would not choose again, expressing interest in telehealth.

Study 3: About half of patients sent messages responding to service questions or asking questions of their own (56%, n= 287). Among those, the mean number of patient-service messages was 10 (median=8, range: 1-29). Primary topics included 1) responding to questions to confirm eligibility for asynchronous telehealth abortion, 2) requesting reduced payment, 3) timing, packaging of medication delivery, and 4) physical process of abortion. Most communication was related to non-clinical concerns. Message volume did not differ by patient demographics (age, consultation language, gestational duration, prior pregnancies, or abortions).

Significance

Understanding how and why patients choose different modalities of care, as well as how they use services can better equip providers to best meet patient needs when providing care. Furthermore, understanding how telehealth services may address or introduce disparities in access to abortion care can support providers in efforts to offer equitable services and mitigate disparities in access.

The dissertation of Anna Fiastro is approved.

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2023

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Acknowledgements

Thank you to my chair and mentor, Jessica Gipson. I so appreciate your commitment to my growth as a researcher and scholar as well as your kindness and understand as I have navigated this journey. You have made this accomplishment possible, and I am deeply grateful.

I would also like to thank Emily Godfrey for her support throughout the program and dissertation process. Her generous and thoughtful approach to mentorship has given me opportunities to shine.

Thank you to the members of my committee, Anne Pebley, May Sudhinaraset, and Frances Olsen, for guiding and supporting me in completing this dissertation.

I would also like to thank Zihan Zheng, Elizabeth Young, Nikeeta Shah, Beth Jacob-Files, Molly Ruben, Ian Bennett, and Rebecca Gomperts for their support with project conceptualization, data collection and analyses, and summarizing findings.

Funding

The collection of the data used for this dissertation was supported by the Society of Family Planning. The UCLA Graduate Division Dissertation Year Fellowship was an invaluable support allowing me to complete this program. The contents of this dissertation do not represent either organization’s views.

Biographical sketch

Anna Elizabeth Fiastro is a public health professional and researcher. Currently, she is a graduate student at the Fielding School of Public Health at the University of California, Los Angeles pursuing a doctorate in the Department of Community Health Sciences. Her research focuses on sexual and reproductive health and rights, exploring opportunities to expand access to abortion care through the implementation of new technologies, provider practices, and health policies. She has experience in quantitative and qualitative research methods as well as health services and implementation science research approaches.

In prior work, Ms. Fiastro worked at the Los Angeles Department of Health Services developing a program that connects community health workers with country residents seeking substance use services. She also spent three years advocating for women's health in Brazil, first as a Fulbright Research Scholar and then as a non-for-profit Program Manager. She completed her master work in public health and environmental management at Yale University.

I. Introduction

Abortion is very common. In the United States (U.S), about one in four women will terminate a pregnancy during their lifetime.[1] There are two types of abortion care during early pregnancy (up to 13 weeks gestational duration): dilation and evacuation and medication.[2] Medication abortion is a technology where the patient is able to take pills at home and pass the pregnancy without a surgery or in-clinic procedure. The process consists of two medications taken 24-48 hours apart. First, mifepristone is taken to stop the pregnancy from continuing, then, misoprostol is taken to cause uterine contractions and expel the contents of the uterus. Though safe, effective, and non-invasive, medication abortion has not been widely available in the U.S.[1,3] The U.S. Food and Drug Administration (FDA) restricts the distribution of the first medication, mifepristone, limiting access to the drug through standard dispensing channels.[4]

The COVID-19 pandemic, however, has dramatically changed the medication abortion service landscape resulting in diverse models of service delivery across the states.[5] This change is due, in part, to a litigation and advocacy strategy that has resulted in changes to the mifepristone FDA restrictions, with the medication now more readily available through mail-order pharmacies.[6–8] Additionally, medical guidelines and the accepted standard of care for providing medication abortion no longer recommend in-clinic exams, ultrasounds, and blood tests for most patients.[9,10] Together, these regulatory and medicinal changes have opened the door for new models of medication abortion service delivery.

Across the nation, providers and administrators have developed telehealth medication abortion services that consist of an online consultation and medications mailed directly to patients or made available for clinic pick up.[11] Though based on international care models with

demonstrated safety, efficacy, and acceptability to both patients and providers, careful evaluation and documentation of care in the U.S. is warranted. Documenting the safety and efficacy of telehealth medication abortion and gaining a better understanding of the patient experience with this model of care becomes increasingly important as federal and state policies attempt to restrict access to abortion care across the U.S.[12] Specifically, a better understanding of the patient experience with these services will not only document the current service delivery innovations but would also allow for best practices to be determined and broadly disseminated as telehealth abortion becomes more widespread and continues to evolve.

To this end, this dissertation examines the following dimensions of patient experience with telehealth medication abortion services in the U.S. First, I examine patients who received medication abortion from a high-volume family planning provider and compare the sociodemographic characteristics of those who received telehealth care to those who received in-clinic care (Study 1). The goal is to explore if there are differences between these two populations with regards to age, race/ethnicity, parity, and geographic spread as dimensions of access to healthcare and health equity. Second, using qualitative data from in-depth interviews, I explore patients' experiences across telehealth and in-clinic services and the context in which they make their decisions. I use a thematic analysis to understand patient decision-making when choosing between telehealth and in-clinic modalities of care at the same clinic (Study 2). Finally, I examine how patients use and interact with telehealth abortion services. I examine the frequency and content of communication between patients and providers using an asynchronous telehealth platform for remote medication abortion services (Study 3). The purpose of this study is to understand patient communication with providers, including the quantity of information exchanged after an initial consultation, as well as the main topics of discussion and primary

patient questions of their providers. Together, these research questions move us towards a better understanding of patient experience with telehealth medication abortion services. Understanding how telehealth services may impact disparities in access to abortion care supports providers in their efforts to expand access to services and mitigate disparities in access. Additionally, an understanding of how and why patients choose different modalities of care, as well as how they navigate services better equips providers counseling and offering care to best meet patient needs.

II. Background & literature review

1. Medication abortion care in the U.S.

Abortion care

The World Health Organization has designated access to safe abortion services as a top health priority, recognizing that throughout the world laws and customs continue to limit reproductive health care and jeopardize women's health and safety.[13] Despite these limitations, abortion is also very common with an estimated 73 million pregnancy terminations globally each year.[14]

In the U.S., about one in four women will have at least one abortion by the time they reach the age of 45 years.[15] Most U.S. abortions take place during early pregnancy (<13 weeks gestational duration), with about 80% in the first 8 weeks and another 15% before 11 weeks of pregnancy.[16] Pregnancy termination during the first 11 weeks of pregnancy is more common due to patient choice, whereas later termination is more often due to health complications or risks to the patient or fetus.[17] Because most abortions occur early in pregnancy, this paper will focus on the options for and regulation of abortion during early pregnancy.

Abortion is very safe.[2] Terminating an early pregnancy is much safer than carrying a pregnancy to term and the birthing process, and the earlier in the pregnancy, the safer and simpler the process.[2] In addition to the associated health risks from pregnancy, being forced to carry an unwanted pregnancy to term carries additional negative consequences. Research comparing those who receive an abortion to those who were denied care has shown that those denied abortion care face greater adverse health events and long-term economic challenges, including increased rates of poverty and unemployment, compared to those who receive abortion

care.[18] At the population level, societies benefit when people have the power to decide if, when, and how to reproduce.[19]

There are two options for ending an early pregnancy (up to 13 weeks gestational duration): dilation and evacuation, often known as D&E, dilation and curettage (D&C), aspiration, or surgical abortion, and medication abortion, also referred to as medical abortion or abortion with pills. D&E refers to an in-clinic procedure performed by a trained provider involving local or general anesthesia where the cervix is prepared using medication and instruments, and then the products of conception are removed, most commonly by vacuum suction.[20] Medication abortion is the second way to terminate an early pregnancy.[21] The most common form of medication abortion is the combined use of mifepristone and misoprostol.[22] Misoprostol was the first drug to be discovered that can be used to safely and effectively end a pregnancy. The medicine is a drug commonly used for ulcers and other indications, and was discovered to be a safe and effective abortifacient by a group of women in Brazil.[*] From there, word spread; misoprostol became commonly used for many obstetric indications because it causes the uterus to contract. When taken for pregnancy termination, it is very safe, with less than 1% of users requiring follow-up care, and successfully terminates a pregnancy about 85% of the time.[24–27] Since misoprostol is a common medication with various indications, it is widely available and stocked in standard pharmacies. There are no unique restrictions on the storage, dispensing, or administration of the medication.

[*] In the 1980's, a Brazilian woman noticed the label on the medication, advising against taking during pregnancy because it may cause miscarriage, and used it to terminate an unwanted pregnancy. This information was shared throughout her community and soon many women were controlling their own reproduction. A local physician who cared for women in the community, noticing fewer unsafe attempts to terminate pregnancies and fewer pregnancies, mentioned the phenomenon to his wife, an anthropologist, who conducted research to learn about the innovative use of misoprostol.[23]

The second medication commonly used to terminate early pregnancy is mifepristone.[21] Developed in France in 1988, it is used in combination with misoprostol. Mifepristone is taken first to stop the growth of the pregnancy and prepare the uterus and cervix for the misoprostol-induced uterine contractions and pregnancy expulsion. This combination of mifepristone and misoprostol is more effective than the use of misoprostol alone, ending a pregnancy about 95% of the time, and can reduce the discomfort of the misoprostol-induced contractions.[28] The combination of medicines is included in the World Health Organization's list of essential medicines, and it has been approved for use in many countries and is used by millions worldwide every year for safe early abortion care.[19,29–31]

Use of medications to terminate pregnancies in the U.S.

Though both D&E and medication abortion are used to end early pregnancies, the proportion of abortion by medication has increased over time.[15] In many European countries, medication abortions account for over 90% percent of abortions.[32] In the U.S. however, the combination is used at much lower rates, accounting for about 54% of all U.S. abortions.[33] Even though the administration of pills requires minimal additional medical training and no specialized equipment, few primary care, family practice providers, or hospital settings (e.g., emergency department services) have incorporated medication abortion into their practices.[34] About 60% of pregnancy terminations take place in special, abortion-specific clinic settings even as the medication combination of mifepristone and misoprostol has increased in use.[15]

Due to over a century of restrictive regulations that single out abortion provision from other similar medical procedures and the stigma associated with pregnancy termination, few providers and facilities have been willing to or have had the capacity to stay up to date and continue to comply with abortion-specific regulations.[35–37] As one example of these regulations,

medical liability insurers have denied coverage or increased premiums for providers adding abortion services to their practices.[37] In another example, state laws have required that abortion care, including medication, occur in facilities that meet the standards of ambulatory surgical centers instead of standard clinical settings.[35] This has effectively taken pregnancy termination outside of the traditional healthcare system and into specialty abortion clinics. When medications for abortion were developed and introduced to the U.S., primary care and internal medicine professionals were hopeful that with this new technology, abortion care could be more broadly administered in a variety of healthcare settings leading to increased access and destigmatization; this proved not to be the case however.[4] Medication abortion was taken up by specialty abortion clinics but not broadly adopted in other healthcare settings. This limited expansion is, in part, due to the United States Food and Drug Administration (FDA) and their placement of restrictions on mifepristone use in the U.S. [4,6,38,39]

FDA mifepristone risk evaluation and mitigation strategy, restrictions on medication abortion

In 2000, the FDA approved the mifepristone/misoprostol regimen for use to safely manage terminations of early pregnancies.[40] Although mifepristone had been proven to be a safe medication, the FDA placed unique requirements dictating how it could be distributed. In 2008, the FDA consolidated mifepristone along with other drugs under the Risk Evaluation and Mitigation Strategy (REMS) program, a designation assigned to certain medications that have safety concerns to help ensure that the benefits of the medication outweigh risks.[38,39] In the case of mifepristone, despite significant evidence supporting its safety; restrictions were still put in place.[31,41] Prior to the COVID-19 pandemic, the FDA Mifepristone REMS consisted of three

main requirements unique to mifepristone: 1) providers needed to register with the medication distributor 2) patients were required to sign a special patient consent form, and 3) providers were responsible for distributing the medicine directly to their patients.[39]

FDA mifepristone REMS prior to the COVID-19 pandemic

The REMS required healthcare providers to register with a product distributor in the United States before they could administer the medication to patients. To register they had to apply to the distributor who is responsible for making sure that applying providers are properly licensed and comply with the REMS. The second element of the REMS is a unique patient agreement or consent form different from the standard consent form developed by each healthcare provider and completed by patients before getting care.[42] The REMS stated that it must be signed in the presence of the provider before the abortion and the providers must maintain a copy in the patient record. The third and final element of the REMS required that a provider oversee the dispensing of mifepristone in a clinic or healthcare setting.[38] Providers were required to order, store, and dispense their own supply of mifepristone to patients. Mifepristone could not be ordered by or stocked in regular, retail pharmacies, making it impossible for a clinician to write a prescription for mifepristone that a patient can take to be filled in a pharmacy following normal processes. This means that clinicians not only provided the patient care - consultation, counseling, and care plan - typical of a clinician, but also took on the responsibilities of a pharmacist - ordering, stocking, and storing the medication in their office and dispensing it to patients following federal and state pharmacy guidelines. Access was limited to the distribution of mifepristone through specific providers who agreed to and had the means to abide by the REMs, instead of normal channels, such as prescriptions and retail pharmacies.[4]

The mifepristone REMS requirements not only present logistical barriers to provision of medication abortion, but they also manifest as psychological barriers for providers and patients alike. The restrictions have led to misperceptions about the complexity and safety of medication abortion and resulted in additional barriers to care.[4] The mere fact that the medication is not available through normal channels has made many providers assume that the process is too complex for them to take on or somehow outside their scope of practice, presenting enough of a barrier to prevent them from making it available to their patients.[37] More specifically, the REMS program discourages providers and clinics from medication abortion because providers are hesitant to register with the distributor and are unable to take on the additional logistical steps of dispensing the medications. Providers practicing in some practices and institutions are prohibited from providing abortion care regardless of their willingness to offer care.[43] For patients, the additional stigma associated with this unavailability in retail pharmacies and requirement to access only in clinics led to limited knowledge and misunderstanding about the option.[44,45] The mifepristone REMS requirements have created barriers to the adoption and use of medication abortion across healthcare settings.

2. The COVID-19 pandemic, a watershed moment for medication abortion care in the U.S.

When the COVID-19 pandemic and national public health emergency occurred, the medical community embraced telemedicine to continue to offer abortion care in a COVID-safe way and championed efforts to move towards broader access to medication abortion, particularly through telehealth.

Changes to the medical guidelines for medication abortion care

Globally, activists, researchers, and medical professionals alike have been generating evidence and advocating for expanded access to medication abortion, specifically pointing to medical evidence that in-clinic-testing, such as using ultrasound to date pregnancies and mandatory blood tests, is neither necessary nor recommended.[46–49] This evidence and advocacy cleared the way for adapting international models and innovating ways of delivering medication abortion pills, employing mail and drone delivery, as well as underground networks of women, doulas, and community health workers who distribute the medications and support self-management of pregnancy termination.[50]

At the beginning of the COVID-19 pandemic, the abortion community drew on international models and precedents to move swiftly towards using evidence-based, "no test" protocols without requiring ultrasounds or blood tests for early pregnancy terminations in order to provide abortion via telehealth.[5,50–53] "No test" protocols were developed by leading experts in the field, including the American College of Obstetricians and Gynecologists (ACOG), National Abortion Federation, Planned Parenthood Federation of America, Reproductive Health Access Project, and Society for Family Planning.[10,46,54–56] This change in perception and standard of care within the medical community was monumental because it freed patients seeking abortion care from the need for a clinic visit.

With the scientific evidence and medical community supporting access to medication abortion services without any mandatory clinic visit, the FDA mifepristone REMS stood out as an unnecessary barrier for patients and a burden on provider time, especially since Center for Disease Control and Prevention guidelines and other government guidelines discouraged person-to-person contact during the COVID-19 pandemic. Seizing the moment, the abortion legal

advocacy community moved on various fronts to push against the unnecessary restrictions on medication abortion.

Changes to the regulatory restrictions on medication abortion care

Across the nation, leading medical experts pressed for the mifepristone REMS to be relaxed during the pandemic. Twenty-one State Attorneys General signed a letter urging selective enforcement of the mifepristone in-person dispensing requirement during the public health emergency.[7,8] In May of 2020, the American Civil Liberties Union (ACLU) filed a federal lawsuit, *ACOG V. FDA,* on behalf of many well-regarded reproductive justice organizations challenging the FDA enforcement of the mifepristone REMS.[†] On July 13th 2020, the Maryland District court issued a preliminary injunction allowing for the delivery of mifepristone via mailing from registered providers to patients while the COVID-19 U.S. Public Health Emergency was in effect.[57,58] On August 19, 2020, the District Court further clarified that registered providers could contract with mail order pharmacies to dispense the medication to their patients.[58] Though some REMS requirements remained in place (i.e., providers had to register with the distributors and oversee the pharmacies' dispense of the medication), this injunction opened the door to alternative dispensing and delivery mechanisms for these medications. As a result, registered healthcare providers began to innovate and operationalize various mechanisms to provide mifepristone to patients seeking an abortion.

There was substantial back and forth in the *ACOG v. FDA* court case and attempts by the Trump Administration to fully reinstate the REMS. But, when Joseph Biden won the 2020

[†] ACOG is the lead plaintiff, supported by the Council of University Chairs of Obstetrics and Gynecology, New York State Academy of Family Physicians, SisterSong Women of Color Reproductive Justice Collective, and an individual family medicine doctor

presidential election and control of the executive branch of government, the regulatory landscape related to mifepristone and medication abortion access changed dramatically. On April 12th, 2021, the FDA issued a letter to ACOG stating that the agency would selectively cease to enforce the in-person requirement of the FDA REMS during the COVID-19 public health emergency and on December 16th, 2021, the FDA announced the permanent removal of the in-person requirement of the mifepristone REMS restrictions.[59] With this, the ability of providers to mail mifepristone directly to their patients - or to partner with mail-order pharmacies to do so - was solidified into federal regulatory policy. Beginning in January 2023, the FDA allowed retail pharmacies, such as CVS and Walgreens, to dispense mifepristone. Patients still need a prescription from a certified provider and the pharmacy must abide by FDA criteria to be a certified pharmacy, but the option to dispense mifepristone is now open to retail and mail-order pharmacies alike.

Resulting models of telehealth medication abortion services

The provision of medication abortion services has changed dramatically due to the change in clinical guidelines – allowing patient reported information instead of ultrasound exams to date gestational duration – and the relaxation of the FDA Mifepristone REMS. Research has shown that patients can accurately date the first day of their last menstrual period.[10,54] A variety of well-respected providers in various healthcare settings have moved towards online telehealth consultations without the use of clinical ultrasounds or blood testing, as well as the mailing of pills from their offices or through partner mail-order pharmacies.[11] A number of innovative telemedicine tech startups also began operations using similar models of care.[60,61] The key elements include a telehealth consultation - either a synchronous meeting by phone or video or an asynchronous conversation via text or email – and the receipt of the medications without a

clinic visit. Some service models continue to have the patient come and pick up the pills at a specific location (the clinic front desk or parking lot, and network clinic location), while others use a courier or mail service to deliver the medications. These models are considered direct-to-patient because the patient can engage with their healthcare from the location of their choosing instead of coming into a clinic or other healthcare location.‡

For mailing medications, providers perform this service themselves or partner with pharmacies. Many package the same medications and supporting materials they would have handed to the patient in a clinic visit and are instead mailing the package to the patient's preferred address. Second, some are partnering with mail-order pharmacies to store, dispense, and ship the medications under the providers' supervision. Although setting up the relationship between the mifepristone distributors, mail-order pharmacies, and overseeing provider is initially more complex, partnering with a mail-order pharmacy offers accuracy and efficiency, saving providers from completing the pharmacy related tasks of storing, counting, labeling, dispensing, and mailing the medications. Given the most recent change in January 2023 to the FDA REMS allowing retail pharmacies to dispense mifepristone in addition to mail-order pharmacies, services will continue to adapt to the changing regulatory landscape.

The lifting of some elements of the mifepristone REMS restrictions was correctly seen as an opportunity to offer telehealth medication abortion care, and providers in many states – primarily those with favorable state legislative landscapes – began to set up telehealth services. These providers did so to meet the needs of patients across their states and to reduce the risks associated with in-person COVID exposure, but they also took the opportunity to provide a "proof of model". Across the research and advocacy community, there was an understanding that

‡ Alternative models include site-to-site telemedicine medication abortion services where patients go to one clinic location and complete a telemedicine consultation with a provider in another clinic location.

the lifting of the restrictions due to the public health emergency presented a window of opportunity for telehealth services to be rendered in the U.S. context legally, demonstrating that these services were possible and favorable to, certainly not inferior to, in-clinic care models. Since April 2020, the new telehealth abortion services have provided an opportunity for a "natural experiment" wherein the telehealth model can be tested, documented, and evaluated. With this in mind, services were implemented across the nation and have served thousands of individuals seeking care.

These shifts in abortion care are particularly urgent given the increasing pressure at the state and federal level to roll back access to abortion care in the U.S.[12,62] Constitutional federal protections of abortion access were removed with the Supreme Court ruling in *Dobbs v. Jackson Women's Health Organization* in 2022 and several state legislatures are aggressively pursuing the criminalization of abortion provision.[63,64] Additionally, at the time of writing there is uncertainty about future access to mifepristone in the U.S. due to legal challenges to the historical FDA approval of mifepristone.[65] In light of this landscape, demonstrating safety, efficacy, and acceptability of telehealth abortion services is critical, now more than ever.

3. Evaluating innovative telehealth medication abortion services

Medication abortion pills and telehealth technologies have the potential to revolutionize access to abortion care in the U.S. Providers in 27 states and D.C. are partnering with mail-order pharmacies and providing less burdensome medication abortion services to those seeking to terminate an early pregnancy. These new clinical services warrant careful, systematic evaluation of procedures.

This project seeks to better understand the patient experience with telehealth medication abortion care. International research suggests that providing medication abortions online, without the traditional delays and obstacles associated with in-person visits or facility-based testing, is equal or preferable to in-clinic models of care.[66] Yet few studies to date have explored the patient experience with direct-to-patient models of care in the U.S. Using quantitative and qualitative methodologies I seek to understand the patient experience and decision-making process when choosing telehealth medication abortion. This research can be used to improve service delivery and patient satisfaction. Additionally, we can better understand how these services expand the reach of abortion services beyond existing in-clinic options.

Historically, access to abortion services has been limited, in part, by geography, with 10% of patients having to travel 50-100 miles to obtain services and 8% of patients driving more than 100 miles.[674] When patients must travel longer distances, they are more likely to experience difficulty in getting to care, delayed care, and decreased use of services, as well as higher out-of-pocket costs and lost wages.[68–71] Moreover, these barriers to care do not affect all individuals in the same way. Underrepresented or minority communities are disproportionately affected, being less likely to seek and receive abortion care.[72–76] Minority ethnic and racial groups; queer, gender non-conforming, and LGBT communities; and younger individuals are more likely to have challenges accessing quality abortion care.

The increases in state and federal legal restrictions on abortion care enacted in 2022 will only further exacerbate the situation for these groups without ready access to care.[12,62,64,77] Abortion restrictions lead to reduced access to care and, importantly, do not affect all groups equally; young, Black, those with lower educational attainment, and low-income groups experience reduced access when restrictions are put in place.[78] In the face of increasing abortion

restrictions and decreasing abortion access, different models of abortion care delivery must be considered and evaluated.

Telehealth has the potential to make healthcare more convenient and available by addressing geographic barriers to care and potentially reaching younger, more tech-savvy populations.[79–85] Disparities in telehealth access among racial and ethnic minority communities and those with limited English proficiency have been documented in other areas of healthcare.[86–89] Past evidence demonstrates that white and wealthy individuals are more likely to have access to technology and telecommunications, and proficient English speakers have higher rates of telehealth use than those with limited proficiency.[87,88,90] It is important to understand who is utilizing telehealth abortion services to better understand how access to care may vary across the population, and if telehealth services are reaching different or unique populations as compared to clinic-based care options.

Evaluation of the patient experience with direct-to-patient telehealth medication abortion services

Both international and U.S-based research has established that telehealth medication abortion services are safe and effective.[91,92] Furthermore, research examining patient experience with telehealth services indicates that patients report high satisfaction with remote care options and equal or greater feelings of privacy than in-clinic services.[93–97] Still, no research has compared patients who were given the option between telehealth and in-clinic services from the same provider or explored how patients choose between these two modalities of care.

Focusing first on one dimension of patient experience, I explore the contextual factors and patient characteristics that influence patient choice of telehealth medication abortion services

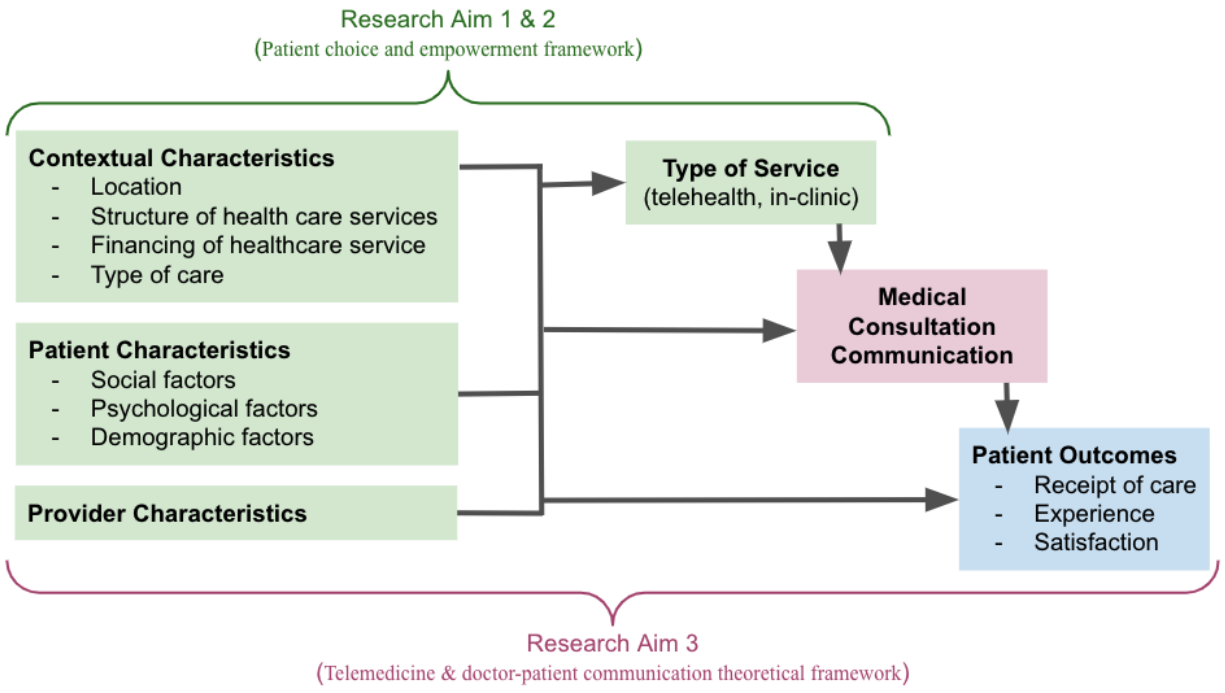
or in-clinic face-to-face services. I explore these relationships using both quantitative (Study 1) and qualitative (Study 2) methods. Using electronic medical record data, I examine the factors associated with receipt of the two modalities of care. This examination explores patient preference for the two types of care and examines the push and pull factors that may move patients towards one type of care over another. Findings provide information for providers and clinics offering these types of services about their patient populations and service utilization. My research also explores if telehealth services have the potential to address disparities in access to healthcare and abortion care and identify areas where healthcare disparities remain or are exacerbated.[72] Limited access to healthcare among racial and ethnic minority communities who do not have the same access to telecommunication and the associated technology as whiter, wealthier communities has been documented in other areas of medicine.[87,88]

The second phase of my research (Study 3) examines the association of patient characteristics with different types of communication during asynchronous medical consultations. It examines how these characteristics and consultation experiences relate to patient experience and satisfaction. Understanding these relationships supports providers in improving patient-facing materials as well as communication prior to, during, and as follow-up to consultations to better address patients' concerns and meet patients' needs. Understanding differences in patient communication and information needs based on sociodemographic characteristics can also help tailor reproductive health services, information, and resources to different groups of patients, particularly valuable when done with an eye towards disparities in healthcare.

Research grounded in an integrated theoretical framework

To guide this work, I developed an integrated framework that draws on previous research about patient experience with telehealth services, with a focus on the dimensions of patient choice and doctor-patient communication. Specifically, my conceptual model is supported by two theoretical frameworks: 1) the Patient Choice and Empowerment Framework, and 2) telemedicine and doctor-patient communication theoretical frameworks.[98,99] (Figure 1) The following figure details the constructs of the model as they relate to telehealth abortion care.

Figure 1. Integrated Conceptual Framework for proposed research on patient experience with telehealth medication abortion services.



Contextual characteristics

Contextual clinic factors influence patients' decision-making regarding their care options as well as their experience of the medical encounter, including their communication during the consultation. The following is a comprehensive description of the contextual factors that influence patient experience.

Location

Location of care is particularly important in the case of abortion services due to differences in state and local laws as well as regulations that influence how and where abortion care can be administered.[12,62] Location also influences the broader cultural acceptance of abortion care and facilities; care providers in less permissive locations may require additional security or face protestors. These restrictions and specifications dictate, in part, the clinical setting, with some states requiring surgical settings or hospitals for abortion care instead of standard physician's offices or primary care settings. In the case of telehealth services, location may refer to the geographic location of the service provider or the location of the patient where they experience the consultation. When considering the patient location as the place of care, the construct of "service location" extends to the website and/or telehealth platform where the consultation takes place. Telehealth services are also subject to the same regulations as in-person services, so their operation will be dictated by the regulations where the provider is based. Regardless of the specifics of the consultation location, these location factors together drive the patient's experience of their care.

Structure of health care services

To examine patient experience with care among those who received either telehealth and in-clinic medication abortion services, modality of care delivery must be considered as a primary driver of patient decision-making and experience. Telehealth services enable the patient to complete the consultation online in a location of their choosing and receive the medications at an address of their choosing or pick them up, while in-clinic services follow a more traditional healthcare delivery model with a need to go to a clinic, wait in a waiting room and then an exam room, interact in person with administrators and clinic staff, then use the medications at a different location of your choosing. The patient experience is heavily influenced by the medium used for the consultation, be it phone, video, or in-person. In the case of this study, in-person, video, phone, and asynchronous email messaging are all examples of media by which the patient consults with the provider for their medication abortion care. Patient awareness, knowledge, and comprehension of the service structure and mechanism of communication is a key element to be considered when choosing between modalities of care, using services, and receiving care.

Another facet of the healthcare service structure is the healthcare provider organization – solo practice, group practice, or multispecialty healthcare network – which may drive the patient's familiarity and comfort with a given care provider, as well as the length of their relationship with the provider (one time visit and specialist, continuity of care and primary care). For example, the majority of abortions in the U.S. take place in specialty reproductive healthcare providers despite patients reporting a preference for receiving abortion care in primary care settings.[1]

Financing of healthcare service

Because most patients - even those with active insurance – do not use their insurance and instead pay cash (cash, check, credit card) for abortion services, the cost of services to patients is a critical factor as patients seek care and choose between care options.[100] Generally, telehealth and in-clinic medication abortion services as well as in-clinic procedural abortion options are often priced equally by healthcare providers so as to not influence patient decision-making or to be perceived as coercive towards one method of care.[100] Additionally, all necessary follow-up care and appointments are usually included in the up-front cost of abortion services, only requiring additional expenditure if the emergency care is provided in a different healthcare setting. The care needed to end more advanced pregnancies, however, is more expensive primarily due to the need for anesthesia.

Type of care - acuteness, time sensitivity of care

The Patient Choice and Empowerment Framework highlights the importance of considering the acuteness of care compared to elective care appointments. This is particularly relevant to abortion care given that terminations are both acute and time sensitive. Though abortion care is very safe, the complexity and therefore cost of the process increases as a pregnancy progresses.[68] After 13 weeks medication abortion is not commonly used in the U.S., with patients limited to a procedural abortion. Therefore, the time sensitivity of abortion care is a factor that likely influences patient decision-making when considering care options. It is also important to consider how abortion is a one-time service, without the need for follow-up or continued healthcare monitoring in most cases.[10,29,41] There is a distinction to be made between medication abortion and an in-clinic procedure in that the latter can be completed in one appointment and the successful termination of a pregnancy can be confirmed immediately. Medication abortion,

however, entails a longer process, with the pills being taken 24-48 hours apart. Moreover, bleeding continues for 1-4 weeks and an over-the-counter pregnancy test may remain positive for four weeks.[2] So, while abortion care is generally considered acute, medication abortion is a longer process, entirely outside a clinical setting, when compared to in-clinic services. Patients are likely to think about their abortion care options in light of the acuteness, time sensitivity, and experience of the termination process.

Patient characteristics

Patient characteristics heavily influence patient experience. Constructs include psychological factors and sociodemographic characteristics - including age, educational attainment, socioeconomic status (SES), gender identity, race, and ethnicity.

Sociodemographic factors

The Patient Choice and Empowerment Framework outlines five dimensions of social factors - educational attainment, occupation, social class, social networks, and religious affiliations - and four patient demographic characteristics - rural versus urban, racial/ethnic group, self-identified gender, and age – that influence patient choice or are associated with how others react to the patients' presentation of self.

Patient educational attainment, occupation, and social class may influence patient understanding of healthcare service options, as well as personal health and body knowledge.[101] Patient occupation is particularly important for researchers to consider as patients who work in healthcare or related fields may have a greater knowledge of telemedicine healthcare services or in-clinic operations. This "insider" knowledge may impact a patient's comfort in clinic spaces or facilitate their use of telemedicine technology. Social networks, including religious affiliations,

are particularly relevant for abortion care due to the stigmatized nature of pregnancy termination and its exceptionalism as "separate" from other forms of healthcare.[45]

Because abortion care is available mostly in specialty clinics instead of in hospitals or primary care settings, patient location and proximity to these specialty clinics is a significant factor that influences when and how patients seek and receive abortion care.[67] Moreover, most clinics are located in urban and suburban settings, leaving many rural communities without accessible abortion services. Disparities in access to care for minority ethnic and racial groups documented across healthcare are also persistent with abortion care.[72,73] Patients who identify as part of underrepresented or minority communities are less likely to seek and receive abortion care. This extends to queer, gender expansive, and LGBT communities, who often attempt to address their abortion care needs outside the formal healthcare system.[74] Finally, age is an important factor that influences how individuals seek healthcare and abortion care. Research has shown that older women report greater satisfaction with their abortion experience than younger women.[75]

Psychological factors

There are two dimensions of a patient's psychological characteristics that influence patient choice. First, their attitudes towards healthcare and abortion care have the potential to drive patients towards or away from certain modalities of care. This is particularly salient for this study given the stigmatized nature of abortion care. Perhaps more important is the patient's past experience or habits with regards to healthcare-seeking behavior.[102] Experience in the healthcare system, familiarity with telemedicine modalities of care, and the frequency of healthcare utilization are all elements that may influence a patient's decision when choosing between direct-to-patient telehealth or in-clinic medication abortion services. Additionally, previous abortion

experience, particularly oneself or a close friend or relative having a successful medication abortion, may increase comfort with and knowledge of the process and influence patient considerations and decision-making.

Provider characteristics

When considering patient-provider interactions and communication, provider characteristics are an important element that influences the information communicated by the provider as well as how the information is received by the patient. The providers' demographic characteristics (age, gender, race, ethnicity) contribute to how the provider is seen and perceived by the patient - which can lead to various levels of comfort and trust with a provider (key elements to successful consultation communication).[98] Additionally, the provider's professional characteristics – their medical training, professional experience, and knowledge of the service or procedure – all influence their ability to communicate pertinent information to patients about the care they are or will be receiving. Finally, provider interpersonal skills, confidence, and attitudes towards patients all shape the delivery of care and transmission of information during consultations.

Patient-provider communication in medical encounter

Much research has been dedicated to patient-provider communication and its relationship to various health outcomes. The 1990's saw a shift in provider communication from directive counseling to patient-centered, shared decision-making in an effort to improve provider-patient communication and health outcomes.[103] Improved provider-patient communication is, in turn, associated with better health outcomes, including care plan adherence, patient safety outcomes, and patient experience.[104,105] Patient experience is associated with less health care

utilization.[72,106] These trends in broader healthcare are applicable to family planning care, as well as to telehealth encounters.[107–109]

Medical encounter communication includes the information transmitted from the provider to the patient, but also the information shared by the patient to drive the provider's considerations and care plan. Communication also goes beyond just the information exchanged, to other verbal characteristics, including tone and manner, as well as non-verbal elements of communication, such as body language. Though conceptualized for synchronous doctor-patient communication scenarios, the framework is also applicable to asynchronous telehealth messaging and chatting between patients and providers since verbal communication includes written text (texts, emails, letters). The communication between patients and their care team is ultimately important to understand because it impacts various health outcomes, including patient understanding, adherence to care plan, experience of care, and satisfaction. This experience of communication and information gathering on the part of the patient is influenced by modality of care (synchronous, asynchronous telehealth and in-person interactions).

III. Study aims of dissertation research

1. **Aim 1**: *Quantitative data analysis*

   Are there contextual and sociodemographic differences between patients who received telehealth medication abortion services versus those who received in-clinic medication abortion services?

2. **Aim 2**: *Qualitative data analysis*

   What contextual and sociodemographic factors influence patient preference for direct-to-patient telehealth or in-clinic medication abortion services and their subsequent experience and satisfaction with care?

3. **Aim 3**: *Mixed methods analysis*

   How do patients communicate with their providers via email as they complete an asynchronous telehealth medication abortion and what are the primary topics of discussion?

Aim 1 and 2 will be explored in partnership with Cedar River Clinics (CRC), a reproductive healthcare clinic network in the state of Washington. Aim 3 will be explored in partnership with Aid Access, an online medication abortion provider. Both study sites – CRC and Aid Access – are explained in more detail in sections 1.2 and 3.2 respectively.

IV. Methods

The methods chapter outlines the research methods for all three studies. Each study is then included in full publication format as submitted to peer-reviewed academic journals with citations included.

Study 1 Patient characteristics associated with receiving telehealth versus in-clinic medication abortion services from a high-volume reproductive health clinic

> *Are there contextual and sociodemographic differences between patients who received telehealth medication abortion services versus those who received in-clinic medication abortion services?*

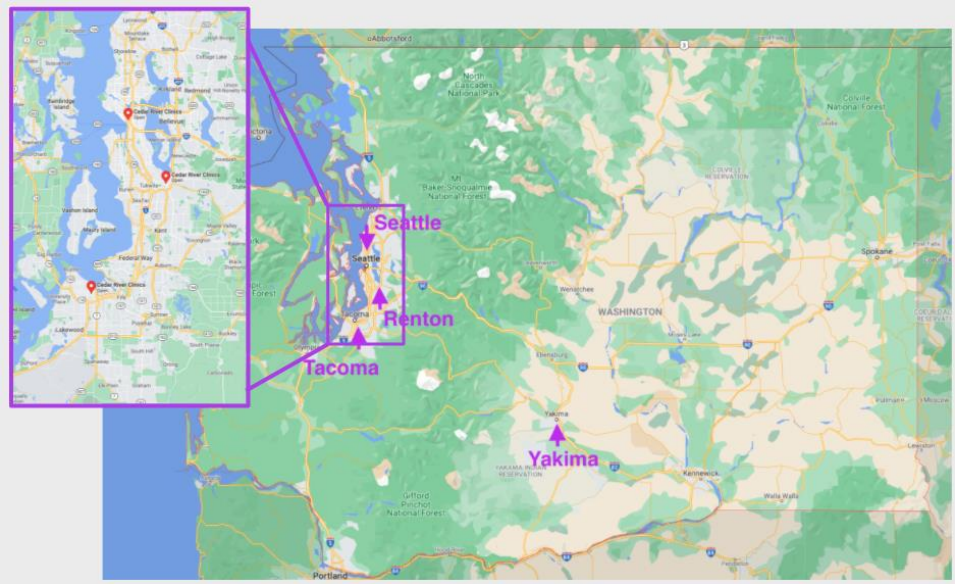
1.1 Design and rationale

The goal of this study is to understand if there are meaningful differences between the patients who received telehealth medication abortion services compared to those who received in-clinic medication abortion services. I evaluate retrospective, electronic medical record (EHR) data with demographics and geographic location of those who received medication abortion from a reproductive healthcare clinic network, Cedar River Clinics (CRC). I examine sociodemographic and geographic characteristics of those who received medication abortion care from CRC from April 2020 - when the telehealth service was implemented - through January 2022, and compare those who received telemedicine abortion service and those who received in-clinic services.

1.2 Study site

CRC is a large, independent, specialized family planning practice in Washington (WA) State, with clinics in Seattle, Renton, Tacoma, and Yakima. (Figure 2)

Figure 2. Four Cedar River Clinics locations in Washington State.



In April 2020, CRC launched a new telemedicine medication abortion service to offer clinician consultations via video visits for patients who meet eligibility criteria and live in WA. Patients then pick up their medications at a CRC clinic location or have the abortion medications mailed to their homes. CRC was working to expand their telehealth abortion services prior to the pandemic; the pandemic - and the need to reduce in-clinic visits - catalyzed their efforts to implement remote care options. Inspired by international telehealth abortion models and the supportive state laws and billing regulations of Washington state, the CRC Medical Director spearheaded the effort to develop clinic policies and procedures for the telehealth abortion service and served as the primary clinician during the initial months of service. The service has

since grown to be a standard part of services offered by CRC with 3-5 family physicians and nurse practitioners staffing the service.

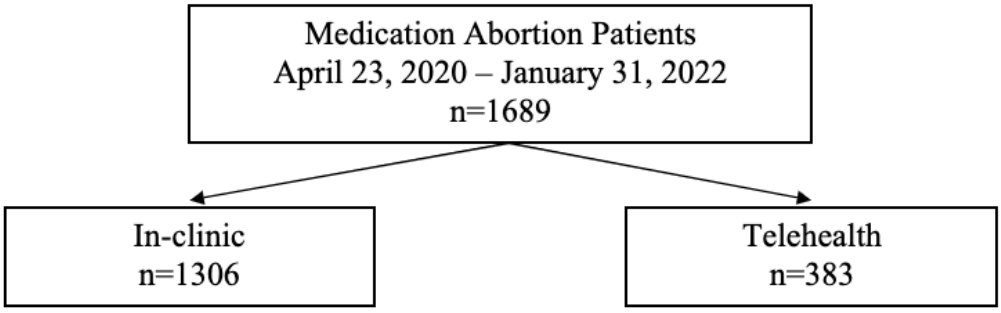
To describe the service in more detail, patients with an address in WA who are interested in seeking medication abortion from CRC undergo an initial screening with a phone counselor to determine if they are eligible for a telemedicine abortion. If determined to be an appropriate candidate for a telemedicine appointment based on the clinic's protocols, they are asked to complete forms with questions about their last menstrual period, relevant medical history, and other demographic information. Patients then receive a text/email with a link to access a confidential, Health Insurance Portability and Accountability Act (HIPAA)-protected site for a synchronous online video visit with a provider. Patients who are less than 10 weeks from their last menstrual period (LMP) and have no contraindications can receive abortion pills via mail or clinic pick-up, based on the patient's preference. Individuals eligible for telehealth medication abortions must: be certain of last menstrual period within one week, no symptoms of or risk factors for ectopic pregnancy (vaginal bleeding, pelvic pain, prior ectopic pregnancy), no prior tubal surgery, permanent contraception, or IUD in place). Patients receive ongoing support from CRC staff through email and phone, as needed. Enclosed with the mifepristone and misoprostol, patients receive an instruction sheet that describes how to use the medications, and information about expected symptoms, potential side-effects, follow up, and emergency procedures. (Appendix 1 – Cedar River Clinics Patient Instruction Sheet) The patients are instructed to take 200 mg of mifepristone followed by 800 mcg of misoprostol 24 to 48 hours after taking the mifepristone. Patients who are more than 9 weeks (but less than 10 weeks) from their last menstrual period receive additional misoprostol tablets which they are instructed to take after an additional 24 hours regardless of their symptoms.

In addition to this new telehealth medication abortion service, CRC continued to offer in-clinic medication abortion services throughout the study period. In-clinic services followed similar protocols but required patients to come into a CRC brick-and-mortar location for an in-person consultation with a provider. Though laboratory testing is up to the discretion of the individual providers, the majority follow "no-test" protocols (without a clinical exam, blood tests, or ultrasound) for in-clinic medication abortion appointments.

1.3 Study population

This study examines all individuals who received medication abortion services from CRC between April 23, 2020 to January 31, 2022 (n=1689). This sample consists of those who received in-clinic medication abortion services (n=1306) and those who received telehealth medication abortion services from CRC (n=383).

Figure 3. Subpopulations of Cedar River Clinic medication abortion patients for analysis.



For individuals with multiple encounters during the study period (n=110), only the first encounter was included (Appendix 2- Description of encounter type for individuals with multiple medication abortion encounters during the study period (April 23, 2020 – January 31, 2022))

1.4 Data sources

De-identified CRC EHR data for patients who received medication abortion services, both in-clinic and telehealth, from CRC between April 2020 (when telehealth services were implemented) and January 2022.

1.5 measures

Age - Patient age was calculated in years on the date of the appointment using the patient's date of birth.

Gender and Race/ethnicity – Patients self-identified their gender, race and ethnicity when completing the patient history intake form. All individuals who identified as Hispanic or Latino were included as such, those who identified as non-Hispanic or declined to specify were included based on their self-selected race. "Asian" was combined with "Native Hawaiian or Other Pacific Islander"; "Alaska Native", "American Indian", "more than one race", "multi-racial", and "other race" were combined creating "Multi-racial / Other race"; "Declined to specify" and those who did not respond were combined; those who chose "Black or African American" and "White" were included as such.

Language – When scheduling an appointment, patients were given the option to complete their consultation in a language other than English with an interpreter. Those who chose to speak English were included as such. Patients who had their appointment with a translator in another language (23 languages) were included as non-English speakers.

Past and current medical issues – Patients indicated current experience or history of 47 common health issues or "No known health issues" in the patient history intake form. None of these health issues were contraindications for telehealth or medication abortion services but were gathered as

part of the standard patient history intake forms. Individuals were categorized as having no health issues, one, and two or more health issues.

Payer type – Patients had the same payment options regardless of whether they received telehealth or in-person services. Payer type is the method used by the patient to pay for their services, categorized by the clinic's financial staff as: cash payment (no insurance used), public insurance, or private insurance plan (mutually exclusive).

Gestational duration – Gestational duration (GD) was documented by clinic staff using ultrasound or calculated using reported last menstrual period and consultation date. Patient charts missing GD and with GD above 77 days (11 weeks) were reviewed for additional information. Those still missing GD or with a GD over 91 days (13 weeks), were included as missing GD (n=25); most had documented pregnancies of unknown location.

Social vulnerability – Using the Housing and Urban Development United States Postal Service (HUD USPS) zip code and the United States Department of Agriculture county name crosswalk files, we matched patient reported zip code with specific counties using associated Federal Information Processing Standards codes.[110] For zip codes that matched multiple Federal Information Processing Standard count codes, we used the primary county for a given zip code. We then assigned county-level Centers for Disease Control and Prevention Social Vulnerability Index (CDC SVI) scores.[111] The CDC SVI is a 15-factor metric that includes poverty, lack of access to transportation, adequate housing, and minority status and language. The CDC SVI was chosen due to its comprehensive inclusion of social determinants of health at the neighborhood level and its utility for examining the relationship between social vulnerability and a wide range of health behaviors and outcomes.[112–114] We categorized patient social vulnerability into terciles of low, medium, and high.

Distance to CRC locations – Using the U.S. Department of Housing and Urban Development's zip code population weighted centroid point, we assigned a latitude/longitude point to each individual based on the zip code the patient reported when scheduling and took the shortest of the two distances in miles between the patient's location and CRC Renton and Tacoma clinical locations using Vincenty's formula.[115,116]

1.6 Hypotheses

Based on past research and my integrated theoretical framework, I hypothesized that patients who received telehealth services would be wealthier, more likely to identify as White, and more likely to have children than those who received in-clinic services due to increased access to and familiarity with telecommunication technology and need for convenient services due to childcare needs. I also anticipated that telehealth patients were more likely to have a history of receiving an abortion in the past. Finally, I anticipated that telehealth patients would be more geographically spread across WA state than those who visited CRC in person.

1.7 Analysis

My primary analysis compares the sociodemographic characteristics for those who received in-clinic services with those who received telehealth services. I used descriptive statistics to examine the distribution of sociodemographic variables collected from CRC's EHR patient records and used an ANOVA or Chi-squared test to compare characteristics of persons across the two modalities of care. I completed a multivariable logistic regression to examine association of sociodemographic characteristics with modality of service received.

To visualize the difference in geographic spread as well as the relative geographic density of the two patient populations, I also calculated and mapped the standard deviation ellipse for

telehealth and in-clinic patient locations using QGIS Ellipse Creator.[117,118] To better visualize the underlying points, I randomly relocated the latitude and longitudinal of the population weighted centroid zip code points for all telehealth and in-clinic patients by +/- 0.03 degrees.[119]

Using resampling-based true permutation testing, I tested whether any potential difference in geographic spread between the telehealth and in-clinic patient groups was due to chance.[120] To do this, I created 10,000 simulated datasets by randomizing the telehealth/clinic designation to the N=1,658 patients with Washington state zip code population-weighted centroid locations. For each simulated dataset I calculated the geographic center point using the geosphere centroid library, calculated the mean distance from each point to its respective center point, and calculated the ratio of average distance to the center point for telehealth-assigned patients compared to the average distance to the center point for in-clinic-assigned patients. The observed ratio was compared to the set of simulated ratios and a p-value was calculated.

Study 2: Patient preference for and satisfaction with direct-to-patient telehealth and in-clinic medication abortion services

> *What contextual and sociodemographic factors influence patient preference for direct-to-patient telehealth or in-clinic medication abortion services and their subsequent experience and satisfaction with care?*

2.1 Design & rationale

The goal of this study is to understand patient preference for direct-to-patient telehealth or in-clinic medication abortion services and their subsequent experience and satisfaction with care. While prior research has established that telehealth services are perceived as equal or preferrable

to in-clinic medication abortion services, none has yet examined how patients consider telehealth and in-clinic options when choosing between modalities of care from the same provider/facility to better understand patient preference for telehealth and in-clinic services.[93–95] Timeliness of services is an important driver of patient choice. Other areas to explore are the convenience of telehealth services and how patients perceive this convenience and its benefit to their lives; this may include patients with children requiring their care, working individuals with busy daytime schedules, and those who live far from brick-and-mortar clinic locations. A related goal was to explore why patients prefer in-clinic services. I explored perceptions of legitimacy of in-person and online healthcare clinics and providers, as well as perceptions of the safety and complexity of medication abortion services. I also examined the patients' subsequent experience of and satisfaction with the two care options. A better understanding of how patients consider and choose telehealth models of care can inform service delivery adaptation to best meet patient needs and improve healthcare outcomes.

2.2 Study site

Semi-structured, in-depth interviews were conducted with individuals who received medication abortion services from any CRC site between August 2021 and January 2022. Additional information on the study site can be found above for Study 1 "Study site".

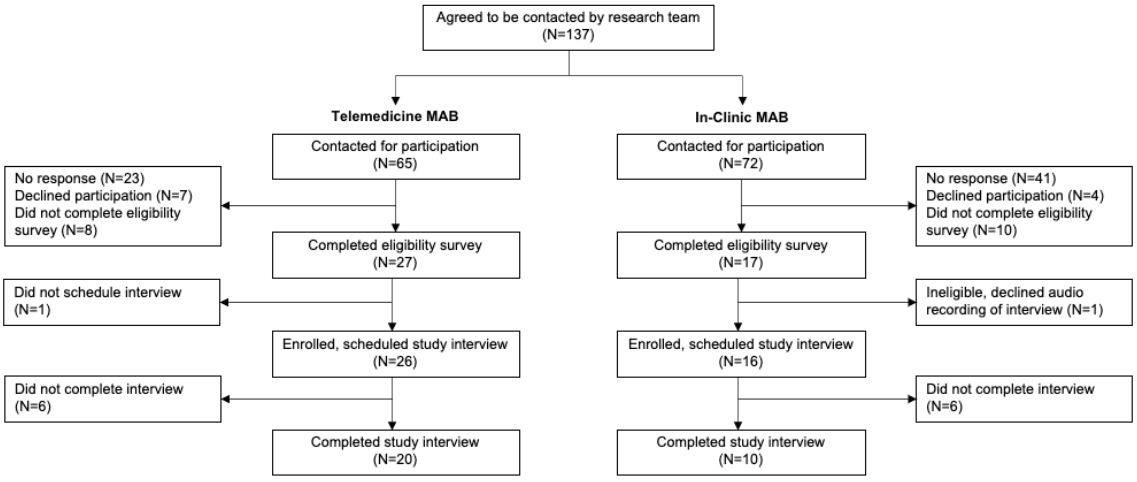
2.3 Study population and participant recruitment

Semi-structured, in-depth interviews were completed with English-speaking adults (ages 18 years and older) who received telehealth or in-clinic medication abortion care at CRC between August 2021 and January 2022. During this time, clinic staff incorporated information about this study into existing patient care consent forms. Patients seeking medication abortion care could

agree or opt out of being contacted by the research team for an interview. Clinic staff compiled and shared basic demographic and contact information for consenting individuals with the research team weekly.

Of the 570 patients who sought medication abortion care (August 2021 – January 2022), 24% were both English speaking and consented to be contacted to participate in the qualitative study. A research coordinator with experience in study design and participant recruitment) contacted potential participants by text, email, and phone calls, up to three times. Using convenience sampling, we approached all 137 individuals who agreed to be contacted by the research team and interviewed all individuals who agreed to be interviewed (30 individuals) (Figure 4).[121] Each participant received a $50 electronic gift card by email following their interview.

Figure 4. Description of recruitment pathway of study participants.



2.4 Instrument development

We generated our initial interview questions based on the Patient Choice and Empowerment Framework – which outlines primary and secondary influences on patient

willingness and/or ability to make choices about the use of specific healthcare services – as well as a conceptual framework for patient-clinician communication in telemedicine settings.[98,99] We asked participants about their choice of and experience with either telehealth or in-clinic services, including how they researched and decided on CRC for their services, their interactions with phone counselors, and scheduling of their appointments. Questions included receipt of care, focusing on patient-clinician communication, clinic setting and experience, telehealth technology used, and follow-up care. We adapted the interview guide throughout data collection. For example, as it became clear that COVID-19 infection was not a major consideration for patients choosing in-clinic care, we no longer probed on this construct.

2.5 Data collection

Though I collaborated to create the interview guide, I was not involved during data collection. A UW study team member and qualitative research expert who identifies as a woman and has training in public health and medical anthropology completed all one-on-one interviews. Interviews were conducted via HIPAA-compliant Zoom conference calls, audio recordings were transcribed verbatim using REV.com, transcripts were reviewed for quality and identifying information was redacted, and transcripts were uploaded to Dedoose qualitative analysis software.

Using a semi-structured interview format, patients were asked about their choice of and experience with either telemedicine or in-clinic medication abortion services. Internal weekly analysis meetings were conducted within the UW research team to assess saturation on primary research questions and associated themes. Saturation on key themes within each domain of our theoretical framework was determined to be reached after thirty (30) interviews.

2.6 Analysis

We completed a hybrid deductive-inductive analysis using Dedoose software. Deductive themes were developed from existing theory related to patient choice summarized in the Patient Choice and Empowerment Framework.[99] Additional themes were inductively generated from what patients shared about their experience.[122,123] A preliminary code book was developed based on the theoretical framework and inductive themes.[124] Ten of the transcripts (1/3 of all transcripts) were coded by two researchers - myself and the medical anthropologist team member who conducted the interviews. We met regularly to ensure inter-coder reliability and agreement on code application.[122] Once consistency was reached, the remainder of the transcripts were coded by one of the two researchers. Coders completed memos throughout the process to track and synthesize thematic discussions and summaries. Codes related to patient decision-making between telehealth and in-clinic services were then pulled and major themes identified and summarized.

Study 3: Communication needs of patients using asynchronous telehealth medication abortion services

> *3. How do patients communicate with their providers via email as they complete an asynchronous telehealth medication abortion and what are the primary topics of discussion?*

3.1 Design & rationale

The goal of this study is to complete a retrospective chart review to analyze the volume of back-and-forth messaging between clinicians and support staff of the study site clinical service and

their patients via the care delivery software platform as well as to summarize the primary topics of patient concern when using an asynchronous abortion service. A better understanding of patient concerns when using asynchronous telehealth abortion services can inform and thus improve communication by healthcare providers during medication abortion consultations to streamline provision, improve patient comprehension and comfort with steps of care, and, ultimately, increase patient satisfaction.

3.2 Study site

Aid Access is an online abortion service that offers a family clinician-supported online abortion service wherein patients communicate asynchronously with Aid Access clinicians and service support staff via an online consultation questionnaire and subsequent email messaging. As a result of the COVID-19 pandemic and changes in federal and state abortion regulations, U.S. providers began to offer telehealth abortion services in three states: New York (NY), New Jersey (NJ), and Washington (WA). To access care, patients fill out an online health questionnaire on the Aid Access care delivery platform that asks about medical history (last menstrual period, gestational duration, method for confirming pregnancy), access to a hospital, and availability of support. An automated algorithm flags patients with contraindications to care (medication allergies, IUD in place, gestational duration >10weeks). The questionnaire and flags are then reviewed by the clinician. If the clinician determines that remote care is appropriate, medications and usage instructions are sent to the patient at an address of their choosing. Aid Access physicians either mail the pills themselves through the United States Postal Service or send a prescription to a mail-order pharmacy that ships the medications. The total cost of the services is $150, although a sliding scale is offered, and Aid Access does not deny anyone due to inability to pay. The recommended regimen for usage is the following: swallow the mifepristone pill (200

mg), wait 24-48 hours, then use 4 pills of misoprostol (200 mg) buccally, sublingually, or vaginally. If bleeding does not occur within 4 hours after taking the misoprostol, it is recommended to take an additional 4 misoprostol pills the same route the first 4 were taken. Patients can then send messages via email to the service, which are responded to by the clinician or help desk representative. Automated messages are also sent to patients throughout the process from the service telehealth platform.

3.3 Study population

This study includes patients who received consultations and medications (mifepristone and misoprostol) from Aid Access in NY, NJ, and WA between April and November 2020 (n=504). Most clinicians began offering services in response to the COVID-19 pandemic with their first patients receiving services in April 2020.

3.4 Data source

De-identified data of the online health questionnaires, subsequent asynchronous messaging, and follow-up evaluation from the Aid Access care delivery platform were used for analysis. Health questionnaire information included: age, gestational duration, state where patients receive medications (NY, NJ, WA), number of previous pregnancies and abortions, reason for needing medication abortion treatment reported by patients, and reason why patients preferred online treatment.

3.5 Hypothesis

I hypothesized that younger patients and those who do not report a history of having an abortion are more likely to exchange messages with the Aid Access platform. I hypothesized that the

primary concerns that patients converse about relate to taking the medications, managing symptoms, and how to determine if the medications have worked.

3.6 Analysis

I completed the analysis in partnership with another UW research team member who has clinical training in abortion care as a Western University of Health Sciences medical student and quantitative/qualitative research training as an MPH graduate of Columbia University Mailman School of Public Health, Population and Family Health Department. We first determined the number of total back-and-forth emails between the patient and the Aid Access providers and service staff. We then reviewed the messages exchanged between patients and the Aid Access platform. After reviewing 30 charts, we created a coding scheme for the primary topics of communication. (Appendix 2 – Preliminary Coding Scheme for Aid Access Patient's Primary Concerns) We then coded the remaining observations based on the primary topics of communication: physical process (medication usage, appropriate amount of bleeding, pregnancy termination concerns), delivery (timing of arrival and packaging of the pills), and cost (sliding scale needs). We categorized individuals having no additional communication needs, communicating on one or more of the four primary topics of communication, and described the number of patients who required additional information based on the topic of communication. We then compared the mean number of back-and-forth messages across demographic characteristics and the topic of communication for those with only one topic of communication using one-way analysis of variance.

V. Study 1: Patient characteristics associated with receiving telehealth vs. in-clinic medication abortion services from a high-volume reproductive health clinic

Anna E. Fiastro, Zihan Zheng, Molly Ruben, Jessica Gipson, Emily M. Godfrey. "Patient characteristics associated with receiving telehealth vs. in-clinic medication abortion service from a high-volume reproductive health clinic in Washington state"

Portions submitted as a research letter to JAMA Network Open, revised and resubmitted

1. Introduction

Abortion is a common healthcare service with more than 56 million terminations occurring globally each year, yet access to safe and legal abortion services remains a pressing public health problem.[1-3] Historically, access to abortion services has been limited, in part, by geography, with 10% of patients having to travel 50-100 miles to obtain services and 8% of patients driving more than 100 miles.[4] When patients must travel longer distances, they are more likely to experience difficulty in getting to care, delayed care, and decreased use of services, as well as higher out-of-pocket costs and lost wages.[5-8]

These barriers to care do not affect all individuals in the same way. Underrepresented or minority communities are disproportionately affected, being less likely to seek and receive abortion care.[9-13] Minority ethnic and racial groups; queer, gender non-conforming, and LGBT communities; and younger individuals are more likely to have challenges accessing quality abortion care. The unprecedented increases in state and federal legal restrictions on abortion care enacted in 2022 will only further exacerbate the situation.[14-17] Abortion restrictions lead to reduced access to care and, importantly, do not affect all groups equally; young, Black, those

with lower educational attainment, and low-income groups experience reduced access when restrictions are put in place.[18] In the face of increasing abortion restrictions and decreasing abortion access, different models of abortion care delivery must be considered and evaluated.

Telehealth offers patients access to clinician-supported medication abortion services. Clinicians in various healthcare settings have moved towards direct-to-patient telehealth medication abortion services, with online consultations (without the use of clinical ultrasounds or blood testing) and medications delivered directly to patients by clinicians or through partner mail-order pharmacies.[19,20] Telehealth has the potential to make healthcare more convenient and available by addressing geographic barriers to care and potentially reaching younger, more tech-savvy populations.[21-27] Disparities in telehealth access among racial and ethnic minority communities and those with limited English proficiency have been documented in other areas of healthcare.[28-31] Past evidence demonstrates that White and wealthy individuals are more likely to have access to technology and telecommunications, and proficient English speakers have higher rates of telehealth use than those with limited proficiency.[29,30,32] It is important to understand who is utilizing telehealth abortion services to better understand how access to care may vary across the population, and if telehealth services are reaching different or unique populations as compared to clinic-based care options.

This study seeks to understand patient characteristics that are associated with choosing telehealth versus in-clinic medication abortion care options to explore if telehealth services have the potential to address known disparities in access to in-person abortion healthcare services (age, race/ethnicity, social vulnerability, ability to access healthcare services).[9] We analyze retrospective sociodemographic and health history data of those who received medication abortion from a reproductive healthcare clinic in Washington state. Findings from this high-

volume setting may provide information for other providers and clinics offering these types of services about how these two modalities of care may reach a more diverse range of patients and highlight opportunities to improve equitable access to abortion care.

2. Methods

We conducted a cross-sectional analysis of electronic medical record (EMR) data of patients who received medication abortion services from CRC, a high-volume reproductive healthcare clinic in Washington State, between April 2020 and January 2022.

The institutional review board of the University of Washington and University of California Los Angeles approved the protocol for this study. We followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines.[33]

2.1 Study site

CRC is an independent, specialized family planning practice and one of the largest abortion providers in Washington (WA) State, with clinical sites in Renton and Tacoma, and an office in Yakima city centers. On April 23, 2020, CRC launched a telemedicine medication abortion service comprised of a video consultation with a clinician and medications available for pick up at a CRC clinic location or mailed to a WA address of the patient's choosing.

CRC phone counselors offer procedural or medication abortion to patient callers. Those who prefer medication abortion and report to be less than 77 days gestational duration are offered a telehealth or in-clinic consultation. Telehealth patients complete an electronic patient history form (with questions about their last menstrual period, relevant medical history, and other demographic information) and receive a text/email with a link to access a confidential, Health

Insurance Portability and Accountability Act (HIPAA)-protected site for a synchronous online visit with a clinician. Patients who have no contraindications for remote care based on clinic protocols (certain of last menstrual period within one week, no symptoms of or risk factors for ectopic pregnancy, no prior permanent contraception or intrauterine device in place) receive abortion pills by mail or pick-up at a clinic location.

In-clinic patients complete patient history forms, meet with a clinician, and are given abortion medications at their in-person visit at one of two CRC clinical sites (Renton, Tacoma).

Both telehealth and in-clinic patients are instructed to orally take 200 mg of mifepristone followed by 800 mcg of misoprostol buccally 24 to 48 hours after taking mifepristone orally. Patients who are more than 63 days from their last menstrual period receive additional misoprostol tablets and are instructed to take the tablets after an additional 24 hours regardless of their symptoms. Patients receive ongoing support from CRC staff through email and phone, as needed.

2.2 Study sample

This study examines EMR data of all individuals who completed an in-clinic or telehealth medication abortion appointment with CRC since their inception of telehealth services starting April 23, 2020 to January 31, 2022 (n=1689). For individuals with multiple encounters during the study period, only the first encounter was included (n=110). (Table 1)

Table 1. Description of encounter type for individuals with multiple medication abortion encounters during the study period (April 23, 2020 – January 31, 2022) (n=110)

Number of encounters during study period and encounter type	
2 encounters	95
Clinic, Clinic	*61*
Clinic, Telehealth	*11*
Telehealth, Clinic	*3*
Telehealth, telehealth	*20*
3 encounters	10
4 encounters	5

2.3 Measures

Age - Patient age was calculated in years on the date of the appointment using the patient's date of birth.

Gender and Race/ethnicity – Patients self-identified their gender, race and ethnicity when completing the patient history intake form. All individuals who identified as Hispanic or Latino were included as such, those who identified as non-Hispanic or declined to specify were included based on their self-selected race. "Asian" was combined with "Native Hawaiian or Other Pacific Islander"; "Alaska Native", "American Indian", "more than one race", "multi-racial", and "other race" were combined creating "Multi-racial / Other race"; "Declined to specify" and those who did not respond were combined; those who chose "Black or African America" and "White" were included as such.

Language – When scheduling an appointment, patients were given the option to complete their consultation in a language other than English with an interpreter. Those who chose to speak

English were included as such. Patients who had their appointment with a translator in another languages (23 languages) were included as non-English speakers.

Past and current medical issues – Patients indicated current experience or history of 47 common health issues or "No known health issues" in the patient history intake form. None of these health issues were contraindications for telehealth or medication abortion services but were gathered as but of the standard patient history intake forms. Individuals were categorized as having no health issues, one, or two or more if they selected health issue(s).

Payer type – Patients had the same payment options regardless of whether they received telehealth or in-person services. Payer type is the method used by the patient to pay for their services, categorized by the clinic's financial staff as: cash payment (no insurance used), public insurance, or private insurance plan (mutually exclusive).

Gestational duration – Gestational duration (GD) was documented by clinic staff using ultrasound or calculated using reported last menstrual period and consultation date. Patient charts missing GD and with gestational duration above 77 days were reviewed for additional information. Those still missing GD or with a GD over 91 days (13 weeks), were included as missing GD (n=25); most had documented pregnancies of unknown location.

Social vulnerability – Using the Housing and Urban Development United States Postal Service (HUD USPS) zip code and the United States Department of Agriculture county name crosswalk files, we matched patient reported zip code with specific counties using associated Federal Information Processing Standards codes.[34] For zip codes that matched multiple Federal Information Processing Standard count codes, we used the primary county for a given zip code. We then assigned county-level Centers for Disease Control and Prevention Social Vulnerability Index (CDC SVI) scores.[35] The CDC SVI is a 15-factor metric that includes poverty, lack of

access to transportation, adequate housing, and minority status and language. The CDC SVI was chosen due to its comprehensive inclusion of social determinants of health at the neighborhood level and its use to examine the relationship between social vulnerability and a wide range of health behaviors and outcomes.[36-39] We categorized patient social vulnerability into terciles of low, medium, and high.

Distance to CRC locations – Using the U.S. Department of Housing and Urban Development's zip code population weighted centroid point, we assigned a latitude/longitude point to each individual based on the zip code the patient reported when scheduling and took the shortest of the two distances in miles between the patient's location and CRC Renton and Tacoma clinical locations using Vincenty's formula.[40,41]

2.4 Analysis

Using bivariate and multivariate logistic regressions, we examined the associations between patient characteristics and the odds of receiving telehealth services versus in-clinic services. Only variables statistically significant in the bivariate analyses (p-value <0.05) were included in the multivariate model. For the multivariable model, 93 observations were dropped due to missingness (11 were missing on two covariates, 16 were missing on three covariates, and 66 on four covariates).

To visualize the difference in geographic spread of the two patient populations, we also calculated and mapped the standard deviation ellipse for telehealth and in-clinic patient locations using QGIS Ellipse Creator.[42] To better visualize the underlying points, we randomly jittered the latitude and longitudinal of the population weighted centroid zip code points for all telehealth and in-clinic patients by +/- 0.03 degrees.

Using resampling-based true permutation testing, we tested whether any potential difference in geographic spread between the telehealth and in-clinic was due to chance.[43] To do this, we created 10,000 simulated datasets by randomizing the telehealth/clinic designation to the N=1,658 patients with Washington state zip code population weighted centroid locations. For each simulated dataset we calculated the geographic center point using the geosphere centroid library, calculated the mean distance from each point to its respective center point, and calculated the ratio of average distance to the center point for telehealth-assigned patients compared to the average distance to the center point for in-clinic-assigned patients. The observed ratio was compared to the set of simulated ratios and a p-value was calculated.

3. Results

A total of 1,689 individuals had medication abortion appointments with most patients receiving in-clinic services (n=1,306, 77.3%). Almost all patients identified as cis-gender female (97.7%) and spoke English during their appointment (93.8%). The largest proportion self-identified as White individuals (29.7%), then as Black or African American (18.9%), then Asian, Native Hawaiian or Other Pacific Islander (17.7%), and 15.3% as Hispanic or Latino (Table 2). Most were in the first 56 days of their pregnancy at the time of receiving abortion care (83.2%).

Table 2. Description of study sample (n=1,689)

Patient demographic characteristic	April 23 2020-January 31, 2022			
	Total	**In-clinic**	**Tele**	**p-value**
	1689	1306	383	
Age				
Average, range	29.24 (13-52)	28.86 (13-52)	30.55 (15-47)	
<20	148 (8.8%)	119 (9.1%)	29 (7.6%)	<0.001
21-25	371 (22.0%)	320 (24.5%)	51 (13.3%)	
26-30	471 (27.9%)	368 (28.%)	103 (26.9%)	
31-35	395 (23.4%)	284 (21.8%)	111 (29.0%)	
36+	304 (18.0%)	215 (16.5%)	89 (23.2%)	
Self-declared gender				
Female	1650 (97.7%)	1282 (98.2%)	368 (96.1%)	0.059
Male	1 (0.1%)	1 (0.1%)	0 (0.0%)	
Missing data	37 (2.2%)	22 (1.7%)	15 (3.9%)	
Self-declared race/ethnicity				
Asian, Native Hawaiian or Other Pacific Islander	299 (17.7%)	246 (18.8%)	53 (13.8%)	<0.001
Black or African American	319 (18.9%)	273 (20.9%)	46 (12.0%)	
Hispanic or Latino	259 (15.3%)	206 (15.8%)	53 (13.8%)	
White	502 (29.7%)	387 (29.6%)	115 (30.0%)	
Multi-racial / Other race	175 (10.4%)	77 (5.9%)	98 (25.6%)	
Declined to specify / no response	135 (8.0%)	117 (9.0%)	18 (4.7%)	
Primary language				
English	1584 (93.8%)	1203 (92.1%)	381 (99.5%)	<0.001
non-English	105 (6.2%)	103 (7.9%)	2 (0.5%)	
Living children				
Average, range	1.15 (0-10)	1.11 (0-10)	1.31 (0-7)	
0	696 (41.2%)	563 (43.1%)	133 (34.7%)	0.012
1+	962 (57.0%)	728 (55.7%)	234 (61.1%)	
Missing data	31 (1.8%)	15 (1.2%)	16 (4.2%)	
Type of payment for visit				
Cash-pay, non-insurance	390 (23.1%)	290 (22.2%)	100 (26.1%)	0.201
Public insurance	835 (49.4%)	659 (50.6%)	176 (46.0%)	
Private insurance	464 (27.5%)	357 (27.3%)	107 (27.9%)	

Table 2 (continued). Description of study sample (n=1,689)

Patient demographic characteristic	April 23 2020-January 31, 2022			
	Total	**In-clinic**	**Tele**	**p-value**
	1689	1306	383	
Social Vulnerability Index rank				
Low	1,212 (71.8%)	958 (73.4%)	254 (66.3%)	<0.001
Medium	426 (25.2%)	321 (24.6%)	105 (27.4%)	
High	48 (2.8%)	24 (1.8%)	24 (6.3%)	
Missing	3 (0.2%)	3 (0.2%)	0 (0.0%)	
Distance to Cedar River Clinic locations**				
<5 miles	369 (22.8%)	305 (23.4%)	64 (16.7%)	<0.001
5-10 miles	554 (32.8%)	444 (34.0%)	110 (28.7%)	
10-25 miles	562 (33.3%)	428 (32.8%)	134 (35.0%)	
25-50 miles	105 (6.2%)	76 (5.8%)	29 7.6%)	
>50 miles	68 (4.0%)	25 (1.9%)	43 11.2%)	
Outside WA	23 1.4%)	22 1.7%)	1 (0.3%)	
Missing	8 (0.5%)	6 (0.5%)	2 (0.5%)	
Number of past & current health issues				
Average, range	1 (0-14)	1.2 (0-14)	0.4 (0-9)	
0	992 (58.7%)	691 (52.9%)	301 (78.6%)	<0.001
1	282 (16.7%)	252 (19.3%)	30 (7.8%)	
2+	383 (22.7%)	352 (27.0%)	31 (8.1%)	
missing data	32 (1.9%)	11 (0.8%)	21 (5.5%)	
Prior abortions				
Average, range	0.81 (0-11)	0.79 (0-11)	0.85 (0-9)	
0	988 (58.5%)	796 (61.0%)	192 (50.1%)	0.003
1+	669 (39.6%)	498 (38.1%)	171 (44.7%)	
Missing data	32 (1.9%)	12 (0.9%)	20 (5.2%)	
Gestational duration (days)				
Average, range	46.01 (7-85)	45.84 (7-77)	46.58 (13-85)	
<=42 days	687 (40.7%)	536 (41.0%)	151 (39.4%)	0.251
43-56 days	718 (42.5%)	561 (43.0%)	157 (41.0%)	
57-70 days	206 (12.2%)	148 (11.3%)	58 (15.1%)	
>=71 days	53 (3.1%)	42 (3.2%)	11 (2.9%)	
Missing data	25 (1.5%)	19 (1.5%)	6 (1.6%)	

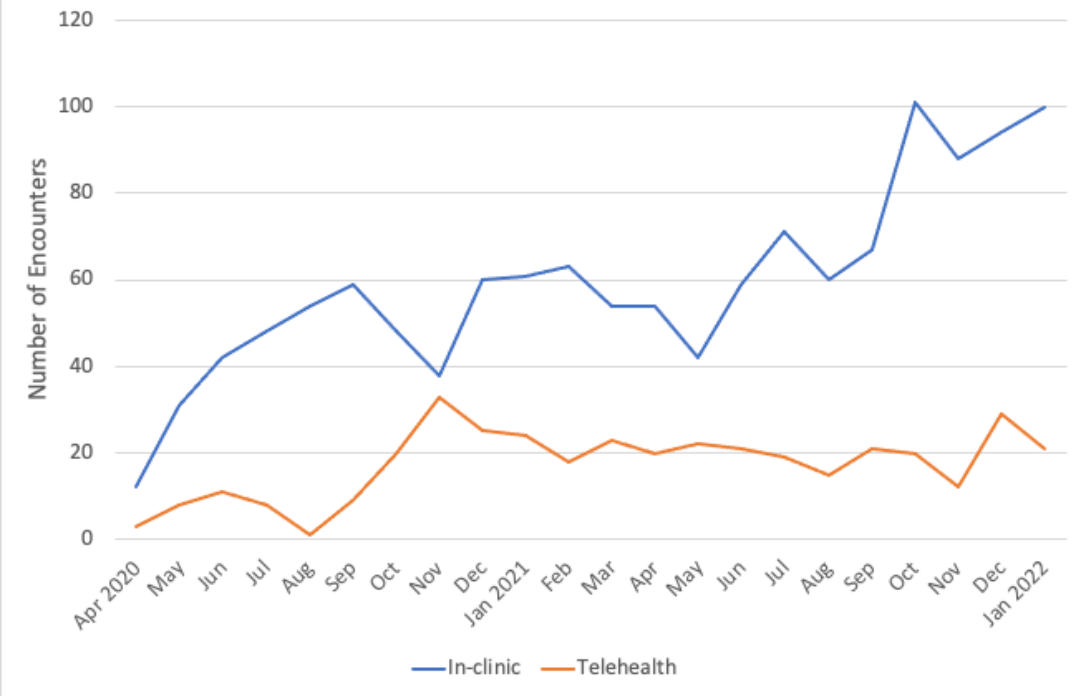
Table 2 (continued). Description of study sample (n=1,689)

Patient demographic characteristic	April 23 2020-January 31, 2022			
	Total	**In-clinic**	**Tele**	**p-value**
	1689	1306	383	
Eligibility for telehealth medication abortion, asked to come into clinic				
Eligible, good candidate			375 (97.9%)	
Ineligible, not good candidate			8 (2.1%)	
Mechanism for medication delivery after telehealth consultation				
Mailed			95 (24.8%)	
Pick-up (Renton)			248 (64.8%)	
Pick-up (Tacoma)			16 (4.1%)	
Pick-up (Yakima)			17 (4.4%)	
Missing data			7 (1.8%)	

Note: p-values were calculated using chi-squared tests

The number of both in-clinic and telehealth appointments per month increased over time (Figure 5).

Figure 5. Number of telehealth and in-clinic encounters, April 23, 2020 – January 31, 2022.



In our adjusted model, younger individuals were less likely to receive telehealth services; patients aged less than 20, 21-25, and 26-30 were less likely to receive telehealth services when compared to 31–35-year-olds (aOR=0.44, 95% CI:0.24-0.80; aOR=0.34, 95% CI: 0.22-0.54; aOR=0.59, 95% CI: 0.40-0.86 respectively). Those who did not speak English during their appointments and those with at least one health issue were less likely to receive telehealth services (Non-English vs. English speakers aOR=0.06, 95% CI: 0.02-0.27; one reported health issue aOR=0.23, 95%CI: 0.15-0.36; two or more issues aOR=0.16, 95% CI: 0.10-0.25 versus No health issues). Compared to White individuals, those who identified as Multi-racial/Other race were far more likely to receive telehealth services (aOR=4.35, 95% CI: 2.80-6.76). Those who lived farther from a CRC location were more likely to receive telehealth than those living closer (aOR=1.02, 95% CI: 1.01-1.03), and those with at least one prior abortion were more likely to seek telehealth care (aOR=1.54, 95% CI: 1.16-2.05) than those who were seeking abortion care for the first time. There were no significant differences between telehealth and in-clinic patients based on types of payment used for the appointment nor gestational duration of their pregnancy at the time of the appointment in the bivariate analyses, and, in the full model, between social vulnerability and having living children. (Table 3).

In addition to examining the patient's distance to a CRC location, we also examined if the telehealth patients were more geographically dispersed than the in-clinic patients. (Figure 6) We found that telehealth medication abortion patients were more geographically spread out than those who received in-clinic services (true permutation test, p-value <0.001).

Table 3. Unadjusted and adjusted odds ratios for receiving telehealth compared to in-clinic medication abortion services (n=1,596)

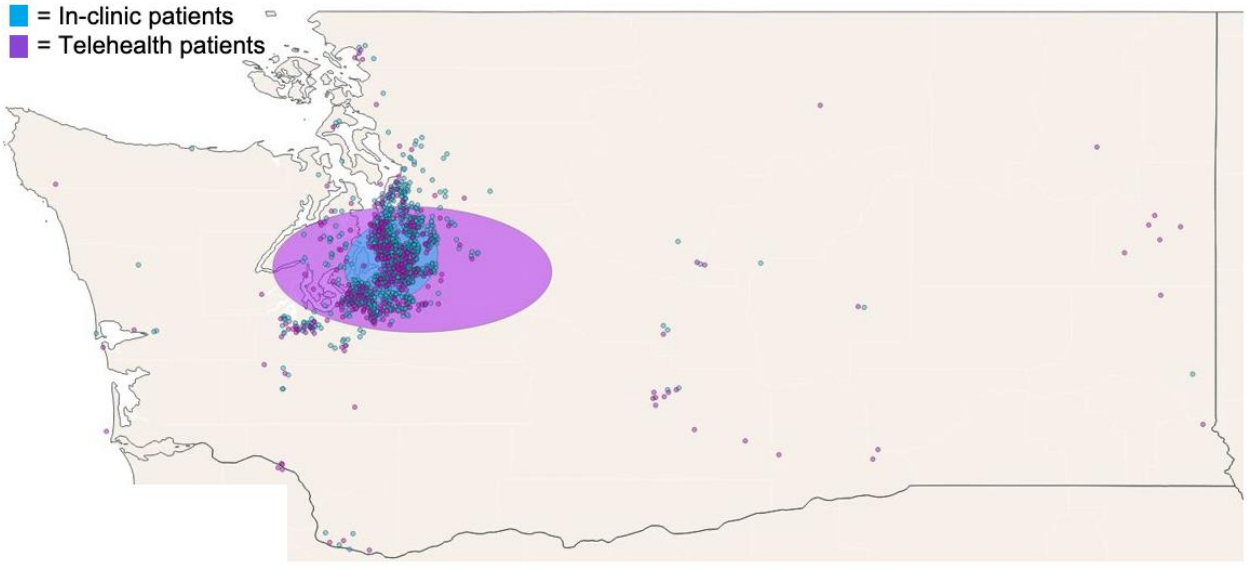
	Unadjusted				Full Model (n= 1,596)			
	OR	**95% CI**		**p-value**	**OR**	**95% CI**		**p-value**
Age (years)								
<20	0.62 *	0.39	0.99	0.045	0.44 **	0.24	0.80	0.008
21-25	0.41 ***	0.28	0.59	<0.001	0.34 ***	0.22	0.54	<0.001
26-30	0.72 *	0.53	0.98	0.035	0.59 **	0.40	0.86	0.006
31-35 (ref)								
36+	1.06	0.76	1.47	0.733	0.99	0.67	1.47	0.96
Self-declared race/ethnicity								
Asian, N. Hawaiian, Otr P. Islander	0.73	0.50	1.04	0.082	0.89	0.57	1.39	0.60
Black or African American	0.57 **	0.39	0.83	0.003	0.66	0.43	1.01	0.06
Hispanic or Latino	0.87	0.60	1.25	0.441	0.81	0.53	1.24	0.33
White (ref)								
Multi-racial / Other race	4.28 ***	2.98	6.16	<0.001	4.35 ***	2.80	6.76	<0.001
Declined to specify / no response	0.52 *	0.30	0.89	0.016	0.51 *	0.23	0.87	0.03
Preferred language								
English (ref)								
non-English	0.06 ***	0.02	0.25	<0.001	0.06 ***	0.02	0.27	<0.001
Number of living children								
0 (ref)								
1+	1.36 *	1.07	1.73	0.012	1.13	0.82	1.56	0.47
Type of payer for visit								
Public insurance (ref)								
Private insurance	1.12	0.85	1.47	0.407				
Cash-pay, non-insurance	1.29	0.97	1.71	0.075				
Social Vulnerability Index rank								
Low (ref)								
Medium	1.23	0.95	1.60	0.114	1.13	0.81	1.56	0.47
High	3.77 ***	2.11	6.75	<0.001	1.75	0.61	5.01	0.30
Distance to Cedar River Clinic locations (miles)								
	1.02 ***	1.01	1.03	<0.001	1.02 ***	1.01	1.03	<0.001
Number of past & current health issues								
0 (ref)								
1	0.27 ***	0.18	0.41	<0.001	0.23 ***	0.15	0.36	<0.001
2+	0.20 ***	0.14	0.30	<0.001	0.16 ***	0.10	0.25	<0.001
Prior abortions								
0 (ref)								
1+	1.42 **	1.13	1.80	0.003	1.54 **	1.16	2.05	0.003

Table 2 (continued). Unadjusted and adjusted odds ratios for receiving telehealth compared to in-clinic medication abortion services

	Unadjusted		MV Model (n= 1,596)	
	OR (95% CI)	**p-value**	**OR (95% CI)**	**p-value**
Gestational duration (days)				
<=42 days	1.01 (0.78-1.30)	0.96		
43-56 days				
57-70 days	1.40 (0.99-1.99)	0.06		
>=71 days	0.94 (0.47-1.89	0.85		

Note: Ref. = reference category; OR = odds ratio; CI = confidence interval; MV=multivariable
* p <0.05
** p < 0.01
*** p < 0.001
† Only variables statistically significant in the bivariate analyses (p-value <0.05) were included in the multivariable model. For the multivariable model, 93 observations were dropped due to missingness (11 were missing on two covariates, 16 were missing on three covariates, and 66 on four covariates).
‡ Individuals located outside of Washington state were excluded from this analysis due to clinic protocols limiting telehealth services.

Figure 6. Geographic distribution of telehealth and in-clinic medication abortion patients in Washington State.



Telehealth (purple) and in-clinic (blue) patients are each represented by a point. The ellipses represent the geographic dispersion of the two patient groups projected on Washington state.

4. Discussion

Findings from this high-volume clinic in Washington State innovating telehealth medication abortion services indicate that older, English speakers, who lived farther from clinic locations, didn't have current or prior health issues, and had prior abortion experience were more likely to receive telehealth services than in-clinic medication abortion services. Additionally, those who self-identified as Multi-racial/Other race were far more likely to receive telehealth than individuals who identified as White. Though prior research suggests that younger populations are more likely to utilize telemedicine options,[27] we found that younger individuals were less likely to receive telehealth care for medication abortion. Younger individuals traditionally have more limited access to abortion care and our findings suggest that telehealth abortion options may not fully meet the needs of younger individuals as they weigh their options for care. Further research should explore elements that drive their decision-making. In our study, those who did not speak English during their appointment were also less likely to receive telehealth abortion care. This finding aligns with prior telehealth research indicating that those with limited English proficiency have lower rates of telehealth use compared to proficient English speakers.[31] Efforts to improve telehealth translation and communication options are needed if telehealth is to meet the needs of those more comfortable receiving care in languages other than English. Lastly, those with past or current health issues were also less likely to receive telehealth options. Research suggests that those with more complex health histories are less likely to utilize telehealth services.[44,45] Our findings support this, suggesting that patients may receive in-clinic abortion care if they perceive more complex care needs. Those with more complex health histories may also have greater familiarity and, potentially, comfort with traditional healthcare delivery models. Conversely, individuals with prior abortion experience were more likely to receive telehealth

options, above and beyond the effect of age. This may be because those with previous abortion experience likely have more knowledge of the abortion process and, potentially, comfort in completing the process. Indeed, those with prior abortion experience are also less likely to perceive and internalize stigma than those who reported no previous abortion experience and, therefore, may feel more comfortable completing telehealth care.[46]

Interestingly, those who identified as multi-racial or another race/ethnicity (i.e., not Hispanic/Latino, Asian, Native Hawaiian or Other Pacific Islander, Black or African America, White or declined to specify) were far more likely than individuals identifying as White to receive telehealth abortion services. The bulk of existing literature finds that ethnic and racial minorities have more limited access to abortion care and are also disproportionately affected by restrictive abortion regulations; thus, further research is needed to better understand who comprises this diverse category and how identity may impact their preference for telehealth services.

Long distances to abortion providers and travel constraints are documented barriers to receiving abortion care.[4] We found that those who lived farther from a CRC location were more likely to receive the telehealth option. Furthermore, telehealth patients were more geographically spread out than the in-clinic patient group. This finding suggests, similar to other studies, that telehealth medication abortion services have the potential to facilitate access to abortion care in remote communities and those far from brick-and-mortar abortion facilities by mitigating the impacts of travel logistics and costs.[21-24,27] This finding is increasingly important with the rise of state and federal abortion restrictions and the associated clinic closures creating "abortion care deserts".

This study is not without limitations. Findings from this study may not be generalizable to asynchronous or less-integrated telemedicine models, or other care settings. In operationalizing social vulnerability and distance to clinic location, we generalized individual characteristics based on the centroid point of the patient's zip code and the associated area characteristic based on county-level designations. Future research may incorporate individual level information regarding income, educational attainment, or financial security. Though we had a large enough sample and acceptable control variables for rigorous statistical adjustment, an observational study cannot determine causation. Because the implementation of the telehealth abortion service coincides with the beginning of the 2019 coronavirus global pandemic (April 2020), there is overlap between the study period and the COVID-19 Public Health Emergency. Due to in-person restrictions and concerns about virus transmission, there may be other factors not captured in this study driving patient choice between telehealth and in-person care. Additionally, research has shown increased utilization of and comfort with telemedicine throughout the course of the pandemic, as well as increased offering and awareness of telehealth abortion services.[45,47-49] Patient choice patterns likely changed over the study period and will continue to change over time.

4.1 Conclusion

Patients face a wide range of barriers to accessing timely abortion care, and telehealth care options have been developed as one way to increase access and address disparities in receipt of care. Our findings suggest that some patient groups may be prone to choosing telehealth abortion services, and that telehealth services are reaching some communities traditionally underserved by abortion services. Additionally, some groups continue to utilize in-person clinic services. If access to abortion care continues to be restricted in the U.S., diverse and innovative models of

care delivery will be needed to accommodate the sustained demand for services and must work to meet the needs of diverse patient populations.

VI. Study 2: Patient preferences for and satisfaction with direct-to-patient telehealth and in-clinic medication abortion services: a patient journey perspective

Anna E. Fiastro, Elizabeth Jacob-Files, Molly Ruben, Jessica Gipson, Emily M Godfrey. "Patient preference for and satisfaction with direct-to-patient telehealth medication abortion services compared to in-clinic care: a patient journey perspective"

Submitted to Perspectives on Sexual and Reproductive Health, in review

1. Introduction

In response to the 2020 coronavirus pandemic (COVID-19), direct-to-patient telehealth medication abortion models of care were developed and implemented in the United States (U.S.) and proliferated across healthcare settings.[11,125] Consisting of online clinical consultations and abortion medications mailed directly to the address of patient's choosing, telehealth models have the potential to efficiently expand access to care.[96,97,126] Furthermore, studies assessing patient experience indicate that patients are highly satisfied with telehealth abortion care, often at higher rates than those reported for in-clinic care, and providers recognize and support the benefits that telehealth provision affords.[91–93,127,128] Yet, no research has examined how patients consider telehealth and in-clinic options when choosing between modalities of care from the same provider/facility to better understand patient preference for telehealth and in-clinic services. Additionally, little is known about how preferences are reinforced or challenged over the course of the patients journey through their care experiences and, ultimately, their satisfaction with the care they received.

Acknowledging, understanding, and incorporating patient perspectives and preferences is a cornerstone of patient-centered care.[129] Optimal healthcare involves understanding patient behaviors and feelings, and incorporating these perspectives into the design, implementation, and delivery of services.[130,131] Furthermore, understanding how patients consider and choose telehealth models of care can inform service delivery adaptation to satisfy patient expectations, meet patient needs, and improve healthcare outcomes.[132–134]

The goal of this study is to explore patient preferences for direct-to-patient telehealth medication abortion versus in-clinic medication abortion services when choosing their care, as well as their respective parallel journeys through the two service options and subsequent experience and satisfaction with their care. A better understanding of patient considerations when choosing between, and in their use of, these modalities of care can inform service delivery to better meet patient needs and strive towards patient-centered care.[135]

2. Methods

We conducted a qualitative, descriptive study comprised of semi-structured in-depth interviews with patients who received direct-to-patient telehealth or in-clinic medication abortion services. An academic institutional review board approved the protocol for this study. We followed the Consolidated Criteria for Reporting Qualitative Research (COREQ) reporting guidelines.[136]

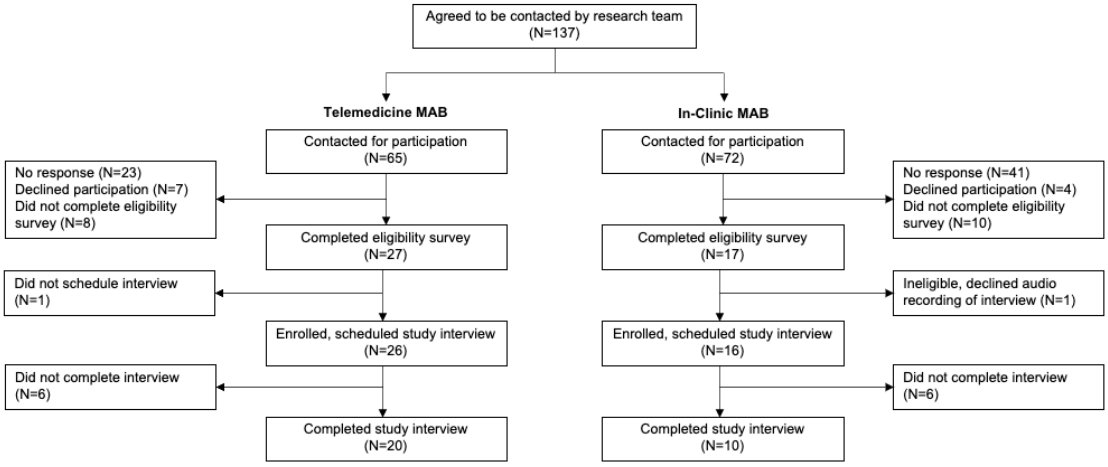
2.1 Setting, study sample, and participant recruitment

We partnered with CRC, an independent, high-volume reproductive healthcare clinic organization with three locations in Washington State. Beginning in April 2020, individuals who

scheduled appointments with CRC and were eligible for and preferred medication abortion (over procedural) were given the option of direct-to-patient telehealth and in-clinic services. Study participants were English-speaking adults (ages 18 years and older) who received telehealth or in-clinic medication abortion care at CRC between August 2021 and January 2022. During this time, clinic staff incorporated information about this study into existing patient care consent forms. Patients seeking medication abortion care could agree or opt out of being contacted by the research team for an interview. Clinic staff compiled and shared basic demographic and contact information for consenting individuals with the research team on a weekly basis.

Of the total 570 patients who sought medication abortion care (Aug 2021 – Jan 2022), 24% were both English-speaking and consented to be contacted to participate in the qualitative study. A research coordinator with experience in study design and participant recruitment) contacted potential participants by text, email, and phone calls, up to three times. Using convenient sampling, we approached all 137 individuals who agreed to be contacted by the research team and interviewed 30 individuals (Figure 7).[121] Each participant received a $50 electronic gift card by email following their interview.

Figure 7. Description of recruitment pathway of study participants.



2.2 Instrument development

We generated our initial interview questions based on the Patient Choice and Empowerment Framework - which outlines primary and secondary influences on patient willingness and/or ability to make choices about the use of specific healthcare services - as well as a conceptual framework for patient-clinician communication in telemedicine settings.[98,99] Participants were asked about their choice of and experience with either telehealth or in-clinic services, including how they researched and decided on CRC for their services, their interactions with phone counselors, and scheduling of their appointment. Questions were also asked about their receipt of care, focusing on patient provider communication, clinic setting and experience, telehealth technology used, and follow-up care. The interview guide was adapted throughout data collection; for example, as it became clear that COVID-19 infection was not a major consideration for patient choosing in-clinic care, we no longer probed on this construct.

2.3 Data collection

A female qualitative methods consultant with experience in abortion research conducted one-on-one interviews from September 2021 to January 2022 using HIPAA-compliant conferencing software. She recorded, transcribed interviews verbatim, then two medical students de-identified the transcripts and reviewed them for accuracy.

The interviewer, a family medicine physician with abortion research experience), myself (doctoral candidate with experience in qualitative research methods and abortion research), and the CRC medical director provided iterative reflective guidance to the interviewer on the interview guide, transcripts, and field notes throughout the data collection phase. Saturation on key themes within each domain of our theoretical framework was determined to be reached after 30 interviews.[137]

2.4 Analysis

The interviewer and I developed an initial deductive codebook based on the study frameworks and interview guide and coded interviews using Dedoose qualitative analysis software. We both coded the first 10 transcripts, meeting after every two to develop coding consistency and update the codebook to include inductive codes for emerging themes identified in the data (e.g., importance of having a support person with the patient during their consultation). Once the codebook was agreed upon, we independently coded the remaining interviews (10 each). I isolated codes related to the patient preference for, experience with, and satisfaction of telehealth and in-clinic services and performed a more detailed thematic analysis in excel.[138,139] Analysts met weekly to review and categorize emerging factors associated with participant perspectives. We used descriptive statistics for participant demographics.

3. Results

We interviewed 20 individuals who received direct-to-patient telehealth services and 10 individuals who received in-clinic services. One of the 20 telehealth patients received site-to-site telehealth, where she went to a non-clinical CRC office location and completed a telehealth appointment with a CRC clinician at another clinical site. All self-identified as women. Selected participant characteristics by type of service received are included in Table 4.

Table 4. Description of study participants who received telehealth and in-clinic medication abortion services in Washington state between Aug 2021 – Jan 2022. (n=30)

Participant characteristic	**Direct-to-patient telehealth (n=20) N**	**In-clinic (n=10) N**
Participant age (years)		
18-21	0	1
22-25	4	2
26-29	1	2
30-35	9	5
36-40	6	--
Gestational duration at time of service (days)		
Less than 7 weeks	12	8
7 weeks and above	8	2
Self-reported prior abortion(s)*		
0	10	7
1 or more	10	3
Race/ethnicity		
Hispanic/Latino	5	1
Asian, Non-Hispanic/Latino	1	1
Black or African American, Non-Hispanic/Latino	--	2
White, Non-Hispanic/Latino	1	4
Other, Non-Hispanic/Latino	10	--
Declined to specify	3	2
Area of residence		
Large metro area (1 million+ population)	7	6
Other (<1 million population)	13	4

*Includes medication and procedural abortions

3.1 Decision-making when choosing abortion services

The most important consideration for patients deciding between direct-to-patient and in-clinic medication abortion services was how soon a clinic appointment was available, with high value placed on same-day or next-day appointments.

> *"They just asked me if I wanted a video one or if I wanted an in-person one and I said, 'Whichever one is faster. Whichever one I can get quicker.'" Participant 25, telehealth, 35 years old*

In some cases, individuals were willing to wait a day or two to have a telehealth appointment, but most would not wait longer than a week for a preferred telehealth appointment and chose to complete in-clinic care.

> *[The clinic] was booked out a little further [for telehealth appointments] versus a regular in-person appointment. But [the telehealth appointment still] fell within the 10-week mark so I was really lucky... Just because pregnancy was never an option for me, I wanted to deal with it quicker... However, with the convenience of not driving, especially because I work a full-time job, it was worth it [to wait for a telehealth appointment]. Participant 3, telehealth, 23 years old*

3.1.1 Preference for direct-to-patient telehealth services

Participants preferred telehealth medication abortion services due to (1) convenience and less impact on other home or work responsibilities (2) less stigmatization and more empowering than in-person care, and (3) familiarity of telehealth due to increased use during the coronavirus

pandemic. Among these participants, avoiding exposure to COVID-19 was not a major driver for interest in telehealth services.

a) Telehealth appointments could be completed from anywhere allowing for much greater efficiency, convenience, privacy, and comfort.

> "*I called one other place first and then they told me it was like two weeks, and then I called [CRC] and they were less than a week. And I was like, "Oh, perfect." And the fact that they had telemedicine and that I didn't have a way to get to [the medications], they could mail it to me. I thought that was really convenient. And I think that is essentially what made me choose [the clinic]*." *Participant 25, telehealth, 35 years old*

Due to convenience, patients were able to more easily fit telehealth consultations into their schedules resulting in more timely access to care and less disruption of their responsibilities at home, as caregivers, and at work. This was particularly true for individuals living in rural areas.

> *"The other options that were available were all in-person. And so that was definitely hard because if they didn't have the ability to be open on a weekend, how was I going to try to figure that around my work schedule and everything else? So, when I saw that I had the option of doing either an in-person or a telemedicine with [CRC], I definitely gravitated more towards them, because it did help with the ability of still going through with my appointment, but not having to disrupt my day as much as it would've potentially."*
>
> *Participant 15, telehealth, 32 years old*

b) Participants felt that being able to complete the appointment in a location of their choosing helped them feel less judgement about their decision to terminate a pregnancy, reduce their anxiety about the appointment, be more open with their clinicians, and avoid potential protestors at clinic brick-and-mortar locations.

"*I just feel like it was a much better experience being able to sit in my room where I feel comfortable and not have to sit in a waiting room where I feel like, 'Oh my God, are all these other people judging me or all these other girls here doing the same thing?'" Participant 25, telehealth, 35 years old*

Participants also felt empowered by the telehealth option, noting that they felt trusted by the provider and in control of the process:

"I think just being able to do it at home made me feel the most empowered about the care, because it was like if you go to [another clinic], they make you take the pills in front of them. So, you just feel like you're treated like a child, whereas this way, I felt like, 'Oh, they're trusting me to mail me this medication and not think that I could leave the office and give it to somebody else.' So, it was nice feeling in control over when I took the medications." Participant 16, telehealth, 35 years old

c) Participants described greater use of and comfort with telehealth services citing the increased utilization of telehealth models due to the COVID-19 pandemic, particularly for mental healthcare. They expressed a growing preference for telehealth services across their healthcare needs.

"I have ADHD and I do telemedicine for my psychiatry stuff because there aren't a lot of people around this area. And so, I see a specialist that specializes in ADHD, in dyslexia only, which I think is a wonderful service. And then again, I have done telemedicine before, telehealth appointments and I just felt very comfortable with it." Participant 29, telehealth, 31 years old

3.1.2 Preference for in-clinic services

Participants who chose in-clinic services over telehealth options did so: (a) to ensure their care was "legitimate" and (b) to confirm they were indeed pregnant and at an appropriate gestational duration for medication abortion (<13 weeks).

a) Some participants felt that they would receive higher quality care from an in-person consultation and that if they needed any additional care, it could be provided quickly during the same visit. They also felt that going in-person would help them ensure the facility was a legitimate abortion provider.

> *"I feel like I was more interested in an in-person visit just to make sure all of my questions got answered. … I know you can do that with telehealth, too, but sometimes having that in-person visit face-to-face sparks my mind a little more so it's easier for me to talk to people. And if I did qualify for immediate action, I wouldn't have to schedule another in-person visit or take a trip to my pharmacy or feel kind of out of place." Participant 12, clinic, 24 years old*

b) Additionally, some participants were hopeful that they were not, in fact, pregnant and felt that going to an in-clinic appointment would potentially allow them to avoid an abortion altogether.

> *"I would have been interested in the idea of [a telehealth appointment]. I still probably would have gone in because it was my first time going through all this and I still kept thinking, "Oh maybe I'm not going to be pregnant when I go in there." But I would have preferred to just go in and do it by the book and everything, rather than having that all on my shoulders... Because I took like three pregnancy tests, but I kept thinking, "Well, there's no way." I kept feeling, "Well, when I go in there maybe they'll be like oh you're not even*

pregnant." But I had all the pregnancy symptoms and everything, so I guess it was wishful thinking." Participant 11, 24 years old

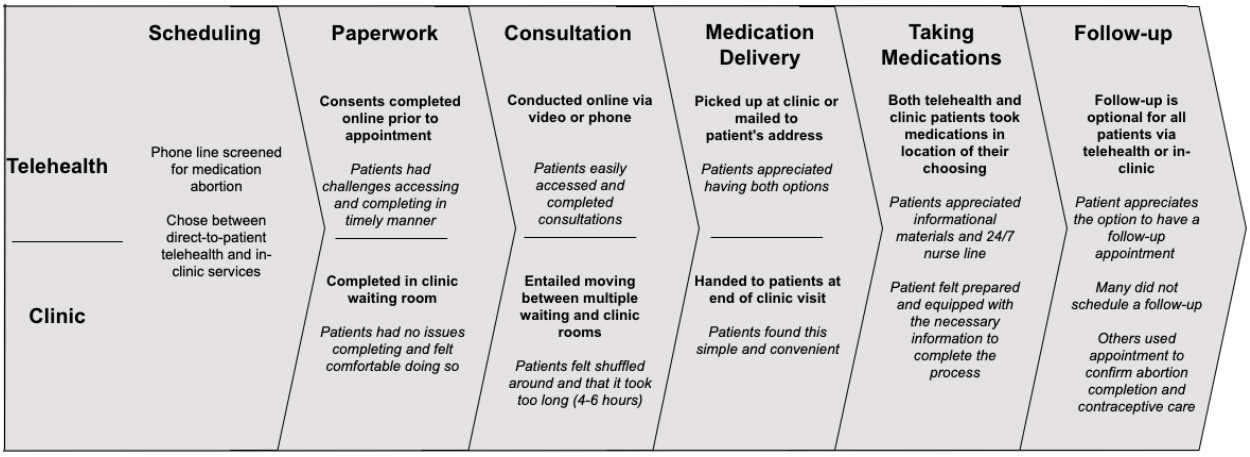
Of note, though clinic protocols direct phone counselors to offer telehealth and in-clinic options to patients at the time of scheduling, almost half of in-clinic patients reported they were not offered telehealth or did not understand it was an option. Furthermore, due to the convenience and expedience of telehealth care, in-clinic patients shared they would have preferred a telehealth service had they known or understood it was an available option.

"The main thing is, I wish [CRC had] brought up, if they were still offering telehealth. Because a lot of places went away from offering telehealth after offering it most of last year. It might've changed the experience for me." Participant 37, clinic, 28 years old

3.2 Patient journey with telehealth and in-clinic services

The patient's journey through the two care options had some similarities including 6 primary steps: scheduling, paperwork and consents, consultation, medication delivery, taking medications, and follow-up care. (Figure 8) At three of the steps the patients' experience differed greatly between telehealth and in-clinic journeys, resulting in varied satisfaction.

Figure 8. Patient journey through direct-to-patient telehealth and in-clinic medication abortion services from the patients' perspective.



3.2.1 Main differences

Primary differences between the patient journey through telehealth vs. in-clinic services were (a) the experience of completing pre-appointment paperwork, (b) completing the steps of the consultation, and (c) getting the medications in-hand.

a) Telehealth patients had more uncertainty and stress when completing the necessary consent forms prior to their consultation. A few had concerns they would not receive or miss the email link to the documentation while others did not receive the appropriate documentation in time, delaying their appointment in some cases. None stated that the confusion or complications associated with paperwork would have led them to prefer in-clinic care.

> *"…there were a bunch of forms that had to be filled out to do the telehealth visit... I didn't fill them out by noon the day before. And so, [CRC] automatically canceled my appointment, but I called right away. Once I got that email and the gal that answered just said, 'Go ahead and fill them out. We'll reschedule your appointment.' So, it was still on the same day and at the same time." Participant 41, telehealth, 30 years old*

Most in-clinic patients felt very comfortable completing the consent forms and receiving their paperwork in the clinic waiting room.

b) In-clinic patients felt that they were unnecessarily shuffled around the brick-and-mortar clinic location and that the length of time they spent in the clinic was unnecessary and unacceptable, often up to 4-6 hours. Many described the experience like "cattle herding", moving from one waiting room or clinic room to another and would have appreciated more frequent updates about the status of their appointment and the coming steps.

> *"I'd been there for two, two and a half hours at this point. And a nurse came and got me, she did an ultrasound in a private screening room... And then I went into a different waiting room, a smaller waiting room, and there were two other women in there. And I was in that waiting room... And then someone else came and brought me into an office type room. So, there was the main meeting room, the ultrasound room, the second waiting room, and now I'm in an office room. And this woman went over more medical stuff, what to expect and had me sign a couple of things I believe... She took me out to the big waiting room where I paid with my credit card. And then I sat back down in the main waiting room for probably another hour and then a nurse came and got me put me in a new room, like a regular doctor's room. And then the PA (Physician Assistant) came in, talked to me again, walked me through everything again, and gave me the pill." Participant 10, clinic, 30 years old*

In part due to this extended waiting room experience, many felt that they would consider telehealth services for a subsequent abortion care experience.

c) Pill delivery

Telehealth patients were given the option to pick up their medications at a clinic location or have them mailed to an address of their choosing. While some participants appreciated having medications mailed to them and saving them a trip to a clinic location, others felt that picking up the medications was more expedient. One individual shared that picking up the pills offered greater privacy because she would have to provide a mailing address that she shares with family members.

> *"Personally, I'm thrilled that they used a mail order service, and it was just mailed to my mailbox. There's nowhere around here that would've filled [the prescription]. So, I really do appreciate it."* Participant 29, telehealth, received medications by mail, 31 years old

> *"... not that I'm a control freak, but being in control of the timing of like, I was able to go and get [the medications] instead of waiting, checking the mail constantly and wondering when they're going to be here."* Participant 39, telehealth, picked up medications at a clinic location, 27 years old

3.2.1 Main similarities

Both patient groups had similar experiences of patient-provider communication and - once they finished the consultation and were taking the medications in a location of their choosing - felt they had sufficient and accurate information for completing the termination process. They all felt they had enough support from the informational materials they received and the 24/7 nurse help line – though few actually reached out for support – and the ability to schedule a follow-up appointment with CRC if they chose. More information on the patient's experience with the consultation, patient-clinician communication, and recall of pertinent medical information has been published elsewhere.[109]

4. Discussion

When choosing between telehealth or in-person abortion care, patients preferred telehealth because it was more convenient and less disruptive to patient's daily lives, less stigmatizing, more familiar, and more comfortable. Telehealth patients were also highly satisfied with their care experience, finding it less time-consuming and, in most cases, easier to navigate. Of those who preferred in-clinic services, some individuals preferred in-clinic visits because they felt services were more likely to be legitimate and high quality. Some indicated they would choose a telehealth appointment for a subsequent abortion care experience. Across nearly all individuals interviewed, getting care quickly was their priority, weighing speed over modality of care. Our findings build on existing research demonstrating that patients find telehealth equally or more satisfactory than in-clinic medication abortion services by elucidating how patient preference informs decision-making when considering care options and resulting satisfaction throughout the care journey.

One surprising finding was that most patients who chose in-clinic services stated that they would have preferred telehealth services had they known virtual care was an option and if they were to have a subsequent medication abortion. Though CRC works to offer both telehealth and in-clinic options to eligible patients for medication abortion, patients may still be less familiar with telehealth abortion options and, at the time of seeking care, may not understand and therefore choose telehealth options. This lack of understanding also aligns with the concerns of patients that telehealth options are not as "legitimate" or as high quality as in-clinic options. These findings suggest that additional information and reassurance could be provided by scheduling staff to increase knowledge and awareness of telehealth options and allay patient concerns about safety and effectiveness.

This study is not without limitations. Our study sample was comprised of patients who sought care at a reproductive healthcare provider in Washington state. Given Washington's supportive legislative landscape towards abortion care access, findings may not be generalizable to patients seeking care in other healthcare settings or in areas with more restrictive abortion policies.[77] The in-clinic experience of medication abortion appointments lasting 4-6 hours due to social distancing requirements and staffing issues related to COVID-19 is atypical for in-clinic abortion care and, therefore, in-clinic patient experience of satisfaction may not be generalizable to other in-person abortion care settings in a post-COVID-19 era.

Implications

Telehealth is an efficient way to provide care across geographies and may address other disparities in abortion access. Furthermore, many patients prefer and are highly satisfied with telehealth services. Telehealth medication abortion services are only one approach for expanding services, and innovative strategies are necessary to meet the increasing need due to severe abortion restrictions across half the US. Further expanding telehealth services will also help address concerns and uncertainty about the "legitimacy" of telehealth abortion providers. It is important to have diverse service delivery models and to empower patients to choose the type of care that best meets their needs and preferences.

VII. Study 3 - Communication needs of patients using asynchronous telehealth medication abortion services

1. Introduction

Telehealth medication abortion services have proliferated across the United States (U.S.), in part due to the 2019 coronavirus pandemic (COVID-19).[11] Services are available in different healthcare settings and generally consist of four main steps: (1) patient screening for medication abortion eligibility and remote services followed by (2) consultation with a clinician to review eligibility, and to explain how to take the medications, what to expect, and when to seek follow-up care, (3) medications delivered directly to patients, and (4) optional follow-up based on patient need and preference.[125] Consultations can be completed synchronously with a video visit or phone call, or asynchronously via store-and-forward messaging. Telehealth abortion services are safe, effective, efficient, and preferred by most patients; they allow a single provider to serve patients across geographies where they are licensed to practice.[91,93,97,126,128,140,141] Specific to asynchronous care, research has shown it to be as safe and effective as in-person care options and demonstrated that patients are equally satisfied and trusting of providers.[142,143] Still, little is known about how patients communicate with their clinicians and support staff when using these asynchronous telehealth models.

Patient-clinician communication is a main pillar of patient-centered healthcare, yet abortion care often fails to be patient-centered.[144,145] Though research has shown that abortion counseling tailored to patient needs is associated with improved psychological patient outcomes, little is known about patient-provider communication during telehealth abortion

consultations.[146,147] To date, research has examined the patient perspective of synchronous telehealth medication abortion services, comparing the communication and counseling experience to those who received in-clinic care. These studies found that patients felt they had the appropriate information for completing the medication abortion process and preferred the telehealth experience because it afforded convenience, efficiency, and privacy.[91,97,109,148] Another study found that synchronous telehealth patients were more likely to require unscheduled communication with clinic staff than those who had received in-clinic counseling; but, most communication was non-clinical, requiring additional time from support staff but not requiring more unscheduled communication with clinicians.[149] To our knowledge, this is the first study to examine patient-service communication in the context of an asynchronous telehealth abortion service.

As asynchronous telehealth medication abortion services continue to be developed and patient demand grows, we must understand patient information and communication needs to improve services.[150,151] To this end, this study analyzes the volume of asynchronous, back-and-forth messaging between patients and the online abortion service clinicians and support staff. We summarize the primary topics of patient communication and determine if the volume of messages varies by patient demographics. We also examine if topics of communication differ in the volume of messages needed to resolve patient issues. The goal of this work is to better understand patient concerns so that services can operate most efficiently by appropriately staffing and responding to these concerns, as well as adapt materials and services to proactively address patient needs.

2. Methods

We conducted a mixed-method study consisting of a retrospective medical chart review and content analysis of patient-service email messages to examine the communication needs of patients receiving asynchronous telehealth medication abortion services. This study was approved by the University of Washington Human Subjects Division and University of California, Los Angeles Internal Review Board.

2.1 Study setting

We partnered with Aid Access, an online asynchronous abortion service that provides care across the U.S. In New Jersey (NJ), New York (NY), and Washington (WA), services are rendered by U.S. licensed family physicians. Patients initiate care by completing an online health questionnaire that asks about the current pregnancy and possible contraindications for remote medication abortion care. A proprietary algorithm automatically flags potential contraindications for physician review, such as uncertain date of last menstrual period. After review, providers have the option to ask additional questions to confirm eligibility (for example, requesting and reviewing ultrasound images, confirming a second service is appropriate if there is a potential of a continuing pregnancy from prior unsuccessful medication abortion). Those whose pregnancies are too advanced for medication abortion are given a list of resources for finding alternate care. If eligible, a physician provides usage instructions and mails medications (one 200 mg mifepristone pill and 8-12 200 mcg misoprostol pills depending on gestational duration) to the patient's chosen address. A help desk provides logistical support by sending automated messages throughout the process. Patients can respond and send messages to the service throughout the

course of treatment. Messages are addressed by the help desk, often using standard response text, and elevated to clinicians when needed (possible complications, continuing pregnancy, guidance to take additional medications). The total cost of the services is $150, though a sliding scale is offered, and Aid Access does not deny anyone due to inability to pay.

2.2 Study population and data source

We examined the intake questionnaire responses and messages sent between patients and the service for all individuals who received medications (mifepristone/misoprostol) from Aid Access in NJ, NY, and WA between April 23, 2020 to November 30, 2020 (n=504). The service provided a de-identified data set of the online health questionnaire, subsequent asynchronous messaging, and follow-up evaluation data of the 534 patients in those states that were serviced in the time period. The patients who had a misoprostol-only abortion (n=30) were excluded due to differences in the experience of the termination process.

2.3 Analysis

First, we counted and documented the number of back-and-forth messages between patients and Aid Access help desk staff and clinicians. Approximately nine of the Aid Access messages in each communication thread were required responses from patients or automatic pre-set emails from the service for confirmation of information receipt, next steps, medication use, and risk awareness and were, therefore, excluded from the analysis.

Next, we conducted a content analysis of the messages exchanged. After reviewing 30 patient charts together, we created a coding scheme for the primary topics of communication and coded the remaining patient charts. We then synthesized and summarized the four primary topics of patient communication.

Finally, we categorized individuals as having no additional communication needs or communicating on one or more of the four primary topics of communication and described the number of patients who required additional information based on the topic of communication. We also compared the mean number of back-and-forth messages across demographic characteristics and across topic of communication for patients with only one topic of concern using one-way analysis of variance.

3. Results

The age of the 504 patients included in our analysis ranged from 14-50 years with a mean age of 29 years old. (Table 5)

Table 5. Characteristics of individuals who used asynchronous telehealth medication abortion service, mean number of back-and-forth messages and standard deviation. (n=504)

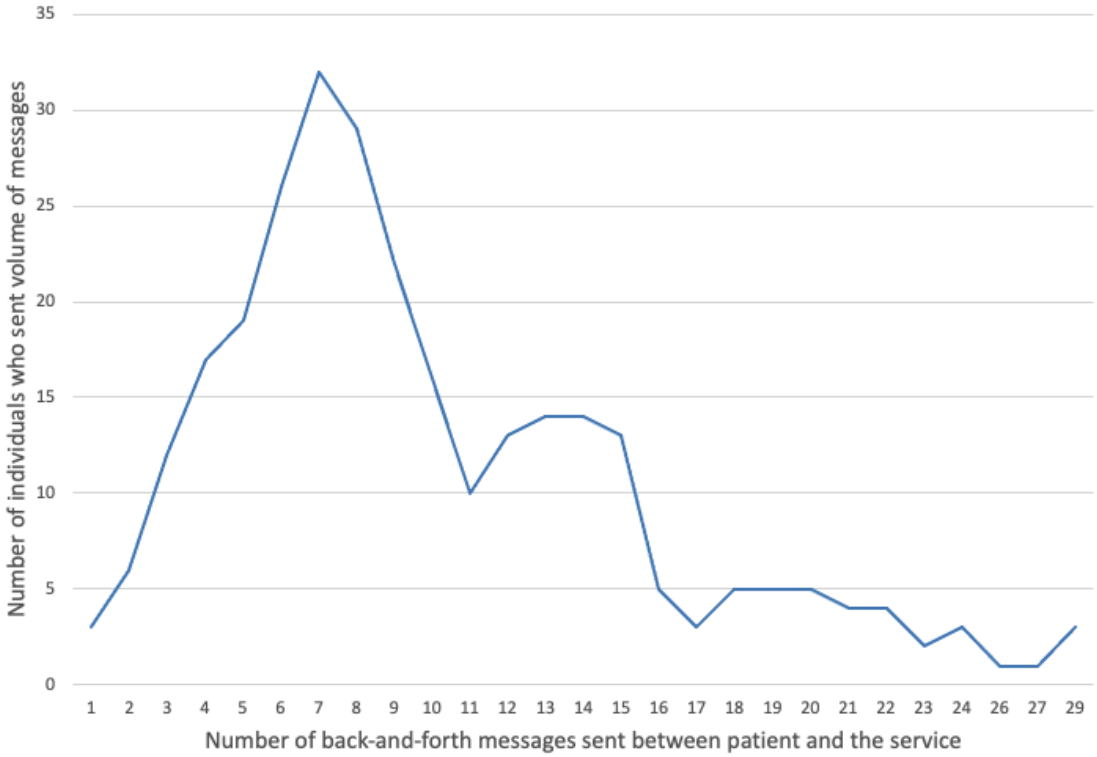
			Mean number of back-and-forth messages sent		
Participant characteristic	**N**	**(%)**	**N**	**Std. Dev.**	**p-value**
Age (years)					
Mean (range)	28.9	(14, 50)			
<=24	140	27.8	7.8	5.8	0.48
25-34	246	48.8	7.4	5.5	
>=35	118	23.4	7.0	5.3	
Language of consultation					
English	496	98.4	7.4	5.5	0.11
Spanish	8	1.6	10.5	4.7	
Gestational Duration (in weeks)					
<5	237	47.0	7.4	5.8	0.50
5 to <7	192	38.1	7.2	5.3	
7 to <11	75	14.9	8.1	5.2	
Prior pregnancies					
0	51	10.1	7.4	6.1	0.96
1 or more	453	89.9	7.4	5.5	
Prior abortion experience					
0	312	61.9	7.2	5.4	0.41
1 or more	192	38.1	7.7	5.8	
*Self-reported reasons why patient preferred asynchronous telehealth service**					
Prefer to take care of own treatment	290	57.5			
More comfortable at home	319	63.3			
Prefer partner/friend with me for process	162	32.1			
Prefer to keep treatment private	297	58.9			
Find it empowering	65	12.9			
*Topic of Communication**					
No additional communication	217	43%			
Confirm eligibility (clinical)	36	7%			
Reduced payment (non-clinical)	138	27%			
Medication delivery (non-clinical)	157	31%			
Physical process (clinical)	70	14%			

* Individuals can be counted in more than one category

The average number of back-and-forth messages between patients and the asynchronous telehealth abortion service did not differ across age groups, language, pregnancy, or abortion history. (Table 5)

Less than half (43.1%) of the sample had no additional communication related to receipt of care, for example only sending messages confirming receipt of medications and thanking the provider for their care. Over half (n=287, 56%) of individuals had additional communication with the service resulting in, on average, 10 back-and-forth messages (median=8, range: 1-29). (Figure 9)

Figure 9. Number of back-and-forth messages with the asynchronous telehealth medication abortion service among patients with additional communication needs. (n=287)



3.1 Primary topics of communication between patients and the asynchronous telehealth medication abortion service

The four primary topics of patient-service communication were: 1) responding to clinician questions to confirm patient eligibility for remote care, 2) the cost of the service and requests for a sliding scale payment option, 3) the timing and packaging of the medication delivery, and 4) the physical process of the abortion, including medication use, appropriate amount of bleeding, and confirmation of abortion completion.

3.1.1 Confirming eligibility

Based on the online health questionnaire, the service's clinicians had the option to ask additional questions regarding the patient's medical history to confirm eligibility for remote medication abortion care (certainty of last menstrual period, cesarean section history). Examples of patients' responses included:

> *"My last menstrual cycle started on May 20, 2020. I do have quite regular periods, with moderate bleeding lasting about 5 days. I accidentally had intercourse when I was ovulating on June 3, 2020. I misread my body."* 36 years old, 4 prior pregnancies, 0 prior abortions

> *"My previous 3 cesarean healed fine and I had no complications."* 28 years old, 4 prior pregnancies, 0 prior abortions

3.1.2 Reduced payment

Since the service offered sliding scale payment from $0 to $150, patients provided information about inability to pay full price and requested a reduced cost for services.

"*The baby I am carrying belongs to my ex-boyfriend. I suffered much emotional abuse from him, he only hurt me physically once ... I am not able to afford $150 for medication. I do not know what else to do at this point. I cannot go forward with this pregnancy.* " 33 years old, 2 prior pregnancies, 0 prior abortions

3.1.3 Medication delivery

Patients had questions or concerns regarding the package delivery, including timing of delivery and requesting package tracking information, asking what the package would look like and requesting discreet packaging, and/or correcting their mailing address. Examples of patient questions included:

"*I am wondering about the shipping duration due to COVID. I am located in NYC so is the time frame accurate from where the pill is shipped from?*" 16 years old, 1 prior pregnancies, 0 prior abortions

"*Can you send the mail as the type that directly delivers to your door in person rather than the ones that leave it in the mailroom? I am just wondering what the package looks like since I have a family that opens my package and I don't want them to know.*" 20 years old, 0 prior pregnancies, 0 prior abortions

3.1.4 Physical process

Finally, patients had questions regarding the physical process of the abortion. Topics of discussion included how to use the medications, additional questions about side effects to expect, appropriate amount of bleeding, and how to confirm success of the termination.

> "*I took my abortion pills as instructed and I am concerned because I am not bleeding as much as I thought I would be. Is this normal?*" 21 years old, 1 prior pregnancy, 0 prior abortions

> "*Moments after I took the Misoprostol I experienced intense cramping, and bleeding, as well as clots. I puked not even 5 minutes later, and I could see the Misoprostol tablets. I continued to bleed heavily and cramp and pass clots for about 6 hours after puking up the Misoprostol. I still have the other 4 Misoprostol tablets. Should I take them since I puked up the other 4 before they had a chance to dissolve or am I in the clear since I passed lots of clots. I am spotting some today, bright red, and small clots.*" 17 years old, 1 prior pregnancy, 0 prior abortions

> "*What're the possibilities that I am still pregnant?*" 16 years old, 1 prior pregnancy 0 prior abortions

3.2 Quantifying the number of messages by topic of communication

Among those who had additional communication with the service (n=287), most (69%) conversed about only one topic of communication, while 66 (23%) discussed two topics and 23

(8%) discussed three or four topics (Table 6). Non-clinical topics that could be resolved by support staff accounted for the vast majority of the communication, while questions requiring the consideration of a clinician were relatively limited (Table 6).

Table 6. Number of individuals who asynchronously communicated about one, two, and three or four topics (n=287).

Topic of communication	Confirm eligibility (clinical)	Reduced payment (non-clinical)	Medication delivery (non-clinical)	Physical process (clinical)
Confirm eligibility	12	-	-	-
Reduced payment	4	76	-	-
Medication delivery	5	28	83	-
Physical process	1	9	19	27
Totals	**22**	**113**	**102**	**27**

*23 individuals communicated on 3 or 4 of the primary topics of communication

To understand if topics of communication required different volumes of massaging, and therefore staff time, to provide care or resolve patient concerns, we examined the subset of patients who messaged with the service about only one of the four topics of communication (n=198). We found no differences in the volume of messages across the four topics of communication (ANOVA F-value = 0.90, p-value = 0.4399).

4. Discussion

Given concerns regarding additional demands on clinician time in providing asynchronous telehealth abortion care, findings from this study indicate that patients require no or limited additional communication with the service provider. Patient communications were

primarily related to logistics of completing the service (sliding scale requests, medication delivery details) with fewer individuals asking clinical questions (patient history to confirm eligibility, physical process of the abortion). This finding is in line with prior research suggesting that though telehealth services may be associated with increased communication needs on the part of the patient compared to in-clinic services, much of the communication can be addressed by non-clinical support staff instead of advanced practice clinicians or physicians. The amount of communication needed did not differ across age groups, language, pregnancy, or abortion history, suggesting that asynchronous service providers can expect patient communication needs to be consistent regardless of the population being served. This finding also suggests that tailored messaging may not be necessary or beneficial for subpopulations examined, though further research is needed to better explore a wider range of demographic characteristics that influence patient communication needs.

We found that about one-third of patients in this study had additional communication regarding the mailing and delivery of their medications. More specifically, patient questions were primarily related to how quickly their medications would arrive and requesting tracking information. While this is expected given the time-sensitivity of abortion care, it is important to note that this service was initiated at the beginning of COVID-19 and, therefore, patients experienced care as services were being developed and improved. The telehealth abortion service initiated a partnership with a mail-order pharmacy to fill prescriptions and mail medications to their patients. The high volume of medication delivery questions may have been in part due to the challenges of the new service and changing operations throughout the study period. Additionally, the U.S. Postal Service was experiencing notable delays in delivery times during

2020.[152] Now that the telehealth services are more established and postal service delivery times have normalized, it is possible that patients may have fewer communication needs.

One limitation of this study is that in addition to the asynchronous messaging option, the telehealth abortion service provides the number of an abortion hotline in its informational messages. We are not able to track the number of patients who used the hotline instead of the service's messaging option when they had questions or needed additional communication. Another limitation is that much has changed in the telehealth medication abortion landscape since this sample of patients received care. For one, less information was available about telehealth options and medication abortion during the study period.[11,33,150,151] Patients were also experiencing the beginning of the COVID-19 pandemic and, therefore, living through a very unique moment in history with limited access to healthcare and heightened stress.[153,154] Even with these possible limitations to generalizability and the unique timing of this study, findings underscore the accessibility of asynchronous telehealth medication abortion services and the limited high-level clinical needs of patients accessing these services.

A better understanding of patient concerns when using asynchronous telehealth abortion services can inform communication by healthcare providers during medication abortion consultations to streamline provision, improve patient comprehension and comfort with the steps of care, and, ultimately, increase patient satisfaction. Services can use our findings to anticipate and proactively address patient concerns and communication needs. Our findings can also inform decisions about the type and time needed for clinical and non-clinical staff when implementing or improving synchronous and asynchronous telehealth medication abortion services. Given that telehealth medication abortion services are safe, effective, and improve access to care, this

study's findings can be used to improve and expand patient-centered telehealth models of this vital service.

VIII. Discussion

This dissertation examines three dimensions of patient experience with telehealth medication abortion services in the U.S: 1) how patient characteristics of telehealth and in-clinic patient populations differ, 2) how patients choose between telehealth and in-clinic services and their subsequent satisfaction with care, and 3) how patients use asynchronous telehealth abortion services and communicate with providers. Understanding how patients learn about, choose between, use, experience, and reflect on care can inform development and adaptation of abortion services to better meet patient needs and strive towards patient-centered care. Additionally, an understanding of who is seeking and receiving telehealth abortion care can highlight how technology may improve or exacerbate disparities in access to abortion care and support providers in their efforts to offer equitable services.

1. Synthesis of key findings

The first study found that among patients who received care from a high-volume reproductive health clinic in Washington State, older patients, English-speaking patients, those who lived farther from clinic locations, patients who had no current or prior health issues, and those who had had prior abortion experience were more likely to received telehealth medication abortion services compared to in-clinic care. Additionally, those who self-identified as multi-racial or another race/ethnicity (i.e., not Hispanic/Latino, Asian, Native Hawaiian or Other Pacific Islander, Black or African America, White or declined to specify) were over four times more likely to receive telehealth than individuals who identified as White. These findings suggest that telehealth abortion may facilitate abortion care access for those who are further from

brick-and-mortar abortion facilities and, thus, has the potential to improve access to abortion care in more communities by mitigating the impacts of travel logistics and costs. Telehealth abortion care may also better meet the needs of those with prior abortion experience, perhaps because these individuals may be more comfortable with the abortion process than those without prior experience. Indeed, those with prior abortion experience are also less likely to perceive and internalize stigma than those who reported no previous abortion experience and, therefore, may feel more comfortable completing telehealth care.[155] Given the differences observed based on self-identified race/ethnicity and documented disparities in abortion access, further research is needed to better understand persons selecting the "multi-racial/other race" category and how these individuals related to the overall demographics of Washington state and those seeking abortion care in this state, as well as how racial identity may impact patient preference for telehealth services.

The findings from Study 1 also suggest telehealth medication abortion services may be less preferred by some groups with limited access to abortion care, including younger individuals, those with limited English proficiency, and those with health issues. Efforts to educate patients about telehealth procedures and improve availability of language support are needed to make telehealth abortion more accessible for diverse populations. Even as telehealth services improve, in-clinic care will remain an important option for some populations, and these findings demonstrate that both care options can prove beneficial to different patient groups.

The second study suggests that, when choosing between telehealth or in-person abortion care, some patients prefer telehealth because it is more convenient and less disruptive to patient's daily lives, less stigmatizing, and more familiar and comfortable. Telehealth patients in this study were also highly satisfied with their care experience, finding it less time-consuming and, in most

cases, easier to navigate. Of those who preferred in-clinic services, some preferred in-clinic visits because they felt services were more likely to be "legitimate" and of high quality. Some who chose in-clinic care indicated they would choose a telehealth appointment if they needed subsequent abortion care. Nearly all individuals interviewed prioritized getting care quickly over the modality of care delivery.

One surprising finding from Study 2 was that many participants chose in-clinic care because they felt that telehealth options are not as "legitimate" or as high quality as in-clinic options. These findings suggest that additional information and reassurance could be provided by scheduling staff to increase knowledge and awareness of telehealth options and allay patient concerns about safety and effectiveness. Broader, population-based awareness and educational campaigns on comprehensive reproductive healthcare, including abortion and modalities of care delivery could also be beneficial. Indeed, information about and demand for telehealth medication abortion has been on the rise, particularly since the COVID-19 pandemic and the Supreme Court ruling eliminating federal protections for abortion rights.[11,33,150,151]

The third study regarding patient communication needs when accessing asynchronous telehealth abortion services found that patients require no or limited additional communication with the service provider after the initial care consultation and upon review of the informational materials. Patients who required additional communication with the asynchronous telehealth provider primarily asked questions related to the logistics of completing the service, including questions related to the sliding scale payment option and medication delivery process. Fewer individuals asked clinical questions, but those who did so were focused on confirming eligibility for remote care or the physical process of completing the abortion. This finding is in line with prior research suggesting that though telehealth services may be associated with increased

communication needs on the part of the patient, much of the communication can be addressed by non-clinical support staff instead of advanced practice clinicians or physicians.[142,143] When compared across patient demographic characteristics, I found that the amount of communication needed did not differ across age groups, language, or pregnancy history, suggesting that tailored messaging may not be necessary or beneficial, though further research is needed to better explore a wider range of demographic characteristics that influence patient communication needs.

2. Implications

Together, this research highlights that telehealth medication abortion services have the potential to reduce barriers to accessing abortion care and improve the patient experience. Study 1 found that more diverse groups of patients were able to access abortion care, particularly those farther from brick-and-mortar clinics who have been traditionally underserved. This notion is strengthened by the findings of Study 2, which highlights the convenience and ease afforded by telehealth services, and Study 3, which demonstrated that patients were able to use even asynchronous services with little additional support and communication. Together these three studies further our understanding of how patients think about and use telehealth abortion services and can inform care provision to better meet patient needs.

This research also elucidates some patients' continued preference for in-clinic care options and the importance of its continued availability. Study 1 found that patients who are younger, have more complex health issues, and who are non-English speakers were more likely to receive in-clinic care. This is in line with findings from Study 2 suggesting that patients preferred in-clinic options expecting to receive higher quality care or to confirm the legitimacy of the care provider. Efforts to improve telehealth translation and communication options and

raising awareness about what telehealth involves, are needed if telehealth is to meet the needs of even broader patient populations.

Finally, the view of participants in Study 2, that in-clinic services are more legitimate, is juxtaposed with their experience of a longer and more complex clinical process. Participants reported cumbersome, room-to-room clinic workflows describing the experience like "cattle herding". Given the findings of Study 3, suggesting that telehealth services can have streamlined workflows with patient-driven communication, it is possible that telehealth services can better meet the needs of those patients who found the in-clinic experience to be drawn out and undesirable. Efficient healthcare delivery is an important component of high-quality care.

Overall, these findings suggest diverse abortion care needs across patient populations. A broad spectrum of service delivery models - be it in-clinic, telehealth, asynchronous, or other – is needed to best meet patient expectations and allow for patients to understand and decide what good outcomes and quality care look like for their life and care journey. Engaging participants in their care journey and providing informed options is an essential component in striving towards patient-centered care.[129,156]

3. Limitations and strengths

There are strengths and limitations to this dissertation work that should be considered.

Study strengths

The partner for Study 1 and 2, CRC was the first provider in the U.S. to begin offering direct-to-patient telehealth medication abortion care outside of a research setting. Because of this, their clinic data are the longest running data set of patients who have received telehealth medications

abortions from a high-volume reproductive healthcare clinic. CRC is unique in that they offer both telehealth and in-clinic services and allow patients who meet their eligibility criteria to choose between the two options of care delivery. Other high-volume providers who have been offering telehealth abortion services since the beginning of the COVID-19 pandemic offer only telehealth services. Because the quantitative and qualitative data set used for Study 1 and 2 includes individuals who received telehealth and in-clinic services from the same clinic and in most cases has the option between the two, the data are truly one of a kind at this time.

The Aid Access data, used for Study 3, is also unique because few providers offer only asynchronous care, without the option of a video visit or audio phone call. This results in the email exchange data being comprehensive of the communication between the abortion service and the patient. This, in combination with the written materials sent to all patients, comprises the entirety of information transmitted between provider and patients. Given this, it allows a complete look into the information needs of patients who are managing a medication abortion at home with pills received in the mail.

The study of asynchronous models is particularly timely given the increasing strains on abortion care providers after the Supreme Court decision in *Dobbs v. Jackson Women's Health Organization*.[63,64] More streamlined service delivery models requiring less clinician time will allow for greater resilience of high quality abortion services as demand for care remains steady.

Study limitations

There are several limitations to this dissertation work. First, for Study 1 and 2 data sets, patients were able to receive either telehealth or in-clinic services from the same clinic, but it remains somewhat unclear how the choice of the two service options was presented to patients upon contacting the clinic and scheduling an appointment. The protocol for the clinic's phone agents

states that all patients interested in medication abortion should be offered both telehealth and in-clinic options. Those interested in telehealth are then screened using additional eligibility criteria (having regular periods, no IUD in place, minimal risk for ectopic pregnancy, or irregular bleeding) and offered only in-clinic appointments if ineligible for remote care. Findings from the qualitative interviews, however, suggest that not all patients were consistently offered both options or they did not understand that both options were available to them upon scheduling their care appointment. Some in-clinic patients state that they were not initially offered telehealth services and that they would have preferred a remote care option had it been offered. Additionally, given the importance of timeliness of care, it is possible that callers are asking for the next available appointment without regard to the type of care. Given this discrepancy and competing interests, further investigation is needed to determine if and how the two modalities of care are presented when individuals contact the clinic and to whom.

For both Study 1 and 3, electronic health record (EHR) data was utilized. Some challenges with EHR data are that they depend on the patients and clinicians completing study fields in a consistent and accurate manner, different from survey responses and data. Because of this, data fields had missing or inconsistently completed information. One example from Study 1 was the challenge of differentiating between those who received in-clinic care because they were ineligible for telehealth services from those who were eligible for telehealth care but chose to receive in-clinic care. The clinic staff use a phone screener to identify who is ineligible for remote care and caller responses are not documented in the EHR system. In this dissertation, I was unable to differentiate between in-clinic patients who were ineligible for telehealth care and those who chose not to receive telehealth care. Therefore, the sample is not limited to those who

had a true choice between telehealth and in-clinic care options, only those who received either type of care.

One limitation with Study 1's data set is that, though I worked closely with clinic staff, detailed information about how the telehealth and in-clinic services changed throughout the study period is not available. For example, the clinic does not have detailed records of how many providers were offering telehealth services month-by-month. They also do not have records of how many appointments (either telehealth or in-clinic) were available on any given day or week. Again, since timeliness of services and availability of appointments is such a driver of patient choice, it is impossible to sort out how these changes in service delivery and availability may have affected patient choice and receipt of one or the other modality of care.

One other element relevant to both Study 1 and 2 data sets is that, in both cases, participants were allowed to self-select a "race" category that best represented their identity. Options included "more than one race", "multi-racial", and "other race" and no additional information about those individuals was collected. A large proportion selected these categories, resulting in limited specificity on how these individuals self-identify their race. The bulk of existing literature finds that ethnic and racial minorities have more limited access to abortion care and are also disproportionately affected by restrictive abortion regulations; thus, further research is needed to better understand who comprises this diverse category and how their identity and experience of structural racism and oppression may impact their preference for telehealth services.[12,62,63,72–76]

One limitation related to the qualitative interview participant recruitment (Study 2) is that a greater proportion of telehealth patients were willing to be interviewed compared to those who had in-clinic services (20 versus 10 individuals) from the study sample of eligible individuals.

This may signal that telehealth patients are more comfortable completing a Zoom interview and were therefore easier to recruit. Finally, our interview guide did not systematically ask participants about their previous abortion experience because this was an emergent finding from the interviews. Additionally, the quantitative patient data suggests that patients who received telehealth abortion services were more likely to have a history of receiving abortion care. If this information had been known at the time of questionnaire development, I would have included questions and probes in the interview guide to learn more about this phenomenon. Ideal study design and project timeline would have allowed for preliminary quantitative analysis prior to interview study design and execution.

When thinking about Study 3, one limitation is that the data are somewhat dated given the fast-moving medication abortion legal and clinical landscape from 2020, when the patients who comprise the sample received care, to the time of writing (April 2023). More information became available about telehealth options and medication abortion during the study period.[11,33] Patients were also experiencing the beginning of the COVID-19 pandemic and, therefore, living through a moment in history with limited access to healthcare and greatly heightened stress.[153,154] Even with these possible limitations to generalizability and unique timing of this study, findings underscore the ways patients communicate with asynchronous telehealth medication abortion services and the limited high-level clinical needs of patients accessing these services.

4. Conclusion

Patients face a wide range of barriers when accessing timely abortion care. Telehealth is an efficient way to provide care across geographies and may address other disparities in abortion access. Furthermore, many patients prefer and are highly satisfied with telehealth services for

abortion care. Service providers can use these findings to anticipate and address patient concerns and communication needs, improve patient comprehension and comfort with steps of care, and ultimately increase patient satisfaction and patient-centered care. This research can also inform staffing considerations when implementing or improving synchronous and asynchronous telehealth abortion services, allowing for more streamlined and efficient service delivery. Further expanding telehealth services will also help address concerns and uncertainty about the "legitimacy" of telehealth abortion providers. While telehealth medication abortion services are only one approach for expanding services, innovative strategies are necessary to meet the increasing need due to severe abortion restrictions across half the U.S.

Diverse and innovative models of care delivery are needed to accommodate the sustained demand for services and must work to meet the needs of diverse patient populations. Given that telehealth medication abortion services are safe, effective, and improve access to care, patients should then be empowered to choose the type of care that best meets their needs and preferences.

X. Appendices

1. Cedar River Clinics Patient Instruction Sheet

CEDAR RIVER CLINICS

□ TACOMA: 1401-A Martin Luther King Jr. Way · Tacoma, WA 98405 - 253.473.6031
□ RENTON: 263 Rainier Ave S. #200 · Renton, WA 98057 - 425.255.0471
□ SEATTLE: 509 Olive Way, Suite 1454, Seattle, WA 98101– 206.957.0990

Appointments: 800-572-4223
web: www.CedarRiverClinics.org

TELEMEDICINE MEDICATION ABORTION INSTRUCTIONS

What you need to do:

Take your mifepristone tablet to begin your abortion process.

24-72 hours after taking your mifepristone, you should take your misoprostol.

Take one naproxen tablet 30 minutes before taking the misoprostol.

Then place 2 misoprostol tablets between your cheek and gum on each side of your mouth (a total of 4 tablets) and leave for 30 minutes. After 30 minutes have passed, swallow any remaining portion of the tablets that have not yet dissolved. (If you are 9 weeks pregnant, or above, you will repeat this same process with 4 more misoprostol tablets 4 hours after your first dose of misoprostol.)

You will most likely experience one or more of these symptoms within four hours of taking the misoprostol tablets: heavy bleeding, clotting, severe cramping, nausea, and/or diarrhea. For these reasons, on the day you take the misoprostol, you should arrange for:

- time off from work
- child care for the day
- a support person
- heating pad or hot water bottle
- light "comfort" food (Jello)
- fluids (ginger ale, 7-Up, broth)

Avoid alcohol and marijuana during this time, in case you need to take the narcotic pain medication that was prescribed for you.

What to expect:

Bleeding and Expulsion
The onset of bleeding and expulsion is usually within 1 - 6 hours of taking the misoprostol. You should expect bleeding that is heavier than your normal period, which will most likely include blood clots (some clots may be quite large – the size of lemons or oranges). The bleeding is heaviest during expulsion and should decrease after 4 hours. There is a very small risk of excessive bleeding (2%) which would require you to have a surgical abortion.

Cramping
It is normal to have cramping with this type of abortion. Be sure to have a heating pad on hand. More severe lower abdominal cramps that last over a 1-3 hour period means that pregnancy tissue is passing through the cervix. This type of cramping may occur in waves and is usually tolerable if you are taking medication. Once the tissue has passed, cramping should become mild.

Other Side Effects
Fatigue, fever, chills, diarrhea and/or other gastrointestinal side effects (upset stomach and nausea) are commonly experienced shortly after taking misoprostol. Be sure to get enough fluids during this time. If symptoms persist 24 hours after you've taken misoprostol, immediately contact the clinic and/or go to your nearest hospital.

Pregnancy Tissue
You may pass the pregnancy tissue at an unexpected time or place. You may see nothing, or a blood clot, a small white clump, or the entire embryo.

Medications

Mifepristone – Take 1 pill by mouth as soon as possible. This pill begins your medication abortion.

Misoprostol – 24 - 72 hours AFTER taking mifepristone, place 2 tablets between your cheek and gum on each side of your mouth (a total of 4 tablets) and leave for 30 minutes to dissolve. After 30 minutes has passed, you may drink water and swallow any remaining portion. (If you are 9 weeks pregnant, or above, you will repeat this process 4 hours later.)

Naproxen – Take 1 tablet (500mg) every 12 hours as needed for cramping. Do not exceed 1000 mg in a 24-hour period. To prevent abdominal discomfort do not take naproxen on an empty stomach.

Oxycodone – Take 1 or 2 every 6 hours as needed for increased cramping. Do not drive or operate heavy equipment while taking oxycodone.

Avoid the following:
- Do not use tampons for the first day or two; use maxi-pad sanitary napkins to allow assessment of bleeding.
- Avoid unprotected sexual intercourse until your follow-up appointment. We will discuss birth control options at that time

It is OK to:
- Go back to your regular activities as soon as you feel able to.
- Have sex and/or use tampons whenever you are ready.
- Take a shower or bath as soon as you want to.
- Eat normally, although you may still feel nauseated for another few days because of pregnancy hormones.

7-day symptom checklist: (answer these questions 7 days after taking the misoprostol)
- Did you bleed and cramp as much as or heavier than a normal period?
- Did you pass clots or tissue?
- If you had pregnancy symptoms before taking the pills, are they gone?
- If you answer yes to all of these questions, your abortion pills very likely worked.

Contact us if:
- You experience abdominal pain or discomfort, or "feeling sick", including weakness, nausea, vomiting, diarrhea or flu-like aching, more than 24 hours after taking misoprostol.
- You have excessive bleeding. We define that as soaking two or more maxi pad per hour for more than 2 hours in a row
- You experience severe pain that is not reduced by rest, pain medication, heating pad, or uterine massage.
- You experience a fever greater than 100.4° F.
- You have no bleeding within 48 hours after taking the misoprostol.
- You experience severe vomiting and/or diarrhea for more than 4-6 hours.
- Call us immediately if you experience the symptoms of an allergic reaction: rash and/or shortness of breath.

2. Description of encounter type for individuals with multiple medication abortion encounters during the study period (April 23, 2020 – January 31, 2022) (n=110)

Number of encounters during study period and encounter type	
2 encounters	95
Clinic, Clinic	*61*
Clinic, Telehealth	*11*
Telehealth, Clinic	*3*
Telehealth, telehealth	*20*
3 encounters	10
4 encounters	5

3. Preliminary Coding Scheme for Aid Access Patient's Primary Concerns

Pregnancy termination	
No period yet	Questions/comments about not having had another period after termination process was complete
Home pregnancy test	Questions/comments related to when a pregnancy test will be accurate, how long to wait, and why a positive pregnancy test might mean
"What are the chances I'm still pregnant?"	General questions/comments related to efficacy of med. Abortion. Excludes questions stemming from home pregnancy test
New pregnancy	Questions/comments related to getting pregnant again after termination is complete, potential of a new pregnancy after termination
Bleeding	
Bleeding began before taking pills	Questions/comments related to bleeding that occurred before med. abortion process was begun. Includes questions/comments related to the need to still take the medications at all
No bleeding yet	Questions/comments related to not having any bleeding after beginning the med. abortion process. *If question is about "next" period/bleeding, use "No period yet" This is for bleeding related to the process, not success of termination or subsequent periods
Too little bleeding	Questions/comments about not having enough bleeding yet. (**this may have overlap with pregnancy termination, "chances I'm still pregnant"*)*
Prolonged, heavy bleeding	Questions/comments related to heavy or prolonged bleeding after beginning med. abortion process. Includes "hemorrhage"
How to use pills	
How to take meds	Questions/comments about how to take the medications/ mifepristone/misoprostol, order of taking medications, oral/vaginal/buccal administration of meds. Or asking about need for 2nd dose if felt complete already
More pills	Questions/comments about the need for or requests for additional medications
"Threw up"	Questions/comments related to throwing up after taking the pills, need for additional meds. *(*this may be too narrow*)*
Other	
Pain management	Questions concerns related to cramping, pain management. Also, vaginal discomfort (pain, pressure, other concerns)
Great Quote	

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