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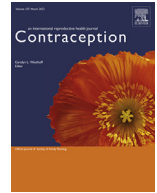
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Brief Research Article

The association of U.S. state-level abortion restrictions with medication abortion service delivery innovations during the early COVID-19 pandemic[☆]

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ABSTRACT

Objectives: To assess whether state-level abortion restrictions resulted in differential uptake of innovative medication abortion practices such as changing ultrasound requirements, offering telehealth, or dispensing medications without a physical exam during the early COVID-19 pandemic.

Methods: We used data from a prospective national survey of abortion providers to assess the association between a novel index of state-level abortion hostility and adoption of medication abortion services innovations during the pandemic.

Results: Clinics in states with low or medium hostility were more likely to adopt innovative practices than those in high or extreme hostility states.

Conclusions: Clinics in abortion hostile states were less likely to adopt clinical recommendations and public health best practices for abortion care during the COVID-19 pandemic.

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1. Introduction

During the COVID-19 pandemic, multiple health care services rapidly adapted to telehealth care delivery to sustain access while minimizing viral transmission risk. Among reproductive health services, medication abortion was a prime candidate for remote care as the medications used (mifepristone and misoprostol) are shelf-stable and easily self-administered [1]. Prior to the COVID-19 pandemic, the safety of medication abortion following a remote consultation was well established. Nonetheless, the distribution of the drug mifepristone remained highly restricted at the federal level by a Risk Evaluation and Mitigation Strategy (REMS) imposed by the US Food and Drug Administration (FDA) that required in-person dispensing of the drug by or under the direction of a clinician, contrary to medical consensus [2].

At the onset of the COVID-19 pandemic, leading clinical authorities in family planning developed guidance to encourage expansion of no- and low-test abortion care, including remote consultations followed by in-person drug dispensing without an exam, and

telehealth abortion in which drugs are mailed directly to the patient [3]. In response to a lawsuit filed by clinicians seeking to deliver care remotely during the public health emergency, the federal in-person dispensing requirement for mifepristone was temporarily lifted [4].

The promulgation of new clinical guidelines and relaxed federal regulations could have reduced close interpersonal contacts in the abortion clinical care setting on a national scale, thereby reducing associated viral transmission risk [5]. However, due to widespread state-level restrictions on abortion care, medication abortion service delivery innovations may not have become equally available in all states. We set out to assess whether state-level abortion restrictions were associated with lower likelihood of abortion care providers offering innovative service delivery options during the early COVID-19 pandemic.

2. Methods

We created an index of state-level abortion hostility and tested its association with adopting innovative medication abortion practice changes in response to the COVID-19 pandemic among clinics in a longitudinal nationwide survey of abortion providers. The index was created using published reports of state-level abortion

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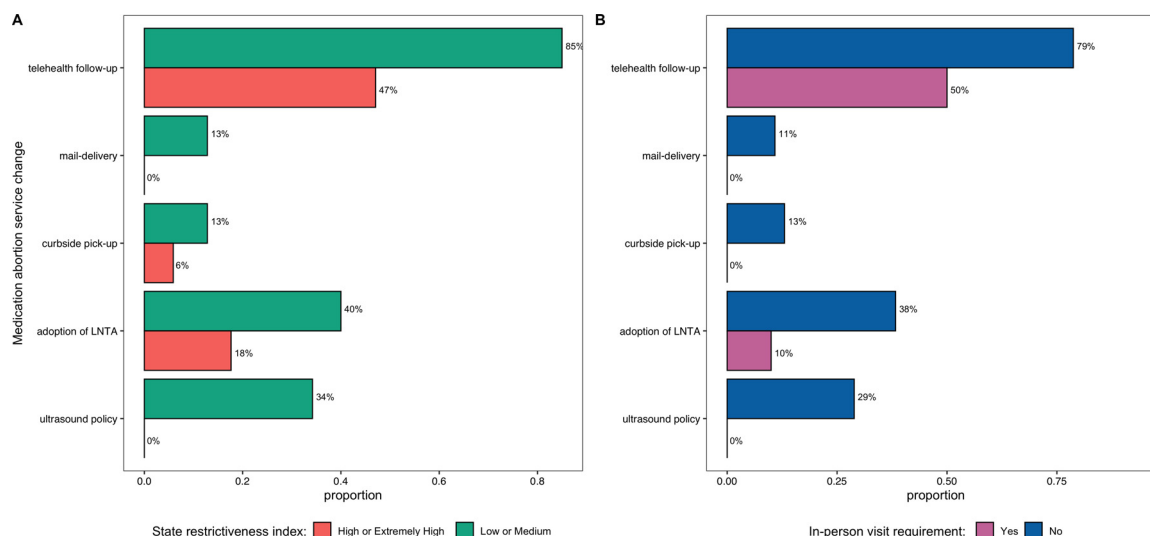


Fig. 1. Proportion of Clinics Adopting Medication Abortion Innovations during the Early COVID-19 Pandemic According to U.S. State-level Hostility and In-person Visit Requirements
LNTA=low- or no-test abortion

policies as of October 1, 2020. To reduce keystroke error, two study team members independently transcribed restrictions from a centralized resource created by a research group and an advocacy group [6]. We then further validated the restrictions as listed by comparing the original source to two additional sources from not-for-profit research organizations [7,8]. The study PI (EJ) adjudicated any discrepancies. We additionally planned to leverage professional connections with legislative advocacy experts to further clarify which dates specific statutes were enacted or enjoined if necessary, but no such consultations were needed.

We tallied 13 specific state-level abortion restrictions for each US state and assigned each restriction a value of 1 for those with weak evidence of impact on abortion access outcomes or 2 for those with strong evidence of impact (Table 1; Fig. 1). We then ranked states into quartiles, categorizing each state as having low (0–4 points), medium (5–12), high (13–17), or extreme (18–20) abortion restrictions (Supplemental Table 1). To separately estimate the association of global abortion hostility from the effect of laws that specifically prohibit care innovations such as no-exam visits and telemedicine, we created a separate binary variable to indicate if state-level restrictions specifically mandated a visit for medication abortion care by requiring either (1) an ultrasound or (2) in-person dispensing of mifepristone as a state law, in addition to the FDA requirement. Other studies of population-level health outcomes have used similar indices of abortion restrictions as the exposure of interest for their analyses [9,10].

Outcome data were obtained from online surveys conducted with a convenience sample of 72 members of the Society of Family Planning’s nationwide Abortion Clinical Research Network at three time points during the early COVID-19 pandemic [11]. Surveys were completed by representatives of Network clinics, including some with more than one clinical location; in cases where clinical organizations spanned multiple states, respondents were instructed to report on their highest volume clinical site and to note the state in which that site was located. We included clinical sites that provide medication abortion services and responded to the third survey wave (November 2020) for a total sample size of 57. To prevent identification of any clinics in this small dataset, the deidentified dataset shared with our team by the Society excluded state names. We provided the Society with the classification of each US state according to our index, and they informed our team of the score of the state in which each site was located.

Thus, the final dataset excluded state name but included classification of each site according to our state hostility index and visit required indicator. The dataset included clinics in 31 states total.

We operationalized the primary outcome of interest, adoption of innovative medication abortion practices, through five binary variables: (1) changes to require ultrasound for fewer patients in order to minimize in-person contact before the abortion, (2) adoption of low- or no-test abortion (LNTA) protocols, (3) began offering “curbside” medication pick-up wherein patients receive the medication in a brief no-exam encounter, (4) mail delivery of abortion medications, and (5) starting starting or expanding telehealth visits for medication abortion follow-up (Supplemental Table 2).

We performed Fisher’s exact tests to assess the relationship between the abortion service delivery innovations and both the state hostility index and visit required indicator. Clinics with missing outcomes were excluded. Due to the small sample size, we made the state hostility index binary (0 = “Low or Medium”; 1 = “High or Extreme”) to conduct statistical tests. All analyses were conducted in RV3.6.0.

3. Results

The number of clinics in states classified as having low, medium, high, or extreme restrictions were respectively 34 (60%), 6 (11%), 7 (12%), and 10 (18%). Ten (18%) clinics required in-person visits for medication abortions due to state-level abortion restrictions. Thirteen (23%; $n = 2$ missing) clinics changed their ultrasound policy, 19 (33%) adopted LNTA protocols, 6 (11%; $n = 1$ missing) allowed curbside medication abortion pick-up, 5 (9%; $n = 1$ missing) offered mail delivery of medication abortion, and 42 (74%) adopted telehealth follow-up.

Compared to clinics in states with high or extreme abortion restrictions, clinics in low or medium states were more likely to: change ultrasound requirements (33% vs 0%; p -value = 0.005), adopt LNTA protocols (40% vs 18%; p -value = 0.132), provide curbside medication pick-up (13% vs 6%; p -value = 0.656), provide mail delivery of medication abortion (13% vs 0%, p -value = 0.309), and offer telehealth follow-up (85% vs 47%; p -value = 0.007) (Fig. 1A). Compared to clinics in states that require in-person visits for medication abortions, states with no such requirements were more likely to: change ultrasound requirements (28% vs 0%; p -value = 0.095), adopt LNTA protocols (38% vs 10%; p -

Table 1
List and rating of 13 types of U.S. state-level abortion restrictions not specific to mifepristone

Restriction type	Point value assigned	Evidence of restriction's impact
Ambulatory surgical center standards imposed on facilities providing abortion	2	Strong evidence that these laws result in abortion clinic closures. [1] Grossman D, Baum S, Fuentes L, White K, Hopkins K, Stevenson A, Potter JE. Change in abortion services after implementation of a restrictive law in Texas . <i>Contraception</i> . 2014 Nov;90(5):496-501.[2] Gerdts C, Fuentes L, Grossman D, White K, Keefe-Oates B, Baum SE, Hopkins K, Stolp CW, Potter JE. Impact of Clinic Closures on Women Obtaining Abortion Services After Implementation of a Restrictive Law in Texas . <i>Am J Public Health</i> . 2016 May;106(5):857-64.
Hospital privileges or alternative arrangement required for abortion providers	2	Strong evidence that these laws result in abortion clinic closures. See references [1] and [2].
Mandatory counseling prior to abortion	2	Strong evidence that this results in delay in abortion access [3] Joyce T, Kaestner R. The impact of Mississippi's mandatory delay law on the timing of abortion. <i>Family Planning Perspectives</i> . 2000 Jan 1:4-13. [4] Joyce TJ, Henshaw SK, Dennis A, Finer LB, Blanchard K. The impact of state mandatory counseling and waiting period laws on abortion: A literature review . New York: Guttmacher Institute. 2009 Apr.
Parental involvement required before a minor obtains an abortion	2	Strong evidence of moderate delay in time to abortion [5] Dennis A, Henshaw SK, Joyce TJ, Finer LB, Blanchard K. The impact of laws requiring parental involvement for abortion: a literature review . New York: Guttmacher Institute. 2009 Mar. [6] Janiak E, Fulcher IR, Cottrill AA, Tantoco N, Mason AH, Fortin J, Sabino J, Goldberg AB. Massachusetts' parental consent law and procedural timing among adolescents undergoing abortion. <i>Obstetrics and gynecology</i> . 2019 May;133(5):978. [7] Ralph LJ, Chaiten L, Werth E, Daniel S, Brindis CD, Briggs MA. Reasons for and Logistical Burdens of Judicial Bypass for Abortion in Illinois <i>J Adolesc Health</i> . 2021;68(1):71-78.
Waiting periods required between time of first appointment and abortion	2	Strong evidence of delay in time to abortion and reduction in number of abortions within the state See reference [4] [8] Lindo JM, Pineda-Torres M. New evidence on the effects of mandatory waiting periods for abortion . <i>Journal of Health Economics</i> . 2021 Sep 16:102533.
Restrictions on abortion coverage in Medicaid	2	Strong evidence that difficulty paying for abortion is a primary driver of delayed or denied access to abortion care across states and over time. [9] Henshaw SK, Wallisch LS. The Medicaid cutoff and abortion services for the poor. <i>Fam Plann Perspect</i> . 1984;16(4):171-2, 177-180. [10] Finer LB, Frohworth LF, Dauphinee LA, Singh S, Moore AM. Timing of steps and reasons for delays in obtaining abortions in the United States . <i>Contraception</i> . 2006;74(4):334-44. doi:[11] Kiley JW, Yee LM, Niemi CM, Feinglass JM, Simon MA. Delays in request for pregnancy termination: comparison of patients in the first and second trimesters. <i>Contraception</i> . 2010;81(5):446-51.
Procedural abortion must be provided by a licensed physician	2	Physician-only laws restrict the number of abortion providers in a state, which in turn limits access to abortion. [12] Samora JB, Leslie N. The role of advanced practice clinicians in the availability of abortion services in the United States. <i>Journal of Obstetric, Gynecologic & Neonatal Nursing</i> . 2007 Sep 1;36(5):471-6. [13] Weitz TA, Taylor D, Desai S, Upadhyay UD, Waldman J, Battistelli MF, Drey EA. Safety of aspiration abortion performed by nurse practitioners, certified nurse midwives, and physician assistants under a California legal waiver. <i>American Journal of Public Health</i> . 2013 Mar;103(3):454-61.
Medication abortion must be provided by a licensed physician	1	Little published evidence, but could follow similar reasoning from [12] and [13]
Restrictions on abortion coverage in private health insurance plans	1	Little published evidence, but could follow similar reasoning from [9]–[11]
Restrictions on abortion coverage in public employee health insurance plans	1	Little published evidence, but could follow similar reasoning from [9]–[19]
Restrictions on the allocation of public funds	1	Little published evidence, but could follow similar reasoning from [9]–[11]
Bans on the basis of sex, race, or fetal diagnosis	1	Little published evidence
Health care providers can refuse to provide abortion services	1	Little published evidence

value = 0.140), provide curbside medication pick-up (13% vs 0%; p -value = 0.578), provide mail delivery of medication abortion (11% vs 0%, p -value = 0.573, and provide telehealth for follow-up (79% vs 50%; p -value = 0.108) (Fig. 1B).

4. Discussion

Clinics in more hostile states were less likely to offer patients options to mitigate their risk of acquiring SARS CoV-2 infection in healthcare settings. Further, providers in states that require in-person dispensing of mifepristone were less likely to offer telehealth follow-up despite there being no state-level regulation requiring this care be delivered in person. These results have implications for the impact of the state legislative environment on adoption of public health best practices.

These results should be interpreted in light of several limitations. The small sample size limited our ability to detect differences according to policy environment; thus, we may underestimate the true influence of abortion restrictions on service delivery innovation during the early COVID-19 pandemic. In addition, all outcomes asked about changes during the pandemic. We did not have data on adoption of these innovative practices previously. While some, such as telemedicine abortion outside of a site-to-site model, were not possible except as part of a research protocol prior to the pandemic [12], others such as waiving ultrasound requirements may have been adopted before 2020. Lastly, these data are drawn from a convenience sample and may not reflect the true prevalence of service delivery innovations that took place during the COVID-19 pandemic. However, because there was significant variability in state legislative hostility in our sample, the validity of the observed associations between state policy and practice innovation is not threatened by this lack of generalizability.

Evidence for the safety and efficacy of telehealth abortion has increased during the COVID-19 pandemic, leading the FDA to review the REMS for mifepristone and lift the in-person dispensing requirement in December 2021 [13–15]. This change could vastly improve access to medication abortion via telehealth. However, as our findings indicate, the positive impact of this change on abortion access may vary substantially depending on other state-level abortion restrictions.

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article are those of the authors and do not necessarily reflect the views of Planned Parenthood Federation of America, Inc.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.contraception.2022.04.003.

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