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Global perspectives on the health inequities in sexual, reproductive, and maternal health post Roe v. Wade

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Global perspectives on the health inequities in sexual, reproductive, and maternal health post Roe v. Wade

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Editorial: Global perspectives on the health inequities in sexual, reproductive, and maternal health post *Roe v. Wade*

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Editorial on the Research Topic
Global perspectives on the health inequities in sexual, reproductive, and maternal health post *Roe v. Wade*

In June 2022, the United States (U.S.) Supreme Court's *Dobbs v. Jackson Women's Health Organization* decision overturned *Roe v. Wade*, thereby eliminating the constitutional right to abortion (1). Authority now resides with individual states to regulate abortion access in the U.S. The impact of the ruling is expected to exacerbate existing health disparities and produce new inequities in sexual, reproductive, and maternal health outcomes, disproportionately affecting those who are already minoritized and living in States where abortion access has been banned or restricted. Observations from countries that have restricted access to abortion over the past 30 years reveal that such laws increase rates of unsafe abortion, which in many instances leads to pregnant people becoming severely ill or dying from preventable causes (2–4). In an era of maternal health crisis for people of color in the U.S. (5, 6) and other disadvantaged populations around the world, eliminating the constitutional right to abortion in the U.S. will have a severe impact on underserved and minoritized groups everywhere (7). This Research Topic of *Frontiers in Public Health* includes ten articles that highlight the global implications of the U.S. Supreme Court decision on sexual and reproductive health.

Several articles illuminated the challenges that the *Dobbs v. Jackson* decision has on reproductive justice. For instance, Montero et al. examined the safety and efficacy of evidence-based abortion care protocols in Chile. They found five types of structural barriers that impede legal voluntary termination of pregnancy (VTP) and conclude that these structural barriers violate reproductive rights and amount to violence against women. Current discourse in the US about the humanity of exceptions to restrictive abortion laws is problematic. This study demonstrates that exceptions do not result in better access to abortion care.

Schott et al. emphasized the importance of ensuring that abortion-related research is conducted ethically and is informed by the social, political, and structural conditions that shape reproductive health inequities. Their discussion underscores that abortion research should be grounded in reproductive justice, human rights, community engagement, and applied ethics.

Roth used a historical framework to examine abortion rights within the U.S., Latin America, and the Caribbean. Roth suggested that reframing restrictions to abortion rights from an issue of individual impacts to a broader public health issue of social and economic justice and human rights will be most effective in advancing reproductive rights.

Lambert et al. examined the anti-abortion rhetoric used in arguments for a 6-week abortion ban in South Carolina. They found that medical disinformation and moral arguments were the most common form of rhetoric used by proponents. A better understanding of the strategies used by anti-abortion supporters can help inform future approaches to abortion and reproductive legislation.

Other authors discussed how the *Dobbs v. Jackson* decision exacerbates existing inequities, most often among marginalized groups. For example, Mann et al. assessed U.S. college students' perspectives on contraception and abortion post-*Dobbs*. Participants were fearful, angry, and concerned about restrictions on reproductive decisions; felt pressured to use certain contraceptive methods [e.g., long-acting reversible contraception (LARC)]; and felt that they would be able to seek an abortion if they desired. The authors concluded *Dobbs* exacerbates the unequal gendered burden of contraception, places undue pressure on young women to use LARCs, diminishes reproductive autonomy, and further illuminates inequities in socioeconomic privilege, particularly given differential perceptions of access to care.

Kheyfets et al. explore the impact of anti-abortion legislation on the Black maternal health crisis in the U.S., highlighting limits to abortion education and training as key factors in worsening health outcomes. The authors also describe the residual impacts of *Dobbs* on access to other reproductive health services. Their approach underscores cascading impacts of restrictive abortion laws on health care delivery and already poor, racialized outcomes in the U.S.

Zhao et al. examined the potential spillover effects of *Dobbs* on non-abortive reproductive care and rights using pre- and post-*Roe* U.S. national clinic data. They concluded that there is early evidence of worsening inequities in non-abortive and reproductive health care differentially impacting socio-economically disadvantaged groups. These insights signal ripple effects regarding how data are collected, how healthcare is funded, how providers are supported, and how comprehensive reproductive health services are delivered that should be considered in policy development.

Andersen et al. studied the impact of Texas Senate Bill 8 on travel to abortion clinics within Texas and out-of-state. Researchers found that travel to abortion clinics in Texas decreased significantly, while travel to out-of-state clinics increased. The study highlights the importance of access to out-of-state abortion services for people in States where abortion is banned or restricted.

Braveman et al. examined California birth records to compare rates of preterm birth among Black immigrants from Africa, Black immigrants from the Caribbean, U.S.-born White women, and U.S.-born Black women who gave birth in California between 2010 and 2021. U.S.-born and Caribbean-born Black women had higher preterm birth rates than U.S.-born white women and African-born Black women. Chronic exposure to stress, such as racism in the U.S., has been linked to this phenomenon. Exposure to discriminatory practices or hostile reproductive environments post-*Dobbs* may have negative impacts on maternal and child health outcomes.

Ujah et al. examined public perceptions and concerns regarding racial and ethnic disparities following the overturn of *Roe v. Wade*. Through sentiment analysis and structural topic modeling, the authors conclude that the ethno-racial concerns following the reversal of *Roe v. Wade* highlight the necessity for ongoing surveillance of racial and ethnic disparities in abortion access post-*Dobbs*. Examining public perceptions regarding legislative changes to health rights may be beneficial in future analysis of policy-related disparities.

The articles in this Research Topic of *Frontiers in Public Health* reveal actual short-term and potential long-term global health inequities to sexual, reproductive, and maternal health produced by the *Dobbs* decision and similar legislation. Exceedingly, authors note compromises to reproductive justice and human rights that suggest calls for advocacy and policies to counter anti-abortion legislation. Devoting a Research Topic to this topic brings vital and robust discourse about reproductive justice and health inequity to the forefront of public health.

Author contributions

DB: Data curation, Methodology, Writing – original draft, Writing – review & editing. NA-O: Writing – review & editing. AS: Writing – review & editing. LI: Conceptualization, Formal analysis, Investigation, Project administration, Supervision, Writing – original draft, Writing – review & editing.

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References

1. *Dobbs v. Jackson Women's health organization*, 597 U.S. Washington, DC: United States Reports (2022).

2. Bearak J, Popinchalk A, Ganatra B, Moller AB, Tunçalp Ö, Beavin C, et al. Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. *Lancet Glob Health.* (2020) 8:e1152–61. doi: 10.1016/S2214-109X(20)30315-6

3. The Lancet. Why *Roe v. Wade* must be defended. *Lancet.* (2022) 399:1845. doi: 10.1016/S0140-6736(22)00870-4

4. Stevenson AJ. The pregnancy-related mortality impact of a total abortion ban in the United States: a research note on increased deaths due to remaining pregnant. *Demography.* (2021) 58:2019–28. doi: 10.1215/00703370-9585908

5. Kheyfets A, Miller B, Amutah-Onukagha N. Implications for racial inequities in maternal health if *Roe v. Wade* is lost. *Lancet.* (2022) 400:9–11. doi: 10.1016/S0140-6736(22)01024-8

6. Howell EA. Reducing disparities in severe maternal morbidity and mortality. *Clin Obstet Gynecol.* (2018) 61:387–99. doi: 10.1097/GRF.0000000000000349

7. Ingram LA, Fletcher FE, Byrd TF, Kadiri A. Sexual and reproductive health among African Americans in the Southern United States. In: Coughlin SS, Williams LB, Akintobi TH, editors. *Black Health in the South*. Baltimore, MD: Johns Hopkins University Press (2023). p. 344–70.

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Texas Senate Bill 8 significantly reduced travel to abortion clinics in Texas

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The *Dobbs v. Jackson* decision by the United States Supreme Court has rescinded the constitutional guarantee of abortion across the United States. As a result, at least 13 states have banned abortion access with unknown effects. Using "Texas" SB8 law that similarly restricted abortions in Texas, we provide insight into how individuals respond to these restrictions using aggregated and anonymized human mobility data. We find that "Texas" SB 8 law reduced mobility near abortion clinics in Texas by people who live in Texas and those who live outside the state. We also find that mobility from Texas to abortion clinics in other states increased, with notable increases in Missouri and Arkansas, two states that subsequently enacted post-Dobbs bans. These results highlight the importance of out-of-state abortion services for women living in highly restrictive states.

KEYWORDS

abortion, health policy, public policy, digital health, mobility

1. Introduction

On June 24th, 2022, in the *Dobbs v. Jackson* decision, the United States Supreme Court overturned *Roe v. Wade* and *Planned Parenthood v. Casey*, rescinding the right to abortion (1). Immediately thereafter, trigger laws in 13 states prohibited or severely restricted access to abortion (**Figure 1**), with elected officials in those and other states considering further restrictions. Although it is too early to see the full effect of the *Dobbs* decision, we can anticipate what is to come by studying an earlier law. In late 2021 the Court allowed Texas' Senate Bill 8 (SB8) to go into effect, prohibiting abortions in the state after 6 weeks of gestational age. Others have shown (2) that SB8 led to an increase in requests for self-managed medication abortions (3) and travel to abortion providers in four states contiguous to Texas (4). This paper is the first to quantify the impact of SB8 beyond Texas's nearest neighbors. It is also the first to use mobility data to assess the points of origin of patients—both within and outside of Texas.

Abortion access in the U.S. has been a longstanding controversial and divisive issue. In 1973, the U.S. Supreme Court legalized abortion nationwide in the landmark case Roe v. Wade (5). This case established the right to an abortion during the first trimester as protected under a constitutional right to privacy. However, this decision came with criticism, which ultimately reflected in further decisions from the Supreme Court, such as the 1992 decision in the case Planned Parenthood of Southeastern Pa. v. Casey (6). In this case, the Court upheld the legality of abortion

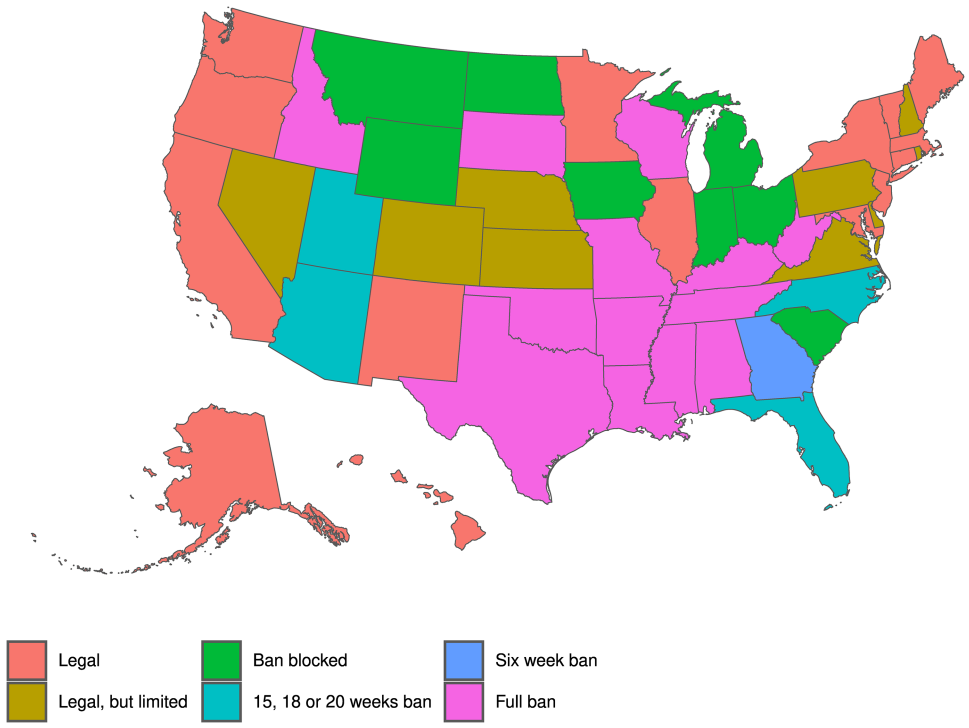

FIGURE 1
Abortion policies by state, following Dobbs v. Whole Women's Health.

throughout the U.S. but changed regulatory standards. Under *Casey*, states could not prohibit women from obtaining an abortion before viability. Still, states did have the right to restrict abortion, as long as a restriction did not represent an undue burden on women seeking abortions. After *Casey*, policies restricting abortion access became more common, particularly in those states where opposition to abortion had been historically strong.

Texas is one of these states. Different abortion restrictions have been implemented across time and, therefore, even before Texas SB8, women faced high barriers to accessing reproductive healthcare. Among the most recent policies implemented in this state are a 2000 parental involvement law, a 2003 two-trip mandatory waiting period, and 1998 and 2009 targeted regulations of abortion providers (TRAP laws). However, its most controversial policy was a 2013 TRAP law, Texas HB2, which required abortion providers to obtain admitting privileges at a hospital located within 30 miles of the abortion facility, among other provisions. As a result, more than half of the abortion facilities closed because the providers could not obtain admitting privileges in nearby hospitals. Then, the distance to the nearest abortion increased for women living in some countries, causing a decrease in abortion rates and increases in birth rates (7–10). In June 2016, the Supreme Court struck down the admitting privileges and distance regulations included in the bill, issuing a majority opinion that the state had failed to demonstrate they served a legitimate interest in regulating women's health and that they imposed an undue burden to access abortion (11). However, even though the policy was struck down, as of June 2018, only three clinics that closed because of Texas HB2 reopened (8).

Although Texas' abortion landscape has historically been more restrictive than other states, its case study has informed us of the potential impacts that abortion policies in other states could have. For example, Fischer et al. (7) estimated a 1.3 percent increase in births in counties that did not have a provider within 50 miles after H2B implementation. Jones and Pineda-Torres (12) explore the impacts on teenage fertility of targeted regulations of abortion providers (TRAP laws) implemented across the US. H2B is one of the studied policies. Their findings indicate TRAP law implementation increases teen births by 3 percent in TRAP states v. non-TRAP states. Although these studies explore changes in abortion access at different geographic levels, HB2 impacts on fertility are consistent with the impacts of overall TRAP laws.

Besides studies focusing on Texas, an extensive body of work has documented the impacts of abortion policies on abortion access, use, and fertility. For example, in the case of the U.S., different studies have explored changes in these outcomes induced by legalization of abortion in the 1970s (13–18). Furthermore, an array of studies has analyzed the health impacts of abortion access induced by state-level policies such as parental involvement laws [the most recent evidence has been provided by Joyce et al. (19) and Myers and Ladd (20)], and mandatory waiting periods for abortion (21–24). Other studied policies

include restrictions on the use of Medicaid for abortion,[1] gestational limits (25, 26), and compulsory ultrasound requirements (27).

Outside of the U.S., different studies have documented the health and economic impacts of abortion policies in Norway (28), Romania (29, 30), Eastern European countries (31), Spain (32), Mexico (33, 34), and Israel (35). Overall, studies on the U.S. and other countries reach similar conclusions on the causal impacts of abortion policy on abortion access, abortion use, fertility, and economic outcomes.

2. Methods

2.1. Data

We collected location data on 813 abortion clinics from the restricted version of the Myers Abortion Facility Dataset (36), which included the latitude and longitude of each clinic and information on the services provided by each clinic. We matched these data with weekly mobility data from SafeGraph for locations within 250 meters of an abortion clinic (using the Haversine formula). The SafeGraph data we use do not include personally identifiable information and do not report data on any individual device. To protect the privacy of the individuals in the data, SafeGraph employs differential privacy methods, similar to those used by the Census Bureau, that add noise to the underlying data (37–39). No ethical review was required by the University of North Carolina at Greensboro Institutional Review Board. We discuss other ethical considerations further below.

Our SafeGraph data come from millions of consenting smartphone users using location-enabled apps. These data provide information on the number of unique devices (visitors) that visit each location in the panel on a weekly basis and the total number of visits to each location, which counts returning visitors. Our data do not include individual-level information, nor can it be used to identify individuals. In addition, SafeGraph assigns each device a home location, at the Census Block Group (CBG) level, based on the common nighttime location from the previous 6 weeks (40). SafeGraph reports the number of weekly visitors to each location from home CBGs with more than two visitors traveling to a given location from that CBG. The exact number of users contributing to the SafeGraph panel varies over time therefore, we scale the data to represent the movement of the population in each state by multiplying the counts of visitors to a location by the ratio of state population to the average number of devices observed in the SafeGraph panel in each state and week. We checked for differential changes in the number of devices in the SafeGraph sample over time (**Figure 2**) and found no evidence of a reduction in devices in the sample in Texas, relative to other states, following the implementation of SB8.

From our initial list of approximately 90,000 locations, we excluded over 70,000 locations with a North American Industry Classification System (NAICS) code starting with "62", which indicates that the location was a healthcare-related location. We imposed this condition to protect participants in the SafeGraph panel from potential legal liability under Texas' SB8 law (see "Ethical considerations" below). As a result, our final sample includes weekly mobility data from SafeGraph for 20,334 non-healthcare locations (e.g., restaurants, banks, etc.) within 250 meters of 814 abortion providers in the United States from January 2021 to December 2021 (we omit the week of February 15th, 2021 due to the Texas ice storm). **Table 1** reports the number of points of interest by industry in our sample. The majority of locations in our sample come from two sectors–Retail Trade and Accommodation and Food Services–which include retail outlets like Target and Walmart, coffee shops like Starbucks and Peets Coffee, and restaurants including McDonald's, Red Robin, and Applebee's. For our analysis, we aggregated our data to the nearest clinic level so that our final dataset is a panel dataset of mobility in proximity to abortion clinics over time.

We developed a novel approach to study visitors' origin points and destinations to abortion clinics in the Myers Abortion Facility dataset. Not only does the approach allow us to understand any decline in the number of devices (and thus individuals) at abortion clinics due to SB8, but also the alternative destinations selected by those device users. In short, we know where would-be abortion clinic visitors go when they can no longer visit a clinic in Texas. To our knowledge, no other study to date has taken this approach.

2.2. Ethical considerations

The use of data derived from health information technologies (HIT) to study abortion access has been of great concern to regulators, policymakers, and the public (41–43). These concerns became particularly acute following press reports about data sharing by period tracking apps (44) and the use of Facebook messages in a recent abortion prosecution (45). These concerns led some geolocation data providers to restrict data collection around sensitive locations (43, 46).

We adopted a research design that reduces potential risks to women seeking access to abortion. First, using cellphone-based measurements, rather than clinic-level data, protects women seeking abortions because we do not know the reason for a visit to a clinic—women may be near an abortion clinic to visit a nearby Starbucks or visiting the clinic itself for other healthcare services. A cellphone-based approach also reduces the administrative burden on clinics and allows us to collect data on a broader range of locations than would be feasible, collecting data from each clinic individually, thus providing a landscape of changes in mobility.

[1]See section 2.1 in Jones and Pineda-Torres (12) for a detailed list on the studies of these policies.

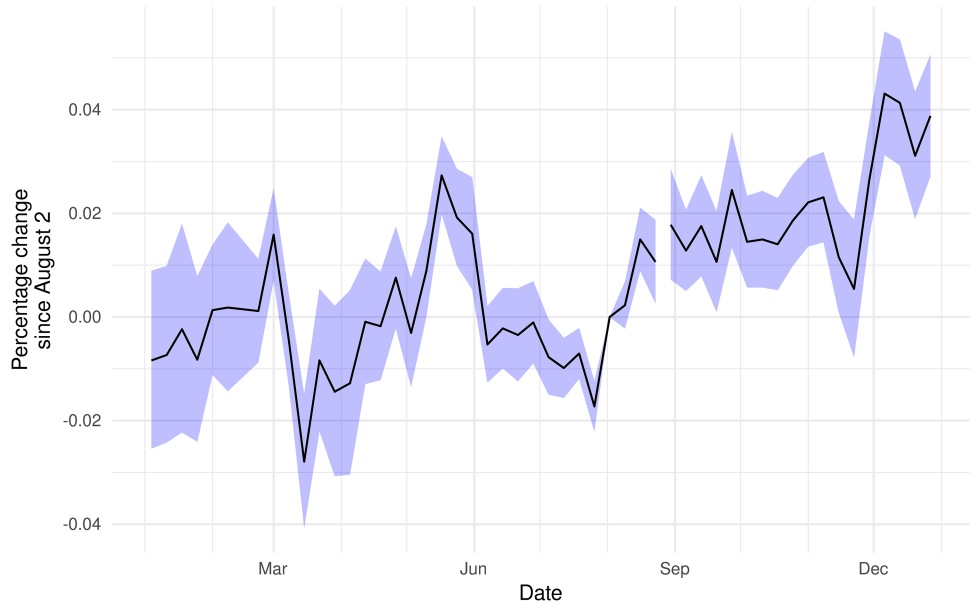

FIGURE 2
Device counts did not appreciably change following Texas' SB8. Coefficients are the interaction of an indicator for Texas and date from a two-way fixed effects Poisson regression of total devices seen in each state on date and state fixed effects. Standard errors clustered at the state level.

Second, we use locations near abortion providers as a proxy for mobility to abortion clinics because SafeGraph no longer provides mobility data to family planning centers (which include abortion clinics). We exclude healthcare-related locations in case there is misclassification of some abortion providers. Our assumption is that changes in the number of devices visiting locations near an abortion clinic will be proportional to changes in the number of devices visiting a clinic (47), which is plausible since some of the nearby locations include coffee shops and other locations where people may loiter before or after visiting a clinic. Because we cannot deduplicate the count of visitors near an abortion clinic, we cannot directly convert our mobility estimates into anticipated changes in abortions as a result of Texas' SB8 law.[2]

Our approach, which allows us to understand the potential mobility patterns surrounding the adoption of SB8, also prohibits us from identifying individuals and exact clinic visit patterns. However, it is precise enough to estimate the effect of SB8 without being so precise as to be useful for law enforcement or those who would seek to use the data to target oft-traveled clinics for anti-abortion protests.

We view geolocation data as a new and valuable data point for health services and public health research. These data have been frequently relied on by the medical and health policy communities during the COVID-19 pandemic, demonstrating their utility for medical researchers (49, 50). These data also have potential future applications in assessing access to care using observed, rather than hypothesized, movement patterns.

TABLE 1 Industry distribution of the safe graph sample.

Industry sector	# POIs	%
Utilities	2	<0.01
Construction	245	1.06
Manufacturing	581	2.51
Wholesale Trade	167	0.72
Retail Trade	6,101	26.30
Transportation and Warehousing	283	1.22
Information	397	1.71
Finance and Insurance	1,456	6.28
Real Estate and Rental and Leasing	783	3.38
Professional, Scientific, and Technical Services	601	2.59
Management of Companies and Enterprises	50	0.22
Administrative and Support and Waste Management and Remediation Services	95	0.41
Educational Services	774	3.34
Health Care and Social Assistance	0	0.00
Arts, Entertainment, and Recreation	1,257	5.42
Accommodation and Food Services	6,236	26.90
Other Services (except Public Administration)	3,597	15.50
Public Administration	351	1.51

POIs is the unduplicated number of points of interest in our sample.

2.3. Descriptive statistics on abortion in the United States

The abortion rate in the U.S., i.e., abortions per 1,000 15–44-year-old women, has sustained a decreasing trend since the 1990s. The average abortion rate between 2000 and 2019 was 12

[2]See Andersen et al. (48) for a paper that converted mobility changes into abortion counts.

abortions per 1,000 women of reproductive age.[3] The lowest abortion rate was observed in 2019, with 9.8 abortions per 1,000 women of reproductive age. Abortion rates in Texas were consistently higher than the national rates up to 2013. However, starting in 2014, abortion rates in Texas have been below the national rates. For instance, between 2000 and 2013, the average abortion rate in Texas was 14.9 compared to a national average rate of 12.9 abortions per 1,000 15–44-year-old women. However, from 2014 to 2019, the average abortion rate was 9, compared to a national average rate of 9.9 abortions per 1000 15–19-year-old women. This decrease in abortion rates in Texas since 2013 is likely associated with the abortion policies implemented in Texas in the last decade, particularly Texas H2B, as described in section 1.

2.4. Empirical methods

We assessed the effect of SB8 on visits near abortion clinics in a difference-in-differences framework (23), which identifies the causal effect of SB8 based on differences in changes in movement patterns to clinics in Texas, compared to other states, while controlling for aggregate time effects. Our implementation uses differences between clinics in Texas and other states before and after August 30th, 2021 (the beginning of the week containing September 1st, 2021, when SB8 took effect). Our identifying assumption is that in the absence of SB8, movement patterns near abortion clinics would be the same in Texas and other states. While this assumption is not directly testable, we can test for differences over time before the implementation of SB8.

Our difference-in-differences regression specification is:

$$E[Y_{it}|Post_t, TX_i, \delta_i, \gamma_t] = \exp(\beta_1 Post_t \times TX_i + \delta_i + \gamma_t)$$

Where Y_{it} is the number of visitors or visits to location i in week t, $Post_t$ is a dummy for the post-period, TX_i indicates if location i is in Texas, δ_i is a set of unit fixed effects (which control for time-invariant differences across units), γ_t is a set of week fixed effects (which control for time-varying differences across units). The coefficient of interest, β_1, identifies the proportional change in visits to abortion clinics in Texas, relative to other states, after SB8, compared to trends before SB8 took effect.

The difference-in-differences model identifies the causal effect of treatment on the treated under a parallel trends assumption—essentially, trends in "control" units are parallel to trends in "treated" units in the counterfactual scenario when treated units are not actually treated. While we cannot directly test this assumption, we can look at "event studies" that plot the evolution of an outcome variable in treated and control units over time. If the pre-trends are parallel, then it is more likely that the post-treatment trends in the counterfactual scenario are also parallel. For our event studies, we used the same specification as above, but replace $Post_t$ with γ_t, and β_1 becomes a vector of differences in outcomes for treated versus control units. We normalize the week of August 3rd, 2021, to be zero so that the unit fixed effects are identified. We rely on a Poisson estimation which assumes a discrete probability distribution of the probability of an event occurring during a fixed time interval, such as the number of visits/visitors to a location in a week. We clustered the standard errors at the state level.

To examine the extent to which people traveled to other states following the SB8 decision, we also estimate models of the form:

$$E[Y_{ijt}|Post_t, TX_i, \delta_i, \gamma_t] = \exp(\beta_1 Post_t \times TX_i \times TX_j + \beta_2 Post_t \times (1 - TX_i) \times TX_j) + \beta_3 Post_t \times TX_i \times (1 - TX_j) + \delta_{ij} + \gamma_t$$

Where Y_{ijt} is the number of visitors from home j to location i in week t, $Post_t$ is a dummy for the post period, TX_j is an indicator that the home location was in Texas, δ_i is a set of unit fixed effects, and γ_t is a set of week fixed effects. The coefficients β_1, β_2, and β_3 correspond to the change in visitors to Texas locations from Texas devices, non-Texas locations from Texas devices, and Texas locations from non-Texas devices. Visitors to non-Texas locations from non-Texas devices are the excluded reference group. As in the previous specification, we rely on a Poisson estimation and use two-way clustering at the source and destination state levels to compute our standard errors. These methods assume that in the absence of Texas' SB8, the trend in the number of visits/visitors to a location would have been the same in locations in Texas as what is observed in locations in other states.

Our final analysis, which provides insight into the impact of the *Dobbs* decision on women in Texas, generalizes the previous model by estimating changes in mobility near abortion clinics in each state for Texas versus non-Texas residents. This method of analysis, to our knowledge, is the first of its kind to assess both the point of origin and potential destinations of those seeking abortion care across state lines.

3. Results

Figure 3 plots the relative change in the average number of visits (top) and visitors (bottom) near abortion clinics, by week, in Texas versus all other states. For both outcomes, there was a visually apparent decline beginning in early August of 2021 that was sustained throughout the Fall of 2021. The additional dip in early December corresponds to the Supreme Court oral arguments in *Dobbs v. Whole Women's Health,* the case that led to the overturning of both *Roe v. Wade* and *Planned Parenthood v. Casey*. While there are occasional statistically significant

[3]Own calculations using abortion counts on abortion occurrences from the CDC Abortion Surveillance System (51) and population data from SEER program.

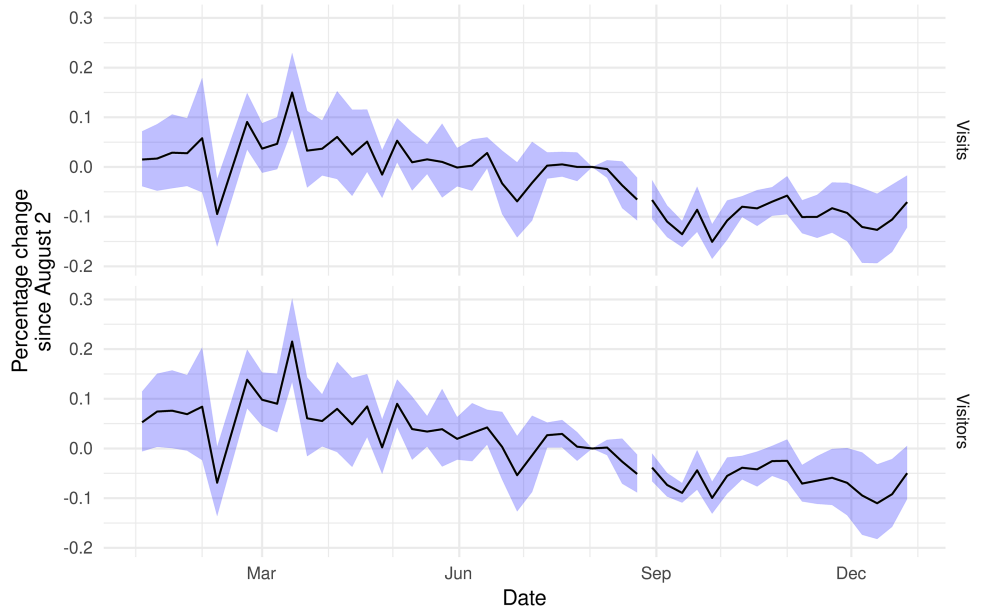

FIGURE 3
Visits (total devices) and visitors (unique devices) to areas near abortion clinics in Texas, relative to clinics in other states and to August 2nd, 2021. Coefficient estimates for the interaction of date with an indicator for Texas from two-way fixed effects Poisson regression, including clinic and date controls. Standard errors are clustered at state level.

differences from zero in the pre-period, these events are concentrated in February and March of 2021.

Table 2 presents difference-in-differences estimates of the effect of Texas' SB 8 law on visits near abortion clinics. The first two columns demonstrate that SB8 led to a 10–11 percent reduction in mobility near abortion clinics. The final column demonstrates that there was a substantial reduction in visitors near abortion clinics in Texas for devices typically used in Texas (9.1 percent, 95% CI: 3.4–14.7, $p = 0.003$) and outside of Texas (10.8 percent, 95% CI: 5.7–15.8, $p < 0.001$). At the same time, Texas residents significantly increased visits near abortion clinics outside of Texas (6.9 percent, 95% CI: 3.0–10.9, $p < 0.001$). Figure 4 builds on the third column's result and demonstrates substantial increases in mobility to several states, notably Missouri, but also several Northeastern states, Oklahoma, and South Carolina. Among these states, Missouri and Oklahoma had post-*Roe* trigger ban laws and, as of September 2021, have banned or substantially reduced access to abortion in those states. Our novel mobility-data-focused method, therefore, shows that destinations that may have provided abortions to Texans in the wake of SB8 are no longer options after the *Dobbs* ruling and resulting trigger laws.

TABLE 2 Difference-in-differences estimates.

	(1)	(2)	(3)
	Visits	Visitors	Visitors by origin
Visits to Texas clinics	−0.108 (0.028)	−0.099 (0.030)	
Texas residents visiting Texas clinics			−0.091 (0.029)
Texas residents visiting clinics outside Texas			0.069 (0.020)
Non-Texas residents visiting Texas clinics			−0.108 (0.026)
# of observations	41,463	41,463	51,229,459
# of clinics	813	813	813
# of home locations (census block groups)	–	–	189,111

All coefficients are interacted with an indicator for after Texas SB8 took effect. Models for columns (1) and (2) included clinic and week fixed effects. The model in column (3) included origin census block group by clinic and week fixed effects. Standard errors clustered at the state (columns 1 and 2) or origin and destination state (column 3) level in parentheses.

4. Discussion

Following the *Dobbs* decision, abortion bans are becoming more common. Therefore, it is important to understand the consequences of restrictions on abortion access, with special attention paid to the availability of alternative means for women to access abortion services through out-of-state travel. This study—to our knowledge, the first of its kind to assess potential cross-state clinic visit effects with mobility data—demonstrates a significant reduction in visits to areas around abortion clinics in Texas following the implementation of SB8. However, the reduction in access to care within the state was partially offset by increases in mobility to clinics outside of Texas. Notably, we observed increases in mobility to states such as Missouri, South Carolina, and New York, which do not border Texas and have not been included in previous studies of changes in abortion visit patterns due to SB8 (4). As these results reveal, women living in

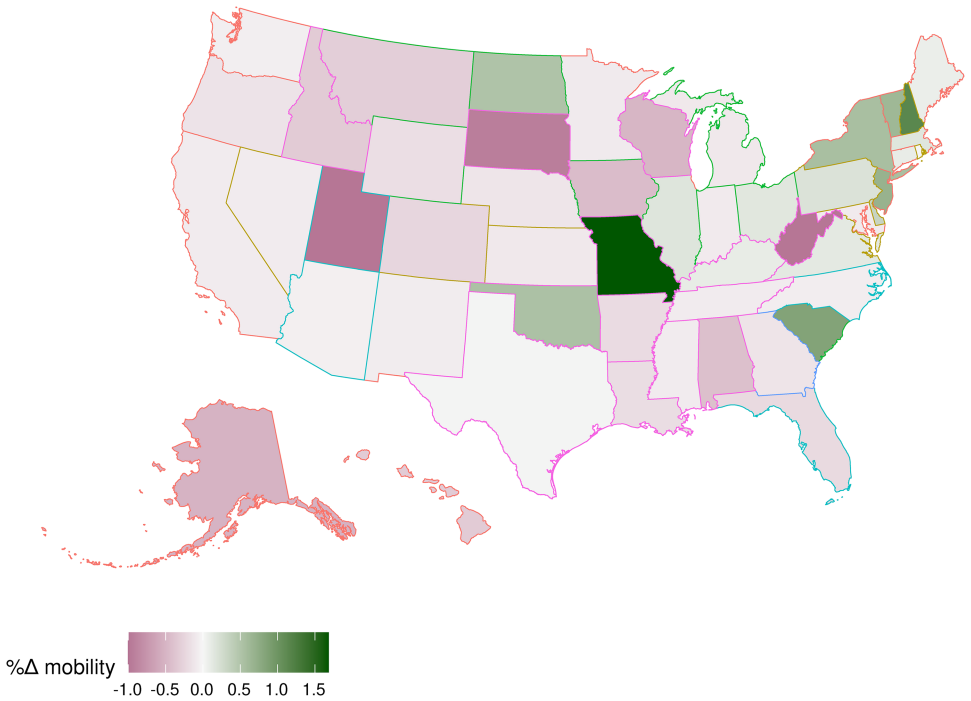

FIGURE 4
Percentage change in mobility near abortion clinics by state for Texas devices relative to non-Texas devices (outline colors correspond to Figure 1). Each state is shaded according to the predicted percentage change in mobility from Texas to the state following SB8's implementation. Estimates are from destination-state specific two-way fixed effects Poisson regressions of visitors on a dummy for a Texas origin interacted with Post SB8, including (destination) clinic-by-origin Census block group and date fixed effects.

restrictive states have historically relied on out-of-state abortions abortion services. However, at least two of those destinations–Missouri and Oklahoma–are no longer an option due to post-*Dobbs* trigger laws, while the situation in Kansas has temporarily stabilized with the defeat of a constitutional amendment that would repeal abortion protections in the state (52). Therefore, as more states implement abortion bans, the abortion landscape will continue turning more restrictive, limiting out-of-state options for residents of such states.

Our paper is also one of the first to demonstrate the utility of geolocation data for monitoring access to healthcare services. Measuring access to ambulatory healthcare services is challenging since people have various insurance arrangements—including no insurance at all—and states do not engage in centralized data collection for ambulatory services. Geolocation data provides from a diverse set of devices and can measure movement both to ambulatory service providers, subject to privacy concerns, and close to those providers. For this reason, geolocation data should be considered in all future studies of access to healthcare. However, these efforts must be tempered by an appreciation of privacy concerns. In our implementation, for example, we do not directly measure access to abortion care but rather infer it based on how movement patterns in the vicinity of an abortion clinic changed following SB8. This approach may be useful in future research on access to abortion in both the United States and other countries.

Our analytic strategy has some limitations since we cannot, by design, identify individuals visiting abortion clinics, and our definition of near encompasses people who may be visiting a clinic, protesting at the clinic, and visiting other locations. First, our estimates of mobility near clinics may be biased if SB8 resulted in a reduction in abortion protestors near clinics in Texas or led to an increase in abortion protestors from Texas traveling to clinics in other states. Second, our results do not imply that there will be a commensurate reduction in abortions in Texas since we do not demonstrate that our mobility data are correlated with abortions by state. Third, because of privacy protections, our measure of out-of-state movement is likely to be understated because SafeGraph does not report links with two or fewer devices after differential privacy has been applied. Fourth, women seeking abortions, particularly in the aftermath of SB8, may have disabled location services, leading us to underestimate movement to clinics outside of Texas following SB8.

Data availability statement

The data analyzed in this study is subject to the following licenses/restrictions: The datasets are available with a subscription to Dewey Data. Requests to access these datasets should be directed to www.deweydata.io.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

MA, CM, and DS contributed to conception and design of the study. MA collected the data, performed the statistical analysis, and wrote the first draft of the manuscript. MA, CM, MP, and DS wrote sections of the manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

DS reports serving as a paid expert witness in litigation concerning abortion regulations. The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. Dobbs v. Jackson Women's Health Organization. 597 U.S. Justia law (2022). Available at: https://supreme.justia.com/cases/federal/us/597/19-1392/.

2. Cohen IG, Adashi EY, Gostin LO. The supreme court, the Texas abortion law (SB8), and the beginning of the end of roe v Wade? *J Am Med Assoc*. (2021) 326 (15):1473–4. doi: 10.1001/jama.2021.17639

3. Aiken ARA, Starling JE, Scott JG, Gomperts R. Association of Texas senate bill 8 with requests for self-managed medication abortion. *JAMA Network Open*. (2022) 5 (2):e221122. doi: 10.1001/jamanetworkopen.2022.1122

4. White K, Dane'el A, Vizcarra E, Dixon L, Lerma K, Beasley A, et al. Out-of-state travel for abortion following implementation of Texas senate bill 8. 8 (2022).

5. Roe v. Wade. 410 U.S. 113 (1973). Available at: https://supreme.justia.com/cases/federal/us/410/113/.

6. Planned Parenthood of Southeastern Pa. v. Casey. 505 U.S. 833. Justia law (1992). Available at: https://supreme.justia.com/cases/federal/us/505/833/.

7. Fischer S, Royer H, White C. The impacts of reduced access to abortion and family planning services on abortions, births, and contraceptive purchases. *J Public Econ*. (2018) 167:43–68. doi: 10.1016/j.jpubeco.2018.08.009

8. Lindo J, Myers C, Schlosser A, Cunningham S. How far is too far? New evidence on abortion clinic closures, access, and abortions. *J Hum Resour*. (2019) 55(4):1217. doi: 10.3368/jhr.55.4.1217-9254R3

9. Lu Y, Slusky DJG. The impact of women's health clinic closures on fertility. *Am J Health Econ*. (2018) 5(3):1–27. doi: 10/gdz4pw

10. Quast T, Gonzalez F, Ziemba R. Abortion facility closings and abortion rates in Texas. *Inquiry*. (2017) 54:0046958017700944. doi: 10.1177/0046958017700944

11. Whole Woman's Health v. Hellerstedt. 579 U.S. Justia law (2016). Available at: https://supreme.justia.com/cases/federal/us/579/15-274/.

12. Jones K, Pineda-Torres M. Trap'd teens: impacts of abortion provider regulations on fertility & education (SSRN Scholarly Paper No. 4114390) (2022).

13. Abboud A. The impact of early fertility shocks on women's fertility and labor market outcomes (SSRN scholarly paper no. 3512913) (2019).

14. Angrist JD, Evans WN. Schooling and labor market consequences of the 1970 state abortion reforms. In: *Research in labor economics, Vol. 18*. Bingley: Emerald Group Publishing Limited (2000). p. 75–113.

15. Bauman KE, Anderson AE, Freeman JL, Koch GG. Legal abortions, subsidized family planning services, and the U.S. "birth dearth". *Soc Biol*. (1977) 24(3):183–91. doi: 10.1080/19485565.1977.9988281

16. Joyce TJ, Mocan NH. The impact of legalized abortion on adolescent childbearing in New York city. *Am J Public Health*. (1990) 80(3):273–8. doi: 10.2105/ajph.80.3.273

17. Kalist DE. Abortion and female labor force participation: evidence prior to roe v. Wade. *J Labor Res*. (2004) 25(3):503–14. doi: 10.1007/s12122-004-1028-3

18. Levine PB, Staiger D, Kane TJ, Zimmerman DJ. Roe v Wade and American fertility. *Am J Public Health*. (1999) 89(2):199–203. doi: 10.2105/ajph.89.2.199

19. Joyce TJ, Kaestner R, Ward J. The impact of parental involvement laws on the abortion rate of minors. *Demography*. (2020) 57(1):323–46. doi: 10.1007/s13524-019-00853-8

20. Myers C, Ladd D. Did parental involvement laws grow teeth? The effects of state restrictions on minors' access to abortion. *J Health Econ*. (2020) 71:102302. doi: 10.1016/j.jhealeco.2020.102302

21. Bitler M, Zavodny M. The effect of abortion restrictions on the timing of abortions. *J Health Econ*. (2001) 20(6):1011–32. doi: 10.1016/S0167-6296(01)00106-0

22. Joyce T, Henshaw SK, Skatrud JD. The impact of Mississippi's mandatory delay law on abortions and births. *J Am Med Assoc*. (1997) 278(8):653–8. doi: 10.1001/jama.1997.03550080063040

23. Lindo J, Pineda-Torres M. New evidence on the effects of mandatory waiting periods for abortion. *J Health Econ*. (2021) 80:102533. doi: 10.1016/j.jhealeco.2021.102533

24. Myers CK. Cooling off or burdened? The effects of mandatory waiting periods on abortions and births (SSRN Scholarly Paper No. 3865459) (2021).

25. Foster DG, Biggs MA, Ralph L, Gerdts C, Roberts S, Glymour MM. Socioeconomic outcomes of women who receive and women who are denied wanted abortions in the United States. *Am J Public Health*. (2018) 108(3):407–13. doi: 10.2105/AJPH.2017.304247

26. Miller S, Wherry LR, Foster DG. The economic consequences of being denied an abortion. *Am Econ J Econ Policy*. (2023) 15(1):394–437. doi: 10.1257/pol.20210159

27. Gius M. Using the synthetic control method to determine the effect of ultrasound laws on state-level abortion rates. *Atl Econ J*. (2019) 47(2):205–15. doi: 10.1007/s11293-019-09619-4

28. Mølland E. Benefits from delay? The effect of abortion availability on young women and their children. *Labour Econ*. (2016) 43:6–28. doi: 10.1016/j.labeco.2016.06.011

29. Hjalmarsson R, Mitrut A, Pop-Eleches C. The impact of abortion on crime and crime-related behavior. *J Public Econ*. (2021) 200:104468. doi: 10.1016/j.jpubeco.2021.104468

30. Pop-Eleches C. The impact of an abortion ban on socioeconomic outcomes of children: evidence from Romania. *J Polit Econ*. (2006) 114(4):744–73. doi: 10.1086/506336

31. Levine PB, Staiger D. Abortion policy and fertility outcomes: the eastern European experience. *J Law Econ*. (2004) 47(1):223–43. doi: 10.1086/380475

32. González L, Jiménez-Martín S, Nollenberger N, Vall-Castello J. The effect of abortion legalization on fertility, marriage and long-term outcomes for women. Working papers, Article 1035 (2018). Available at: https://ideas.repec.org//p/bge/wpaper/1035.html.

33. Clarke D, Mühlrad H. Abortion laws and women's health. *J Health Econ*. (2021) 76:102413. doi: 10.1016/j.jhealeco.2020.102413

34. Marquez-Padilla F, Saavedra B. The unintended effects of the COVID-19 pandemic and stay-at-home orders on abortions. *J Popul Econ*. (2022) 35 (1):269–305. doi: 10.1007/s00148-021-00874-x

35. Brooks N, Zohar T. Out of labor and into the labor force? The role of abortion access, social stigma, and financial constraints. Working Papers, Article wp2021_2111 (2021). Available at: https://ideas.repec.org//p/cmf/wpaper/wp2021_2111.html.

36. Myers C. Myers abortion facility database (2021).

37. Abowd JM. *The U.S. Census bureau adopts differential privacy. Proceedings of the 24th ACM SIGKDD international conference on knowledge discovery & data mining* (2018). p. 2867.

38. Dwork C, Roth A. The algorithmic foundations of differential privacy. *Found Trends Theor Comput Sci*. (2014) 9(3–4):211–407. doi: 10.1561/0400000042

39. SafeGraph. SafeGraph letter to senator warren (2022). Available at: https://go.safegraph.com/rs/264-DBV-179/images/SafeGraph%20Response%20Letter.pdf.

40. Andersen M. Early evidence on social distancing in response to COVID-19 in the United States (SSRN scholarly paper ID 3569368). Social Science Research Network (2020).

41. Cox J. Location data firm provides heat maps of where abortion clinic visitors live. Vice (2022). Available at: https://www.vice.com/en/article/g5qaq3/location-data-firm-heat-maps-planned-parenthood-abortion-clinics-placer-ai.

42. Fung B. FTC sues data broker Kochava for selling location information that could unmask abortion-seekers | CNN Business. CNN (2022). Available at: https://www.cnn.com/2022/08/29/tech/ftc-kochava-abortion-suit/index.html.

43. Kaye K. SafeGraph is under fire for selling abortion data. Its CEO says more changes are coming. Protocol (2022). Available at: https://www.protocol.com/enterprise/safegraph-auren-hoffman-abortion-data.

44. Olsen E. Report: popular period tracking apps share data with third parties. MobiHealthNews (2022). Available at: https://www.mobihealthnews.com/news/report-popular-period-tracking-apps-share-data-third-parties.

45. Kaste M. Nebraska cops used Facebook messages to investigate an alleged illegal abortion. NPR (2022). Available at: https://www.npr.org/2022/08/12/1117092169/nebraska-cops-used-facebook-messages-to-investigate-an-alleged-illegal-abortion.

46. Bass D. Google to delete user data on trips to abortion clinics—Bloomberg. Bloomberg News (2022). Available at: https://www.bloomberg.com/news/articles/2022-07-01/google-will-delete-sensitive-location-data-from-user-tracking.

47. Cotti CD, Engelhardt B, Foster J, Nesson ET, Niekamp PS. The relationship between in-person voting, consolidated polling locations, and absentee voting on Covid-19: evidence from the wisconsin primary (Working Paper No. 27187; Working Paper Series). National Bureau of Economic Research (2020).

48. Andersen M, Bryan S, Slusky D. COVID-19 restrictions reduced abortion clinic visits, even in blue states (No. w28058). National Bureau of Economic Research (2020).

49. Gao S, Rao J, Kang Y, Liang Y, Kruse J, Dopfer D, et al. Association of mobile phone location data indications of travel and stay-at-home mandates with COVID-19 infection rates in the US. *JAMA Network Open*. (2020) 3(9):e2020485. doi: 10.1001/jamanetworkopen.2020.20485

50. McCrone JT, Hill V, Bajaj S, Pena RE, Lambert BC, Inward R, et al. Context-specific emergence and growth of the SARS-CoV-2 delta variant. *Nature*. (2022) 610(7930):154–60. doi: 10.1038/s41586-022-05200-3

51. Kortsmit K, Mandel MG, Reeves JA, Clark E, Pagano HP, Nguyen A, et al. Abortion surveillance—United States, 2019. *MMWR Surveill Summ*. (2021) 70 (9):1–29. doi: 10.15585/mmwr.ss7009a1

52. Lysen D, Ziegler L, Mesa B. Voters in Kansas decide to keep abortion legal in the state, rejecting an amendment. NPR (2022). Available at: https://www.npr.org/sections/2022-live-primary-election-race-results/2022/08/02/1115317596/kansas-voters-abortion-legal-reject-constitutional-amendment.

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Qualitative analysis of anti-abortion discourse used in arguments for a 6-week abortion ban in South Carolina

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Background: On June 24, 2022, The U.S. Supreme Court overturned Roe v. Wade, leaving abortion legislation entirely up to states. However, anti-abortion activists and legislators have organized for decades to prevent abortion access through restrictive state-level legislation. In 2019, South Carolina legislators proposed a bill criminalizing abortion after 6 weeks gestation, before most people know they are pregnant. The current study examines the anti-abortion rhetoric used in legislative hearings for this extreme abortion restriction in South Carolina. By examining the arguments used by anti-abortion proponents, we aim to expose their misalignment with public opinion on abortion and demonstrate that their main arguments are not supported by and often are counter to medical and scientific evidence.

Methods: We qualitatively analyzed anti-abortion discourse used during legislative hearings of SC House Bill 3020, The South Carolina Fetal Heartbeat Protection from Abortion Act. Data came from publicly available videos of legislative hearings between March and November 2019, during which members of the public and legislators testified for and against the abortion ban. After the videos were transcribed, we thematically analyzed the testimonies using *a priori* and emergent coding.

Results: Testifiers (Anti-abortion proponents) defended the ban using scientific disinformation and by citing advances in science to redefine "life." A central argument was that a fetal "heartbeat" (i.e., cardiac activity) detected at 6 weeks gestation indicates life. Anti-abortion proponents used this to support their argument that the 6-week ban would "save lives." Other core strategies compared anti-abortion advocacy to civil rights legislation, vilified supporters and providers of abortion, and framed people who get abortions as victims. Personhood language was used across strategies and was particularly prominent in pseudo-scientific arguments.

Discussion: Abortion restrictions are detrimental to the health and wellbeing of people with the potential to become pregnant and to those who are pregnant. Efforts to defeat abortion bans must be grounded in a critical and deep understanding of anti-abortion strategies and tactics. Our results reveal that anti-abortion discourse is extremely inaccurate and harmful. These findings can be useful in developing effective approaches to countering anti-abortion rhetoric.

KEYWORDS

anti-abortion, legislation, policy, abortion rhetoric, abortion laws, pro-life movement, discourse, attitudes toward abortion

1. Introduction

On June 24, 2022, in a 5–4 decision, the Supreme Court of the United States overturned the constitutional right to abortion through the Dobbs v. Jackson Women's Health Organization decision, overturning the 1973 Roe v. Wade decision and leaving states to decide on and enact their own abortion legislation. Since then, abortion access has become increasingly difficult and confusing within a fragmented and polarized abortion landscape. Many states in which Republicans control state legislatures have passed extreme abortion restrictions or complete bans (1, 2).

Overturning the right to abortion granted by the 1973 Roe v. Wade decision was the result of decades of organizing by fundamentalist conservatives in the United States, who worked strategically over time through state-by-state actions to pass restrictive legislation. The past decade has seen a sharp rise in state abortion restrictions, with a record 108 state restrictions on abortion enacted in 2021 alone (3). At the same time, efforts to reverse antiquated legislation, known as trigger laws, were unsuccessful or not pursued, thereby making abortion illegal when Roe v. Wade was overturned (3).

Since 2011, multiple state legislatures have proposed or enacted legislation that bans abortion after a fetal "heartbeat" is detected (4). These bills promote misinformation that life is indicated by the detection of a "heartbeat" (more accurately described as electrical activity of cells) (5), which can occur as early as 6 weeks gestation, before most people know they are pregnant (6). A surge of 6-week abortion bans began in 2019 (7), with five states successfully enacting 6-week bans in 2019 alone, including Georgia, Kentucky, Louisiana, Mississippi, and Ohio (8).

Only one other study has analyzed the anti-abortion rhetoric around a 6-week abortion ban. Evans and Narasimhan conducted a narrative analysis of the legislative testimony around the 2019 6-week ban in the state of Georgia (9). They report that anti-abortion advocates in Georgia promoted fetal personhood and legal protection of fetuses by using "heartbeat" as a proxy for life. They also framed this protection as a matter of states' rights. Furthermore, these anti-abortion advocates misrepresented scientific findings and appropriated progressive successes, such as civil rights legislation (9).

In the current study, we replicate the approach used by Evans and Narasimhan to examine the anti-abortion rhetoric used by anti-abortion proponents in South Carolina (SC) in 2019, who aimed to pass a 6-week abortion ban. The South Carolina Fetal Heartbeat Protection from Abortion Act, House Bill 3020 (H.3020) was introduced to the SC House on January 8, 2019 (10). It required "testing for a detectable fetal heartbeat before an abortion is performed on a pregnant woman and to prohibit the performance of an abortion when a fetal heartbeat is detected." Unlike the bill in Georgia, H.3020 did not pass in SC during the 2019 legislative session. However, a practically identical bill (S.1) was introduced to the SC state Senate during the 2021 legislative session, passed both the House and Senate, and was signed into law by Governor Henry McMaster on February 28, 2021. While it was initially struck down by a federal judge, this 6-week ban went into effect again soon after Roe v. Wade was overturned in June 2022. It was subsequently enjoined by the SC Supreme Court, which on January 5, 2023, ruled the 6-week ban was unconstitutional based on the right to privacy, which was added to the state Constitution in 1971 (11).

Roe v. Wade no longer exists to overrule state-level bans on abortion. In this historical moment, it is critical to deconstruct and understand the strategies and tactics that aim to restrict abortion access and to position these strategies within the context of a post-Roe world. Further, it is important to illuminate the consequences of restrictive abortion legislation, especially in terms of deepening abortion-related stigma and the detrimental impact on the health and lives of South Carolina residents, especially those marginalized by racism, poverty, and anti-LGBTQ and anti-immigrant sentiment and policies. By examining the arguments used by anti-abortion advocates, we aim to expose their misalignment with public opinion on abortion (12) and demonstrate that their main arguments are not supported by and often are counter to medical and scientific evidence.

2. Methods

2.1. Design and participants

We utilized publicly available videos of meetings of the SC House Judiciary Constitutional Law Subcommittee and the SC Senate Medical Affairs Subcommittee, during which members of the public provided testimony for H.3020. The meetings took place between March and September 2019, with video footage posted on the South Carolina legislature video archives website and the Women's Rights Empowerment Network Facebook page. We analyzed arguments from anti-abortion proponents, including 19 South Carolina legislative representatives as well as 22 community members who made anti-abortion arguments in support of the bill or demanding even stricter abortion legislation.

2.2. Procedure

Video files of the hearings were downloaded from the Women's Rights and Empowerment Network's Facebook page (https://www.facebook.com/WomensRightsandEmpowermentNetwork) and the South Carolina legislature video archives website (https://www.scstatehouse.gov/video/archives.php) and transcribed using Happy Scribe, a virtual transcription service. The transcripts were then fidelity checked by the research team and imported into NVivo, where they were thematically coded. Researcher-perceived demographic characteristics (e.g., gender, age, race) of the testifiers were noted when testifiers did not provide characteristics in their testimony. We also conducted a word count of terminology used in the testimonies to characterize fetuses.

We used a combination of *a priori* and emergent codes. The *a priori* codes were developed based on a codebook from a previous analysis of Georgia's "heartbeat" bill hearings, conducted by Evans

and Narasimhan (9). Authors 1 and 2 began by independently double-coding each transcript. After initial coding of each transcript, a coding comparison query was conducted to assess coder agreement for each code. Agreement ranged from 83%-100% across all transcripts.

We implemented a constant comparison approach, where we coded the data then paused to review the codebook, examples of individual codes, and overlap between the codes. All three authors met to discuss the codes after each initial coding of a transcript. We reviewed coding of themes for which there was lower reliability (i.e., 90% or lower) and clarified any questions about the codebook that arose while coding. We also discussed any new codes or other changes we thought should be made to the codebook. When changes were made to the codebook, each of the previously coded transcripts was recoded by one of the first two authors based on extensive discussion about the codes among all three researchers. Additionally, the research team regularly communicated with colleague researchers Evans and Narasimhan, who analyzed 6-week ban hearings in Georgia. Through this process, the codebook was frequently reevaluated and refined to best represent the South Carolina data.

We expanded the codebook used in the analysis of Georgia's 6-week ban to include new themes that arose in South Carolina. First, we added codes to characterize scientific misinformation, including codes identifying different types of evidence (e.g., anecdotal, statistics, quotes, health professional credentials) and codes around specific arguments used to promote misinformation (e.g., abortion is harmful, advances in science and technology). We also added codes that characterized moral arguments against abortion, including limiting government overreach, racism, abortion clinic profit, carry to term coercion, abortions for convenience or burden, equating abortion with murder, organized responses to abortion, and value of life. Finally, we expanded a single code for rape used in the Georgia codebook by adding more specific codes, such as arguments for and against exceptions for rape, abortion as evidence of rape, descriptions of rape victims, and responsibility of rape victims to report.

2.3. Study ethics

The Institutional Review Board at the University of South Carolina reviewed the study protocol and determined this study did not meet the criteria for human subjects research. Although quotes can be matched with video footage, throughout this article, we do not directly identify any individual who provided testimony except the primary legislative sponsor. Given that all testimony analyzed is part of the public record, our approach respects research ethics related to privacy and confidentiality.

3. Results

Researcher-perceived and self-identified characteristics of the anti-abortion proponents who gave testimony are summarized in Table 1. We analyzed testimonies from 41 individuals, including 19 SC legislators, four physicians or nurses, six anti-abortion advocates, six religious figures, two crisis pregnancy center employees, one student, and four people who did not provide their occupation in their testimony. Twenty of the anti-abortion proponents who testified identified as "Christian" as part of their testimony. While we were unable to obtain self-identified socio-demographic information about the community members who testified, we estimated most to be 30–54 years old ($n = 12$) or 55 or older ($n = 16$), white ($n = 34$), and male ($n = 28$).[1]

TABLE 1 Perceived characteristics of anti-abortion speakers at 2019 H.3020 hearings.

Variable		# of Participants ($N = 41$)
Age	18–29	3
	30–54	12
	55+	16
	Unsure	10
Gender	Male	28
	Female	13
Race	White	34
	Black	7
Occupation (self-identified)	Government Figure	19
	Physician or Nurse	4
	Anti-Abortion Advocate	6
	Religious Figure	6
	Crisis Pregnancy Center Employee	2
	Student	1
	Other	4
Religion (self-identified)	Christian	20
	Unknown	21

3.1. Argument frames

In our analysis, we found that arguments could be classified into two major argument frames: scientific disinformation and moral arguments, with some anti-abortion proponents using both frames to build their case for supporting H.3020.

3.2. Scientific disinformation

Throughout the testimonies, proponents of H.3020 framed arguments using claims based in scientific disinformation. These types of claims misrepresented scientific findings and used scientific and medical terms and explanations of pregnancy and abortion in inaccurate or misleading ways to justify the ban.

[1]These estimates are based both on video footage as well as familiarity the third co-author has with the anti-abortion proponents providing testimony, based on her decades-long participation in abortion access hearings in the SC legislature.

Both individuals with medical backgrounds and those without scientific training used scientific arguments to support the ban. Arguments that relied on scientific disinformation can be classified into four themes: (1) Arguments from biased medical professionals; (2) Arguments that misrepresented science; (3) Arguments that attempted to redefine life from a scientific perspective; and (4) Arguments using value or logic statements to connect scientific and moral arguments.

3.2.1. Medical professionals supporting the ban were biased and used coercion

Four supporters of H.3020 from the 2019 hearings were medical professionals. Each began their statements by describing their training and credentials in detail, with only one claiming to specialize in obstetrics. The other three mentioned that their training in obstetrics was outdated or not extensive, yet they felt they could serve as experts despite their "limited experience." One even stated, "I don't have the level of expertise and experience of my obstetrical colleagues," yet continued to share his testimony about refusing to refer pregnant people seeking abortions to abortion providers. All the medical professionals mentioned the Hippocratic Oath, referring to it as their "oath to protect the life of the born and the unborn," and their duty "to speak on behalf of the unborn."

The medical professionals with experience working in family medicine or obstetrics shared stories of coercing pregnant people to listen to and view their ultrasounds.[2] One stated:

> "We have a look at the ultrasound and have the mother see the heartbeat. Upon seeing the heartbeat, she realizes this is a child and it's her child … Most of the women who have an opportunity simply to see truth—that this is their child they're carrying—decide to continue with the pregnancy."

In a later testimony, this same physician stated that he would "never coerce," yet he described how he would offer free ultrasounds to pregnant people who had made it clear they wanted an abortion and then use that ultrasound as an opportunity to convince them to continue their pregnancies:

> "We'd put the ultrasound probe on and see this teeny little peanut of a fetus—or an embryo, really– and then hung around a little bit further and then see this teeny little fluttering, which comprised a kind of a rapid beat that you could see. And almost invariably– not all the time, but almost invariably– I would point that out and the lady would say, 'Is that my baby's heartbeat?' Almost invariably, that was a comment that was made. … And then after that, the vast majority of those women who would see that heartbeat would then decide to keep their pregnancies. Not all, but many of them did decide to keep them."

Medical professionals also used medical terminology in biased ways to bolster their claims. One described fetal development by saying:

> "At 6 1/2 weeks, the teeny little baby is about a little bit less than an inch long; has very incipient eyes, head, chest, a two chambered heart; has limb buds with teeny little buds that will eventually become fingers at the time of the average time for elective abortion."

Another physician stated, "We can discuss all day long here today whether the fluttering, the pulsation and cardinal vessels of a tiny embryo comprise a heartbeat or two chamber for chamber heart." Despite his medical expertise, he went on to say, "When a mother says that it is a heartbeat, that's a heartbeat."

Intertwining their anti-abortion opinions with their medical "expertise" and "experience," the medical professionals who testified in support of the 6-week ban made grandiose claims about how wrong they believe abortion to be. One stated, "Any medical procedure that interrupts or terminates that developing human life for whatever reason constitutes the taking of a human life." Another said:

> "There is no circumstance, no matter how desperate or difficult, that justifies the killing of innocent unborn children with beating hearts. And trust me, as a family doctor, I have dealt with all of these desperate and difficult circumstances that surround the conception of unborn children."

Another obstetrician and medical director at a crisis pregnancy center stated, "I have lots of patients and I don't tell them, 'I'm a Christian, I don't believe in abortion, you can't have an abortion' … I talk to them about their options."

3.2.2. Anti-abortion proponents misrepresented science

Many anti-abortion proponents relied heavily on data, statistics, or numbers to bolster their claims. However, they rarely referred to actual sources and often misrepresented the statistics they cited. Representative John McCravy, the primary legislative sponsor of H.3020 stated, "If that heartbeat's detected, there's a 90 percent chance of that baby's survival" and "we know from medical science that that's about 90 to 95 percent now." Fetal cardiac activity – what supporters of this bill call a "heartbeat" – can be detected as early as 6 weeks gestation, which is long before the possibility of a viable birth. While viability is a complex medical concept determined by more than gestational age, leading experts in the field of fetal and maternal medicine do not consider births before 20 weeks gestation to be near the threshold of viability (i.e., periviable) (13). Furthermore, the American College of Obstetricians and Gynecologists reports that 95% of births before 23 weeks gestation result in fetal death (14).

[2]A SC law passed in 2016 (S.C. CODE ANN. § 44-41-330(A)(1)(a)) requires people seeking abortions who have an ultrasound be given the opportunity to see their ultrasound image. However, it does not mandate that people seeking abortions have an ultrasound or view the ultrasound image if they do have one.

TABLE 2 Scientific and medical disinformation.

Examples of false claims[a]	Evidence refuting these claims
Describing fetal cardiac activity as a "heartbeat"	Cardiac activity occurs long before the heart is developed (25).
Fetal cardiac activity ensures viability and "survivability" (confounding viability with risk of miscarriage)	While viability is determined by more than gestational age, experts in the field of fetal and maternal medicine commonly consider the point of viability to occur between 23–24 weeks gestation (14, 26). Futhermore, periviable births, those near the limit of viability, are those that occur from 20 0/7 weeks to 25 6/7 weeks of gestation (26).
Abortions are harmful/more dangerous than giving birth	Legal abortions are extremely safe (18–20, 23). Risk of mortality from giving birth is 14× greater than for abortion (27).
Abortions prevent later pregnancies	Abortions have no effect on fertility (23). They also appear to enable people to have later intended pregnancies. In a study following people 5 years after seeking an abortion, people who were able to get an abortion had higher overall pregnancy rates and higher intended pregnancy rates compared to people denied an abortion (17).

[a]Sources of these claims were not mentioned or were based on anecdotal evidence.

Other speakers made erroneous statements about the consequences of abortion, such as "the statistics show that 10% of women who have abortions never have another child" and "there is no data to support the claim that abortion is safer than childbirth." These speakers did not provide sources for these claims. However, even if the former statement were true, 90% of people who get abortions would go on to have a child, which is high given the fact that nearly 17% of older adults in the United States do not have biological children (15). There are not reliable studies that follow people for the rest of their reproductive years to ascertain if they have a biological child after getting an abortion; however, most people who have abortions already have at least one child (16). Furthermore, compared to people denied an abortion, people who receive an abortion are more likely to become pregnant again in the subsequent 5 years (17). Regarding the safety of abortions, many studies have found that legal abortions are much safer than childbirth (18–20). Considering mortality alone, abortions are significantly safer than giving birth. In the United States in 2019, there were 20.1 deaths per 100,000 live births (21). In contrast, the rate of abortion-related deaths from 2013 to 2017 was 0.44 legal induced abortion-related deaths per 100,000 reported legal abortions (22).

Some speakers used anecdotal evidence to generalize about the experiences of patients, displaying that they lacked the ability (or desire) to differentiate between their subjective experiences and scientific evidence. A registered nurse referred to a "brief survey" that she conducted of obstetrics and gynecology (OB-GYNs) at the hospital where she worked. She said her sample consisted of "a handful of doctors" but she used research terminology and drew generalized conclusions. She stated that, "All but one [doctor] admitted to seeing multiple women in the emergency room with abortion complications," and that there were "frequent diagnoses of retained products of conception, punctured uterus and undiagnosed ectopic pregnancy, a life-threatening condition." She followed up by stating, "That is when a woman has had an abortion without having an ultrasound to determine the location of the pregnancy." Similarly, an obstetrician, who was also the medical director at a crisis pregnancy center, claimed to see patients who reported physical and mental harm from abortions. Another medical doctor recounted his experience with patients seeking abortions, stating, "The vast majority of those women who would see that heartbeat would then decide to keep their pregnancies." These speakers misrepresented anecdotal experience as scientific evidence, describing experiences that contradict research showing that abortions are very safe (18–20, 23) and that most people do not regret getting them (24).

Disregard for scientific evidence was also demonstrated when anti-abortion proponents stated that the scientific backing for the bill was obvious without providing data or evidence to support this claim. For example, one person stated, "Obviously, the scientific case for life has been made. We've all been through middle school [and] high school biology." He went on to say, "We know that organisms that reproduce sexually when the sperm fertilized egg, there's a unique, genetically unique organism."

Table 2 outlines the most common false claims made by anti-abortion proponents as well as scientific evidence refuting these claims.

3.2.3. Anti-abortion proponents attempted to redefine life and personhood

Another prominent strategy of anti-abortion proponents was attempting to redefine life and personhood from an ostensibly scientific perspective. One way they did this was through use of various words and phrases to promote a new standard of life and personhood. Throughout all the anti-abortion testimonies we analyzed, the term "heartbeat" was used 97 times when not referring to the bill itself; "baby" was used 62 times; "unborn" was used 45 times; "unborn child" was used 16 times; "personhood" was used eight times; and "pre-born" was used six times.

The word "heartbeat" was particularly instrumental to the anti-abortion arguments trying to redefine life from a scientific perspective, with many supporters of the bill framing their arguments around the heartbeat being the new standard for life. The primary legislative sponsor of the bill stated in his opening testimony, "…the heartbeat is a definite marker and a predictability of survival." One pastor stated, "While not the beginning of life, the heartbeat is a universally recognized indicator of life." Another speaker, the executive director of an anti-abortion non-profit, stated, "The absence of a heartbeat indicates death, then logically the presence of a heartbeat indicates life."

Anti-abortion proponents also suggested that advances in science and technology have changed the standard for fetal viability and how the medical field understands life. For example, representative McCravy, H.3020's primary legislative sponsor, stated:

> "There's also a consensus among medical experts, scientists, lawyers and ethicists that the standard of viability has changed. That we now know many more things about the unborn child that we did not know in the 1970s. So we've had so many advances in medical and scientific technology that have expanded our knowledge of prenatal life."

Neither this representative nor anyone else making similar arguments cited evidence for the claim that advances in scientific technology had redefined the medical standards of viability or life. However, though there have been advances in care for pre-term deliveries, fetal viability occurs long after 6 weeks gestation. Births between 20 and 26 weeks are considered "periviable," with viability depending on various factors surrounding a pregnancy (13).

In contrast to those who tried to redefine life and personhood at a fetal "heartbeat," some anti-abortion proponents refused to use this as the new standard for life. For example, a medical professional in favor of the bill stated, "My expert medical testimony is that human life begins at conception. That was what I was told in medical school 40 years ago. That was true then. That's true now. Nothing has changed in the ensuing 40 years." One anti-abortion proponent, who opposed the bill in favor of stricter legislation, stated:

> "The heartbeat bill does not establish justice for all human beings at fertilization but chooses the biological benchmark which may occur and be detected for a month and a half or later after fertilization and allows all human beings in the womb prior to that point to be exterminated."

3.2.4. Anti-abortion proponents used value or logic statements to connect science and morality

Many supporters of H.3020 intertwined scientific claims with value or logic statements as the basis of moral arguments. Since science provided a new standard for detecting life, anti-abortion proponents argued it was clear that abortion after a "heartbeat" is detected is taking a life, which is immoral. Some who used this line of reasoning referred to it as "logical," "rational," or "common sense" when making their arguments. A pastor said, "Science and common sense tells us that a heartbeat signifies life," while not following up with an explanation of what he meant by either "science" or "common sense." Another speaker, a family physician, stated:

> "You are logical and rational people, and I trust that you make your decisions based on good rationale and good logic and not on emotion. Life begins at conception and there is a heartbeat in every unborn child. Nothing changes that fact. That's logical, that's rational. And I trust that you make your decisions based on good logic and good rationale."

The framing of H.3020 as the heartbeat bill provided an opportunity for anti-abortion advocates to claim a novel scientific standard for life, which made it easier for supporters of H.3020 to claim that their connection of scientific and moral arguments was logical.

3.3. Moral arguments

Supporters of H.3020 made various arguments that framed abortion and those providing or seeking abortions as immoral. Moral arguments across the testimonies could be classified into five themes: (1) Promoting the (perceived) righteous cause of protecting the unborn; (2) Religion as the basis of morality; (3) Vilifying and stigmatizing the pro-choice movement; (4) Vilifying healthcare providers; and (5) Vilifying and stigmatizing people who get abortions.

3.3.1. Anti-abortion proponents promoted the perceived righteous cause of "protecting the unborn"

Based on the assumptions that a "heartbeat"– or some other indicator of fetal development– signified human life, anti-abortion proponents argued that abortion after 6 weeks is murder. While many simply used the word murder (or related terms) to describe abortion, others attempted to explain why they believed abortion was equivalent to killing a person. Some supporters of the bill believed that life begins at conception and, hence, abortion before 6 weeks gestation should also be defined as murder. However, many argued that, since absence of a heartbeat is an indication of death, presence of a heartbeat indicates life. Hence, in "civilized" societies, abortion after detection of a fetal "heartbeat" is taking a life. Many promoted the fetal "heartbeat" as the new standard for life in a modern or "civilized society" that does not allow innocent humans to be killed. One person who provided testimony, the director of an anti-abortion non-profit, summarized this line of thinking:

> "Another fact-based saying is if the absence of a heartbeat indicates death, then logically the presence of a heartbeat indicates life. In a civilized society, we should all agree that the human heartbeat is the objective scientific proof of life. In a civilized culture, we can all agree that it is barbaric and a savage act to kill an innocent, innocent member of the human family with a beating heart."

Supporters of the bill called abortion genocide and both directly and indirectly compared it to historical injustices and atrocities. In their view, just as society's morals have progressed regarding historical atrocities, society must progress by adopting this new standard of life–the fetal "heartbeat." One white male proponent of the bill said the following:

> "If nothing else, history tends to judge people harshly based on the standards of the current day. Not at the time of the actual event. I never hear anyone try to justify slavery based on the standards of today. Women not having the right to vote seems ludicrous. The Jim Crow laws of the South seem cruel by today's standards. But what will we tell our grandkids about abortion when they ask why we had the chance to stop it? But we fell prey to political pressure and let the carnage continue. How would they judge us? Some will

> justify it as a right the mother has to do with her body as she wants, never once considering the future mother she may be carrying."

To further demonstrate the morality of H.3020 and its advocates, supporters of the bill framed the unborn as a targeted and vulnerable group in need of special protections. To do this, they co-opted language and ideas from human rights movements, suggesting abortion is an inhumane practice that violates universal principals of morality. Human rights language, including terms such as "intrinsic value" and "dignity of human life," was used to extend the rights of humans to embryos (which anti-abortion proponents refer to as "fetuses"). Thus, supporters framed this bill and its advocates as the true champions of morality and human rights. Indeed, many supporters touted their own commitment to the "value of life." They urged representatives listening to do the same, adding that they believed the government is responsible for protecting life through banning abortions. One speaker co-opted human rights language by saying:

> "Unlike pro-abortion advocates, the pro-life movement firmly believes in the value and dignity of each human life. That includes every single person in this room. And I want to tell each of you in this room, your life matters. Your life has intrinsic and immeasurable value because you are human."

A legislative representative more explicitly framed abortion as a human rights issue:

> "The U.S. Constitution, which all our laws must pursue, states in the Fourteenth Amendment: No state shall deprive any person of life without due process of law and order, not to any person within its jurisdiction equal protection of the laws regardless of the age, size, or dependent status. A child with a heartbeat should be treated with dignity. These unborn men and unborn women have human rights too. And yes, even children conceived through the terrible crime of rape have a right to life and justice. They have a right not to have their bodies mutilated, their choices eliminated, and their heartbeats stopped. I stand against abortion so passionately because it is the chief example in our time of the callous violation of human rights. It is our job in government to defend against this. Human children deserve to be defended."

3.3.2. Anti-abortion proponents used religion as the basis of morality

While religious rhetoric was sparse across the testimonies, some anti-abortion proponents used their primarily evangelical Christian religious beliefs as the foundation for their moral arguments about the value and definition of life. For example, speakers stated they supported the bill because they believed in the value and sanctity of life of the unborn, a belief informed by their religion. In addition to claiming to respect the "value of life," speakers making religious arguments used multiple adjectives with moral implications to describe life, such as "precious," "sacred," and "dignity." The following quote exemplifies many of the adjectives used to discuss their view on the "value of life" as well as the seamless connection speakers made between religious beliefs and morality:

> "We want the heartbeat bill because we want to protect the God-given value and dignity of all human life, including our own. Unlike pro-abortion advocates, the pro-life movement firmly believes in the value and dignity of each human life. … Your life has intrinsic and immeasurable value because you are human. If we believe we can discard human life at its most helpless and most vulnerable, it cheapens the innate and immeasurable value that God bestowed upon each one of us at that very first moment of our own existence. Tiny, precious, and innocent lives are at stake in this legislation. But so is our very own worth and dignity."

Anti-abortion proponents who discussed religion also used other tactics to connect their religious beliefs to the immorality of abortion. Some quoted biblical scripture as evidence that "life" in the womb is determined and created by God, with some speakers explicitly stating that life begins at conception. Others used anecdotes and personal stories. Some of these stories were about pregnant people who considered abortion yet decided to carry to term because of their religious beliefs. Other stories centered people whose mothers considered aborting them but did not. While religious speakers described the inherent value of "pre-born" life as bestowed by God in scripture, they often tied the worth of the people in these stories to their potential to advance Christianity.

3.3.3. Anti-abortion proponents vilified the pro-choice movement

In contrast to their portrayals of themselves and other advocates of H.3020, supporters of the bill framed the pro-choice movement and opponents of the bill as immoral. They framed the unborn as a vulnerable group, thereby claiming that pro-choice advocates were not only discriminatory but also proponents of child sacrifice and genocide. They further claimed pro-choice advocates devalue life and human rights and strategically dehumanize the unborn to achieve their goals. One supporter of the bill—a male physician and medical director for a crisis pregnancy center—compared societal approval of abortion to historical acceptance of chattel slavery and the Holocaust.

> "So you think about throughout history to make something to be able to commit atrocities against a group of people. What society has done is dehumanized them. United States with slavery and Nazi Germany with the Jews. That's what they did. They said, 'Well, they're not human', right? That's what we did. Right. Shameful. That's what we're doing. That's what we're doing with the unborn child. … I think this is a blight on our nation. And I think there's a genocide, to which we're all going to be called by our maker."

3.3.4. Anti-abortion proponents vilified healthcare providers who perform abortions

Supporters of the bill also vilified healthcare providers and clinics providing abortions, claiming they make exorbitant incomes from abortions while providing inadequate care and coercing people into getting abortions. One pastor questioned the motives and morality of a nearby healthcare provider offering abortions:

> "This past weekend, I was at [name of medical center], which is one of the busiest abortion clinics in the southeast. One of the reasons it is, is because it's the cheapest. … But I quickly asked, how much money do they make off this one center? They own three. And the answer is four to five million dollars a year. And I was thinking, man, are they really here for women? Or are they here to line their pockets? … Our battle is against the evil. Our battle is against not anybody that's against this bill. Our battle is for flesh and blood. It's not against flesh and blood."

Another speaker—a physician and medical director at a crisis pregnancy center—attacked Planned Parenthood:

> "And one of the main reasons we're here today is money. This is money. And power. This is a multi-billion dollar business, abortion. And I'm telling you, I have so many patients who come to me and said 'they didn't tell me about the risk of depression. They didn't tell me the risk I would get a perforated uterus and have a hysterectomy.' I've seen that happen. 'They didn't tell me about any of the risk of the suicidal thoughts and suicidal ideation.' I have family members who have had an abortion who've never gotten over the depression from that. So we need to–if we're going to provide safe abortion–we need to make sure that people like Planned Parenthood who are making billions of dollars —half a billion of our tax dollars are going to Planned Parenthood– we need to make sure that they are properly counseling women on the not only physical risk of abortion, but the mental risk."

In 2019, Planned Parenthood's total revenue, including both government funding and private donations, was $1.6 billion while its expenses were $1.5 billion (28). However, Planned Parenthood is prohibited from using any federal funding it receives on abortion services, and abortions account for only 3% of the total medical services provided at Planned Parenthood health centers (28). Furthermore, there is ample evidence that abortions are safer than childbirth (18, 19) and other common medical procedures (29) and that people seeking an abortion who are able to get one fair better in terms of their short-term mental health (30) and longer-term physical health and financial well-being than people denied abortions (31).

3.3.5. Anti-abortion proponents vilified people who receive abortions

Anti-abortion proponents used multiple tactics to both stigmatize abortion and malign people who receive abortions. They characterized people who receive abortions as lazy and irresponsible or selfish and immoral and stated their objections to "abortions of convenience," defined by multiple speakers as having an abortion for social or economic reasons and not for the life of the pregnant person or because of rape or incest. While many of these speakers stated or implied that most abortions are done for "convenience," none cited evidence for this claim.

Supporters of the bill described their aversion to "abortions of convenience" with statements like this from a legislative representative:

> "Over 90% of the abortions that are done in the United States are what? They are done for the manner of convenience. Not because of life of the mother. Not because a rape or incest. But because of convenience issues."

Another example came from a testifier who was an educator at a Christian university and the president of an anti-abortion non-profit: "The vast majority of abortions are obtained for social and economic reasons, not rape, incest, or life of mother. … Studies indicate that over 90% of women seek abortion for social and economic reasons."

Some anti-abortion proponents who described people who get abortions as selfish also described them as victims. They claimed abortions are mentally, emotionally, and physically harmful to people who receive them. For example, one person described her own abortion as selfish, yet said that she and other people who get abortions are unaware of (what she perceived as) emotional repercussions of abortion:

> "I got an abortion, and it was a heartless, selfish act of snuffing out a precious life for my convenience. Women don't know, nor are they told about, the guilt and the shame that they will carry the rest of their lives. Abortion doesn't just end the life of a baby. It hurts women, and it scars them for life. I have heard hundreds of testimonies, and I know many women will deny what I just said. They claim there have been no repercussions. However, even if they hide their guilt and their shame from themselves, or they deny it or bury it so deep that they don't feel anything anymore, they still live with it the rest of their lives."

In contrast to this quote, researchers have found that, among people seeking abortions, those *denied* an abortion are more likely in the short-term to experience adverse mental health outcomes, such as anxiety, low self-esteem, and low life satisfaction compared to people who receive abortions (30). The person who said the previous quote went on to describe her husband's disdain for her past abortion, revealing the potential source of the guilt she felt for getting an abortion:

> "Yesterday, my husband said to me, 'You can be forgiven, but you have still taken a life.' Heartless. For women who have had

> an abortion, those are fighting words because it's difficult to face the reality that we have taken a life. Abortion is a heartless act and the argument that women have a right to their own bodies is a smokescreen to hide the reality that they can't face."

Another anti-abortion proponent who was an educator at a Christian university and the president of an anti-abortion non-profit implied that people who get abortions are victims because healthcare providers do not inform them of the risks of having an abortion. She used this argument to advocate for the new bill, which would require informed consent and provision of information about the "harms" of abortion to anyone seeking an abortion:

> "For many of these women, abortion is not an act of liberation. Rather, it is a violent act of despair. Many of these women have indicated they would carry their child if they were not abandoned by the father, pressured by employers, or rejected by parents. Further, many women in the United States, unlike those in South Carolina, have not been guaranteed informed consent. … They undergo abortions with no knowledge of fetal development, or knowledge of alternatives, or knowledge of the risk involved. For many women, abortion is a skillfully marketed product to prey on the fears of women in crisis. When women discover the physical, mental, and emotional scars that often surface, it is too late. I've met many of these women myself."

As demonstrated in the quote above, supporters of the bill framed people who get abortions as desperate victims by associating abortions with abuse and coercion. In legislative sessions on the inclusion of an exception in the bill for rape and incest, speakers focused more intently on actual victims of abuse seeking abortions. Some against the exception claimed abortion protects rapists because a baby is evidence of rape and that abortion perpetuates the trauma of victims. Conversely, they claimed that carrying a pregnancy to term provides deliverance, healing, and vindication to victims of rape and incest. This discourse around victims of rape, incest, and coercion served to stigmatize abortion as associated with abuse. A quote from one speaker–the founder and president of an anti-abortion organization–exemplifies this discourse:

> "And the younger a girl is, the more likely it's someone in her household, family member who's been raping her. And the more likely that it's been going on for years. And guess who reveals the rape? The baby. Her baby is ultimately her hero who can deliver her out of that abusive situation. But we see time and time again how oftentimes it's her own mother who's trafficking her, who takes her to the abortion clinic where they cover up the rape and then send her right back for repeated abortion, after abortion, after abortion. … And it is absolutely absurd to suggest that somehow more violence brings healing, more violence in the exact place where she was traumatized is somehow going to bring healing. But babies do have a way of bringing healing. … And I am so concerned when people say that somehow, you know, she's going to be better off after an abortion, when studies show that she's four times more likely to die within the next year after the abortion. They have a higher rate of murder, suicide, overdose because, again, more violence doesn't bring healing"

As stated in previous sections, there is no evidence that abortions are associated with negative mental health outcomes. Indeed, people who are denied an abortion are more likely to experience poor mental health than people who get an abortion (30).

4. Discussion

Our analysis of legislative testimony in support of H.3020, both by SC legislative representatives and the public, reveals that anti-abortion advocates primarily used scientific disinformation and moral arguments–based in their concepts of morality–to promote this bill. The only prior study to investigate anti-abortion arguments used in legislative hearings for a 6-week abortion ban came out of Georgia's 6-week ban, which was introduced in 2019, around the same time as SC H.3020. Many of the anti-abortion arguments and tactics we found in South Carolina were similar to those reported in the analysis of Georgia's ban (9), including misrepresenting scientific and medical findings, redefining life and personhood with the use of "fetal heartbeat" language, and comparisons of abortion to historical atrocities while framing opposition to abortion as defending human rights. However, anti-abortion proponents in South Carolina employed several arguments and strategies that were not found in the analysis of legislative hearings in Georgia. Findings unique to South Carolina included descriptions of biased and coercive care from medical professionals, use of value and logic statements based on scientific disinformation, use of religious rhetoric, and vilification of healthcare professionals and people seeking abortions.

In the current study, we found that blatant misrepresentation of science was commonly employed, with some speakers claiming there were scientific justifications for the ban without explaining these justifications and other speakers presenting opinions and anecdotal evidence as factual. This emphasis on medical and scientific arguments is consistent with anti-abortion arguments reported in an analysis of Georgia's 6-week ban. However, prior studies have found an historic lack of science-based arguments from anti-abortion activists, even within the last decade (32). The framing of this legislation as the "heartbeat bill" and the related scientific rationale used to ban abortions at 6 weeks may have allowed advocates of abortion restrictions to expand their rhetorical strategies by incorporating more scientific framing.

Though their scientific framing may have been relatively novel, anti-abortion advocates in the current study used scientific arguments as the basis for anti-abortion moral arguments that have long been used to promote abortion restrictions. Moral framing was prominent in the current analysis, with defenders of the bill providing arguments for why abortion was immoral and banning abortion was moral. This finding reflects a recent analysis of legislative discourse about anti-abortion policies, which found that morality frames were more common in discourse on abortion bans compared to discourse on other types of abortion restrictions (32).

The claim that fetal cardiac activity–which supporters of SC H.3020 inaccurately called a "heartbeat"–indicates life was fundamental to many of the moral arguments used by anti-abortion speakers. Using cardiac activity as a proxy for life and personhood, defenders of the ban asserted that abortion after detection of fetal cardiac activity is murder. Supporters of a similar 6-week abortion ban in Georgia in 2019 also used cardiac activity as a proxy for life and personhood (9). Advocates of abortion restrictions have long defended fetal personhood and "right to life" and claimed that abortion is murder (32). However, this novel and extreme legislation–deceptively named a "heartbeat bill"–gave anti-abortion advocates a new way to frame fetal personhood and connect supposedly scientific and moral arguments.

Anti-abortion advocates also endorsed the so-called morality of the 6-week ban by co-opting civil and human rights language and explicitly comparing their efforts to eradicate abortion to historical civil and human rights movements. This rhetorical strategy was also prominent in an analysis of public testimonies in support of a similar 6-week abortion ban in Georgia in 2019 (9). Co-option of and comparison to progressive, including civil rights, discourse have become common tactics in the anti-abortion space over the past decade (33, 34). Prior studies have found that anti-abortion organizations and advocates appropriate the language of social justice organizations and movements, such as Black Lives Matter; they also frame abortion restrictions as moral by comparing abortion to slavery, eugenics, and genocide and equating their advocacy to the historical efforts to eradicate those atrocities (33, 34).

Another tactic used by anti-abortion speakers in the current study was to frame the ban as sensible legislation by using phrases like "logical" and "common sense." This type of language was not found in anti-abortion testimony for Georgia's 6-week ban (9). However, similar language was used during a congressional hearing for the 2014 federal Women's Health Protection Act, during which anti-abortion senators defended state abortion restrictions by referring to them as "common sense" legislation and claiming a majority of American people supported the restrictions (35). In an analysis of those hearings, Duffy (2015) argued that use of "common sense" language appeals to populist ideals by framing abortion restrictions as policies supported by and aligned with the values of sensible, average Americans. This rhetoric thus positions those opposing the "common sense" policies (in this case, abortion restrictions) as enemies of the American people. Duffy contends that this populist rhetoric in abortion policy discourse masks the damaging effects of anti-abortion legislation by focusing on conventional conservative talking points (e.g., arguments around states' rights and federal government overreach) rather than the actual impact of these bans on people's health (35).

Another theme in the current analysis that was not found in anti-abortion arguments for Georgia's 6-week ban (9) was negative portrayals of people involved in abortions, including providers and patients. Foundational to these negative portrayals was the claim that abortions are dangerous, which has been a common claim among U.S. anti-abortion advocates at least since the U.S. Supreme Court's Casey v. Planned Parenthood decision in 1992 (32, 36). Anti-abortion proponents have used this false claim to frame abortion restrictions as benefitting rather than harming women (32, 36–38). Claiming that abortions were harmful allowed proponents of the 6-week ban in South Carolina to both argue that abortion providers were deceiving patients about the risks of abortion and that abortion patients were being victimized.

Since the U.S. Supreme Court's Casey v. Planned Parenthood decision in 1992, abortion opponents have strategically vilified abortion providers, claiming that they mislead people about the risks of abortion (36). This theme remains prominent in anti-abortion discourse today (33, 37). In the current study, we found explicit negative portrayals of abortion providers, with anti-abortion proponents endorsing inaccurate claims about the physical and psychological consequences of abortion and claiming that abortion providers were nefarious for not disclosing these supposed harms and for ostensibly profiting off people who get abortions. In contrast, anti-abortion healthcare providers who testified in support of SC H.3020 described situations in which they provided biased or coercive care to patients seeking abortions. This finding suggests anti-abortion medical professionals are the providers who are actually harming patients.

In the current study, anti-abortion proponents making moral arguments also vilified people who get abortions by describing them as either lazy, selfish, and immoral or desperate victims of poverty, abusive relationships, and healthcare providers. They claimed these people are duped or forced into having abortions. Some speakers also claimed that abortions further traumatized victims of abuse, leading to a downward spiral of other harmful behaviors, including drug use and suicide. This discourse on the circumstances and effects of abortion both stigmatized abortion and allowed supporters of the abortion ban to claim it would protect women.

Prior research has reported that anti-abortion advocates commonly promote lies about the harms of abortion in order to claim that abortion restrictions protect women, with some even declaring abortion opposition as a feminist stance (32, 36, 37). This rhetoric is part of what has been termed "mother-child" framing, a relatively recent strategy through which abortion opponents assert abortion restrictions promote the wellbeing of both babies (fetuses) and pregnant people (36, 37). Claims that abortion restrictions protect women, are feminist, and are compatible with the wellbeing of mother and child have become more common in the post-Casey era (36). Before the 1992 Casey decision, anti-abortion proponents explicitly promoted fetal rights over the bodily autonomy of pregnant people; however, in recent decades, they have adopted a more "pro-woman" approach, in part to make abortion restrictions seem less radical (36–38). The recent rise of extreme abortion bans and the rhetoric promoting them (e.g., fetal "heartbeat" language) may suggest that anti-abortion strategies are regressing, with a renewed emphasis on fetal rights and personhood (37). Indeed, the current study and the analysis of anti-abortion rhetoric around Georgia's 6-week ban (9) suggest that personhood rhetoric is becoming more prominent among advocates of extreme abortion bans.

Claims that abortions are dangerous are false. Legal abortions are much safer than childbirth (18, 19) and other common medical procedures (29). Furthermore, people seeking an abortion who are able to get one experience better short-term mental health (30) and longer-term physical health (20) and financial well-being (39) than people denied abortions. Negative experiences related to abortion (which appear to be infrequent) can likely be attributed to inequitable social systems that oppress

the most vulnerable abortion patients and not due to abortion itself (40, 41).

Religious arguments in the current study were sparse yet notable given their absence from anti-abortion arguments in legislative hearings for Georgia's 6-week abortion ban (9). In South Carolina, anti-abortion proponents used religion as the foundation of personal and societal morals by expressing how much they valued "life" in the womb, often tying this value and their definition of life to their Christian faith. Recent studies are mixed on the prominence of religious rhetoric in anti-abortion discourse. A 2013 analysis of anti-abortion discourse from anti-abortion forums, organizations, and parliamentary representatives in Canada found that religious arguments were not common (38); indeed, activists explicitly discouraged people from making religious arguments to support abortion restrictions, and scientific arguments appear to have replaced religious arguments for the basis of fetal personhood arguments (38). However, this analysis from Canada is dated, and the abortion landscape in Canada differs substantially from that in the United States. A more recent study of abortion discourse on Twitter found religious arguments were prominent in anti-abortion Tweets (42). Hence, the prominence of religious discourse may vary by platform. Additional investigation of the prevalence and effects of anti-abortion religious discourse in the United States is needed and may help abortion advocates counteract these arguments and develop their own messaging for religious audiences.

Our analysis had several limitations. We were unable to collect self-reported demographic information of anti-abortion proponents other than the legislators, so our estimation of participants' demographic characteristics is based on our perceptions of their race, gender, and age, which may be inaccurate. Furthermore, this analysis focused only on anti-abortion arguments, and further research is needed to analyze pro-abortion rhetoric used by those opposing abortion restrictions.

5. Conclusions

Restricting abortions has detrimental impacts on the health and well-being of people who can become pregnant (43). At this moment when reproductive rights are being stripped away in the United States, analyses of the discourse and strategies used to promote abortion restrictions are critical. In the current study, we found that arguments used during public legislative hearings to promote a 6-week abortion ban in South Carolina were characterized by scientific disinformation and stigmatizing language around the morality of abortion. More research is needed to determine the optimal tactics to counter this rhetoric; However, advocates for reproductive rights, health, and justice may use findings on current anti-abortion tactics to inform their own strategies, including by explaining to the public and policymakers that current anti-abortion rhetoric is extremely harmful and inaccurate. As the struggle for reproductive rights and justice continues in the United States, abortion advocates must continue to document the dangerous strategies used by abortion opponents and learn from the global pro-abortion movement to develop strategies that will restore these rights.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found here: Video files of the hearings were downloaded from the Women's Rights and Empowerment Network's Facebook page (https://www.facebook.com/WomensRightsandEmpowerment Network) and the South Carolina legislature video archives website (https://www.scstatehouse.gov/video/archives.php).

Ethics statement

The Institutional Review Board at the University of South Carolina reviewed the study protocol and determined this study did not meet the criteria for human subjects research. Although quotes can be matched with video footage, throughout this article, we do not directly identify any individual who provided testimony except the primary legislative sponsor. Given that all testimony analyzed is part of the public record, our approach respects research ethics related to privacy and confidentiality.

Author contributions

VL was responsible for the codebook development, data coding and analysis, and manuscript development. EH was responsible for the codebook development, data coding and analysis, and contributed to manuscript development. DB was responsible for study design and contributed to the development of the codebook and the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

References

1. Guttmacher Institute. *Interactive map: US abortion policies and access after Roe*. New York City: Guttmacher Institute (2022). Available at: https://states.guttmacher.org/policies/ (Accessed August 18, 2022).

2. Kirstein M, Jones R, Philbin J. *One month post-Roe: At least 43 abortion clinics across 11 states have stopped offering abortion care*. New York City: Guttmacher Institute (2022). Available at: https://www.guttmacher.org/article/2022/07/one-month-post-roe-least-43-abortion-clinics-across-11-states-have-stopped-offering (Accessed August 18, 2022).

3. Guttmacher Institute. State Policy Trends 2021: The Worst Year for Abortion Rights in Almost Half a Century (2021). Available at: https://www.guttmacher.org/article/2021/12/state-policy-trends-2021-worst-year-abortion-rights-almost-half-century (Accessed May 12, 2022).

4. Guttmacher Institute. State Policy Trends at Midyear 2022: With Roe About to Be Overturned, Some States Double Down on Abortion Restrictions (2022). Available at: https://www.guttmacher.org/article/2022/06/state-policy-trends-midyear-2022-roe-about-be-overturned-some-states-double-down (Accessed October 31, 2022).

5. American College of Obstetricians and Gynecologists. ACOG Guide to Language and Abortion (2022).

6. American College of Obstetricians and Gynecologists. ACOG Opposes Fetal Heartbeat Legislation Restricting Women's Legal Right to Abortion (2017). Available at: https://www.acog.org/news/news-releases/2017/01/acog-opposes-fetal-heartbeat-legislation-restricting-womens-legal-right-to-abortion (Accessed March 14, 2023).

7. Nash E. A Surge in Bans on Abortion as Early as Six Weeks, Before Most People Know They Are Pregnant (2019). Available at: https://www.guttmacher.org/article/2019/03/surge-bans-abortion-early-six-weeks-most-people-know-they-are-pregnant (Accessed Jan 19, 2023).

8. Nash E, Mohammed L, Cappello O, Naide S. *State policy trends 2019: A wave of abortion bans, but some states are fighting back*. New York City: Guttmacher (2019). 10–2. Available at: https://www.guttmacher.org/article/2019/12/state-policy-trends-2019-wave-abortion-bans-some-states-are-fighting-back (Accessed January 19, 2023).

9. Evans DP, Narasimhan S. A narrative analysis of anti-abortion testimony and legislative debate related to Georgia's Fetal "heartbeat" abortion ban. *Sex Reprod Heal Matters*. (2020) 28(1):215–31. doi: 10.1080/26410397.2019.1686201. Available at: https://www.tandfonline.com/action/journalInformation?journalCode=zrhm21 (Accessed March 3, 2020).

10. H.3020 SC Fetal Heartbeat Protection from Abortion Act (2019). Available at: https://www.scstatehouse.gov/sess123_2019-2020/bills/3020.htm

11. Planned Parenthood South Atlantic, et al. v. State of South Carolina. Vols. 2022–00106 (2022).

12. Winthrop University. November 2022 Winthrop Poll (2022). Available at: https://www.winthrop.edu/winthroppoll/current-findings.aspx (Accessed December 12, 2022).

13. Raju TNK, Mercer BM, Burchfield DJ, Joseph GF. Periviable birth: Executive summary of a joint workshop by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, Society for Maternal-Fetal Medicine, American Academy of Pediatrics, and American College of Obstetricians. *Obstet Gynecol*. (2014) 123:1083–96. doi: 10.1097/AOG.0000000000000243

14. American College of Obstetricians and Gynecologists. Obstetric care consensus No. 6 summary: periviable birth. In: *Obstetrics and gynecology* (2017). 130(4):e187–99. Available from: https://journals.lww.com/greenjournal/Fulltext/2017/10000/Obstetric_Care_Consensus_No__6_Summary__Periviable.52.aspx.

15. Valerio T, Knop B, Kreider RM, He W. Childless Older Americans: 2018 Current Population Reports (2021).

16. Jerman J, Jones RK, Onda T. Characteristics of U.S. Abortion Patients in 2014 and Changes Since 2008 (2016). Available at: https://www.guttmacher.org/report/characteristics- (Accessed August 3, 2022).

17. Upadhyay UD, Aztlan-James EA, Rocca CH, Foster DG. Intended pregnancy after receiving vs. Being denied a wanted abortion. *Contraception*. (2019) 99 (1):42–7. doi: 10.1016/j.contraception.2018.09.002

18. Gerdts C, Dobkin L, Foster DG, Schwarz EB. Side effects, physical health consequences, and mortality associated with abortion and birth after an unwanted pregnancy. *Women's Heal Issues*. (2016) 26(1):55–9. doi: 10.1016/j.whi.2015.10.001

19. Raymond EG, Grimes DA. The comparative safety of legal induced abortion and childbirth in the United States. *Obstet Gynecol*. (2012) 119(2, Part 1):215–9. Available at: http://journals.lww.com/00006250-201202000-00003. doi: 10.1097/AOG.0b013e31823fe923

20. Ralph LJ, Schwarz EB, Grossman D, Foster DG. Self-reported physical health of women who did and did not terminate pregnancy after seeking abortion services a cohort study. *Ann Intern Med*. (2019) 171(4):238–47. doi: 10.7326/M18-1666

21. Hoyert DL. Maternal Mortality Rates in the United States, 2019 (2019). doi: 10.15620/cdc:103855

22. Kortsmit K, Jatlaoui TC, Mandel MG, Reeves JA, Oduyebo T, Petersen E, et al. Abortion surveillance — United States, 2018. *MMWR Surveill Summ*. (2020) 69 (7):1–30. doi: 10.15585/mmwr.ss6907a1. Available at: https://www.cdc.gov/mmwr/volumes/69/ss/ss6907a1.htm.

23. National Academies of Sciences, Engineering and M. *The safety and quality of abortion care in the United States*. Washington, DC: National Academies Press (2018).

24. Rocca CH, Moseson H, Gould H, Foster DG, Kimport K. Emotions over five years after denial of abortion in the United States: Contextualizing the effects of abortion denial on women's health and lives. *Soc Sci Med*. (2020) 269:113567. doi: 10.1016/j.socscimed.2020.113567

25. Glenza J. Doctors' organization: calling abortion bans "fetal heartbeat bills" is misleading. *The Guardian*. (2019) Available at: https://www.theguardian.com/world/2019/jun/05/abortion-doctors-fetal-heartbeat-bills-language-misleading (Accessed October 31, 2022).

26. Cha AE, Roubein R. *What is fetal viability and what does it have to do with abortion laws? - The Washington Post*. The Washington Post (2021). Available at: https://www.washingtonpost.com/health/2021/12/01/what-is-viability/#SGUISCML5FDXVKN6QOWFUQI6R4-0 (Accessed October 31, 2022).

27. American College of Obstetricians and Gynecologists. Increasing access to abortion. ACOG committee opinion No. 815. *Obstet Gynecol*. (2020) 136(6): e107–15. doi: 10.1097/AOG.0000000000004176

28. Planned Parenthood Federation of America. Planned Parenthood 2019-2020 Annual Report. Available at: https://www.plannedparenthood.org/uploads/filer_public/67/30/67305ea1-8da2-4cee-9191-19228c1d6f70/210219-annual-report-2019-2020-web-final.pdf (Accessed February 14, 2023).

29. Raymond EG, Grossman D, Weaver MA, Toti S, Winikoff B. Mortality of induced abortion, other outpatient surgical procedures and common activities in the United States. *Contraception*. (2014) 90(5):476–9. doi: 10.1016/j.contraception.2014.07.012

30. Biggs MA, Upadhyay UD, McCulloch CE, Foster DG. Women's mental health and well-being 5 years after receiving or being denied an abortion a prospective, longitudinal cohort study. *JAMA Psychiatry*. (2017) 74(2):169–78. doi: 10.1001/jamapsychiatry.2016.3478

31. Miller S, Wherry LR, Foster DG. What happens after an abortion denial? A review of results from the Turnaway Study. *AEA Pap Proc*. (2020) 110:226–30. doi: 10.1257/pandp.20201107

32. Mucciaroni G, Ferraiolo K, Rubado ME. Framing morality policy issues: State legislative debates on abortion restrictions. *Policy Sci*. (2019) 52(2):171–89. doi: 10.1007/s11077-018-9336-2

33. Norwood C. Misrepresenting reproductive justice: A Black feminist critique of "protecting Black life". *Signs (Chic)*. (2021) 46(3):715–41. doi: 10.1086/712080

34. Davidson MdG. Black women's bodies, ideology, and the public curriculum of the pro- and anti-choice movements in the US. *Gend Educ*. (2018) 30(3):310–21. doi: 10.1080/09540253.2016.1225011

35. Duffy C. States' rights vs. Women's rights: the use of the populist argumentative frame in anti-abortion rhetoric. *Int J Commun*. (2015) 9(1):3494–501.

36. Halva-Neubauer GA, Zeigler SL. Promoting fetal personhood: the rhetorical and legislative strategies of the pro-life movement after *Planned Parenthood v. Casey*. *Fem Form*. (2010) 22(2):101–23. doi: 10.1353/ff.2010.0011

37. Leach BR. Whose backlash, against whom? Feminism and the American pro-life movement's "mother-child strategy". *Signs (Chic)*. (2020) 45(2):319–28. doi: 10.1086/705004

38. Saurette P, Gordon K. Arguing abortion: The new anti-abortion discourse in Canada. *Can J Polit Sci*. (2013) 46(1):157–85. doi: 10.1017/S0008423913000176

39. Miller S, Wherry LR, Foster DG. *The economic consequences of being denied an abortion*. Cambridge, MA: Publisher is National Bureau of Economic Research (2020). Report No.: 26662. Available at: http://www.nber.org/papers/w26662.

40. Kumar A. Everything is not abortion stigma. *Women's Health Issues*. (2013) 23 (6):e329–31. doi: 10.1016/j.whi.2013.09.001

41. Millar E. Abortion stigma as a social process. *Womens Stud Int Forum*. (2020) 78:102328. doi: 10.1016/j.wsif.2019.102328

42. Sharma E, Saha K, Ernala SK, Ghoshal S, De Choudhury M. Analyzing ideological discourse on social media: a case study of the abortion debate. *ACM Int Conf Proc Ser*. (2017):1–8. doi: 10.1145/3145574.3145577

43. ANSIRH. The Harms of Denying a Woman a Wanted Abortion Findings from the Turnaway Study (2020). Available at: https://www.ansirh.org/research/turnaway-study (Accessed September 1, 2022).

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Examining ethno-racial attitudes of the public in Twitter discourses related to the United States Supreme Court *Dobbs vs. Jackson Women's Health Organization* ruling: A machine learning approach

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Background: The decision of the US Supreme Court to repeal *Roe vs. Wade* sparked significant media attention. Although primarily related to abortion, opinions are divided about how this decision would impact disparities, especially for Black, Indigenous, and people of color. We used advanced natural language processing (NLP) techniques to examine ethno-racial contents in Twitter discourses related to the overturn of *Roe vs. Wade*.
Methods: We screened approximately 3 million tweets posted to *Roe vs. Wade* discussions and identified unique tweets in English-language that had mentions related to race, ethnicity, and racism posted between June 24 and July 10, 2022. We performed lexicon-based sentiment analysis to identify sentiment polarity and the emotions expressed in the Twitter discourse and conducted structural topic modeling to identify and examine latent themes.
Results: Of the tweets retrieved, 0.7% (n = 23,044) had mentions related to race, ethnicity, and racism. The overall sentiment polarity was negative (mean = –0.41, SD = 1.48). Approximately 60.0% (n = 12,092) expressed negative sentiments, while 39.0% (n = 81,45) expressed positive sentiments, and 3.0% (n = 619) expressed neutral sentiments. There were 20 latent themes which emerged from the topic model. The predominant topics in the discourses were related to "racial resentment" (topic 2, 11.3%), "human rights" (topic 2, 7.9%), and "socioeconomic disadvantage" (topic 16, 7.4%).
Conclusions: Our study demonstrates wide ranging ethno-racial concerns following the reversal of *Roe* and supports the need for active surveillance of racial and ethnic disparities in abortion access in the post-*Roe* era.

KEYWORDS

Roe vs. Wade, racism, race, ethnicity, sentiment analysis, structural topic modeling, natural language processing, social media

Introduction

Abortion in the United States (US) has remained a subject of longstanding ethical, religious and political controversy (1). As far back as the early 19th-century abortion was considered legal and by the mid-19th century, at least one in four pregnancies ended in abortion (2). However, by the 20th century, abortion restrictions had grown across several

states in the US which consequently heralded an era of illegal and unsafe abortions that contributed to about 17% of maternal mortality in the US (2). While limited access to safe abortion services remained available for socially advantaged women, young women and those from minority populations continued to be disproportionately affected by having recourse to unsafe abortions (3). The increase in unsafe abortions as well as an increase in Thalidomide-associated birth defects strengthened further advocacy efforts to decriminalize abortion (2). Eventually, in 1973, the United States Supreme Court in a landmark decision in *Roe vs. Wade* ruled that the decision to terminate or continue a pregnancy was the constitutional right of women under the protection of the "right to privacy" (4). Under this legal framework, states were prohibited from restricting abortion before the third trimester of gestation (5, 6). Beyond this point, however, states were allowed to regulate abortion except when the woman's life was at risk. Since then, there have been several legislative barriers that have confronted abortion access, and data from survey polls show a roughly even split of the US population into those opponents and supporters of abortion (7).

In the 1992 *Planned Parenthood vs. Casey* decision, the Supreme Court upheld the constitutional right to abortion but permitted states to restrict abortion before 24 weeks of gestation (6). However, the Supreme Court ruling in *Dobbs vs. Jackson Women's Health Organization* regarding the constitutionality of a Mississippi law banning abortion after 15 weeks of pregnancy led to the eventual overturn of *Roe vs. Wade*, putting an end to the 49 years 5 months and 2 days constitutional right to abortion in the United States and consequently, returning the authority to regulate abortion to individual states (8–10). Since *Dobbs*, there have been varying nationwide implementation of bans or protection of abortion access (11) with several states imposing partial or complete abortion restrictions. In conjunction with a woman's location of residency, restrictive abortion laws serve as socio-ecological determinants of abortion care access which can potentially impact her sexual and reproductive health and well-being (12–14). The reversal of *Roe vs. Wade* has generated substantial concerns among the public. However, there are some who find the decision favorable within the context of the morality of abortion. These individuals may believe that abortion is morally wrong and that the reversal of Roe vs. Wade is a positive step in the right direction (15). Those in favor of the Supreme Court's decision also argue that the decision is likely to result in a decrease in the number of abortions performed and ultimately increasing the sanctity of life.

With prior state-level abortion restrictions, some of the challenges encountered with accessing abortion care and services include delays in care, facility closures, long-distance travels for women seeking abortion, and increased cost for abortion services (6, 16) which were associated with medical, economic and safety problems that are likely to be disproportionately worse, especially for Black, Indigenous, and other people of color (BIPOC) in the post-*Roe* landscape (16–18). Furthermore, there is evidence of racial and ethnic differences in abortion rates and access in the United States, with the need for abortion services being greatest among women of color—Additionally, they face more obstacles to abortion treatment than other racial and ethnic groups (4, 15). Although Dobbs *was* primarily related to abortion, however, opinions are divided about how the decision impacts the status of federal right to contraception, consensual sexual intimacy, marriage, and reproduction (14) as well as to what extent the Supreme Court's decision is likely to exacerbate extant health disparities, especially for women of color who, compared to White women are likely to have lower income (4, 19). Stevenson (20) estimates that with a total ban in effect, overall maternal mortality is likely to rise by approximately 21% with the rates being even higher for Black women (33%).

According to the theory of planned behavior, attitude and opinion together with perceived control and contextual subjective norms shapes behavioral intention and subsequent behavior (21, 22). Therefore an understanding of these opinions could inform strategies and help gain insight into salient issues that can inform future research, policy, and practice related to eliminating racial and ethnic disparities. While public opinion polls and national surveys have been employed in assessing different dimensions of attitudes towards abortion, these approaches are however limited by how questions used to collect data are framed, by repetition of questions on complex issues which exhibit a temporal trend, and by the failure to capture robust information of public sentiments (23, 24). There is a growing interest in the use of social media, particularly Twitter, as a unique source of big data for public health research, since it provides real-time content and is easily accessible and searchable (25–27). Furthermore, relative to traditional approaches to data collection which tend to be expensive and time-consuming, social media as a data source is efficient and cost-effective for data collection, recruitment of study participants, and delivery of interventions (2, 21). Also, due to the evolving nature of social media discourses, it helps provide opportunities for researchers to discover new, and previously unidentified perspectives (28). Additionally, there is a substantial quantity and scope of data from Twitter, which represents a variety of user demographics (25). Considering that abortion is one of the frequently discussed issues on social media platforms (27) and several studies have used Twitter to examine abortion opinions (2, 4, 21, 27), women who may potentially seek and eventually access abortion services, especially with the post-*Roe* landscape may rely on information from social media and shape discourses about their experiences through this platform. Therefore, as an important source of data, Twitter can provide an opportunity for early and rapid assessment of the public's concerns about abortion restriction which lays the foundation for the design and implementation of future research and programs.

An inherent challenge with the use of big data from social media for qualitative research arises from the need for manual processing and analysis of large volumes of unstructured texts in a systematic and reproducible manner (29). It frequently results in premature sampling and early selection of focal texts, problems integrating perspective and interdiscursivity (29). Nevertheless, this challenge can be overcome by employing advanced natural language processing and computational text analytic methods such as sentiment analysis and topic modeling

to uncover attitudes and salient themes emerging from public discourses contained in big data (29, 30). Several studies have employed computational text analytic methods to examine population attitudes toward contraception (31), topics and sentiments expressed in health events (32), abortion legislation (24, 33, 34), including the recent Supreme Court ruling in *Dobbs* (2), COVID-19 pandemic (35) and "Black Lives Matter" (36). Also, the utility of Twitter in studying abortion attitudes draws from existing literature which showed that opponents and proponents of abortion, including public figures and social movement organizations use their social media platforms to demonstrate their solidarity, spread information, mobilize supporters and raise funds for events following the referendum repealing Eight Amendment of the constitution in Ireland in 2017 (37). Therefore, considering the public's reaction to the overturning of *Roe vs. Wade* on social media, Twitter can help play an important role in evaluating public knowledge and concerns regarding restrictions on abortion access and as well, can inform how contextually appropriate strategies to address these concerns are designed and implemented.

Data mining techniques such as those in natural language processing are effective for representing the opinions of pro-abortion and anti-abortion supporters in the context of the reversal of *Roe vs. Wade*. A recent study by Mane, Yue (2) examined the public's reaction on Twitter to the overturning of *Roe vs. Wade* and abortion bans. The authors discuss spatial, thematic, and sentiment patterns in Twitter content on the abortion ban before and after *Dobbs*. Given substantial concerns about how the Supreme Court's decision may disproportionately impact BIPOC, there is a need to understand how the overturning of *Roe* is perceived and interpreted in the context of racial and ethnic inequalities by the general public. By employing advanced natural language processing (NLP) techniques, this study examined ethno-racial attitudes in Twitter discourses related to the overturn of *Roe vs. Wade*.

Methods

The steps involved to address the research questions for this study include data acquisition, data cleaning and preprocessing, and data analyses. Each step was performed using R software version 4.2.0.

Data acquisition

Data for this study were collected from Twitter, which has more than 300 million active users monthly. A random sample of original tweets posted in English language between June 24 (Supreme Court ruling) and July 10, 2022, were collected through Twitter's official application programming interface (API) using the "*twitteR*" package in R. This period was chosen with the goal of capturing discourses in the early phase of the reversal of *Roe vs. Wade* and therefore likely to reflect important concerns of the public. Initially, tweets related to the overturn of Roe vs. Wade were retrieved using related keywords/phrases and hashtags which included "*Roe*", "*Roe vs. Wade*", "*roevswade*", "*roeoverturned*", "*Roe* vs. *Wade*", "*#Roe*", and "*#roevwade*". Retweets were, however, excluded from the retrieved data since they do not contain as much thought as an original tweet and can serve as a source of bias in the data (38). To filter tweets for mentions of racism and different racial and ethnic categories, we customized and revised the filter terms from existing literature (39). These included "*black men*", "*black women*", "*black people*", "*white men*", "*white women*", "*white people*", "*hispanic men*", "*hispanic women*", "*hispanic people*", "*latino*", "*latina*", "*latinx*", "*asian men*", "*asian women*", "*asian people*", "*men of color*", "*women of color*", "*people of color*", "*bipoc*", "*racial*", "*racism*", "*blacks*", "*Hispanics*", "*whites*", "*Caucasian*", "*Black American*", "*African American*". Tweets used in this study are publicly available. Permission to use data was obtained from Twitter developers prior to data collection hence, ethical approval was not required. However, in order to maintain privacy of user accounts, mentions were replaced with "*@username*".

Data cleaning and preprocessing

Prior to performing data analyses, dimensionality reduction in terms of data cleaning and preprocessing techniques was performed. This involved replacing contractions, removing special characters ("&", "@", "$","#"), numbers, account usernames, non-American Standard Code for Information Interchange (non-ASCII) characters from strings, hyperlinks, white spaces, emojis, punctuations, sentence breaks, duplicate tweets and stop words. Also, texts were converted to lower case, and tweets containing four or fewer words were excluded from the corpus of tweets given that they do not provide useful semantics. Lastly, tokenization of texts into single words was performed.

Data analyses

We employed natural language processing (NLP) techniques—sentiment analysis and topic modeling—to address the research questions for this study. Both techniques are useful for providing nuanced insight into discourses in unstructured texts such as in user-generated content from social media. Sentiment analysis applies computational linguistics to identify and assess opinions and attitudes about events contained in textual data (40). This could be lexicon-based, machine learning based, or a hybrid of both methods. In addition, sentiment analysis could be performed at the text, word, or document level. This study applied the "*syuzhet*" package to conduct a lexicon-based sentiment analysis (41). This algorithm uses normalized scores to classify texts, based on sentiment polarity, into either positive, negative, or neutral sentiments. In addition, this package uses the Canadian National Research Council's (NRC) Word Emotion Association Lexicon to classify emotions within the corpus of text in to anticipation, anger, joy, surprise, trust, disgust, fear and sadness according to Plutchik's human emotion classification. In

performing sentiment analysis, the term "abortion" was excluded from the corpus since most lexicons score abortion highly negatively thereby biasing the output. In addition, the use of the abortion was more in reference to the news event rather than an individual receiving the procedure.

Topic modeling, on the other hand, is a form of unsupervised machine learning technique employed to detect word clusters which frequently co-occur within unstructured data such as social media data. In this study, structural topic modeling (STM) with spectral initialization was performed to identify latent themes (42). The STM is an extension of the Latent Dirichlet Al.location (LDA) which integrates features of a correlated topic model and sparse additive generative topic model. The "*stm*" package was applied to run the topic modeling (43). Using the *searchK()* function, we trained multiple STM models with different numbers of topics ranging from 5–50 in increments of 5 and evaluated the coherence-exclusivity plot to identify models best potential candidate topics. In addition, we iteratively compared output from the model diagnostics and selected the model with a high semantic coherence, high held-out likelihood, high exclusivity, and low residual based on recommendation from prior studies (44, 45). By examining tables and plots of the semantic coherence and exclusivity estimates, the model selection for the number of topics was based on a trade-off between the semantic coherence and exclusivity of a model in which there was no dominance by either metric (43). The researchers examined the 10 most frequently used words in each topic to assign a label and interpreted based on highest probability, FREX, score, and lift metrics (46). Each topic was then classified based on sentiment polarity into topics with positive and negative sentiments. Furthermore, we performed a correlation network analysis to examine the correlation between the topics.

Results

We collected 3,161,353 *Roe vs. Wade* related tweets posted in English language during the entire study period. Of these, a subsample of 23,044 which had mentions related to racial discourse were filtered using the relevant keywords and phrases. After data preprocessing and removal of duplicates, 20,858 unique tweets posted by 17,544 user accounts were retained for analysis. Of the retained accounts, about 3.4% were verified (blue badge next to account user's profile name indicating that an account of public interest is authentic) and about 90.6% sent only one tweet. The average tweet per account was 1.19 (SD = 1.85). The number of followers per account ranged from 0 (one account) to 58,651,318. The median number of followers was 304. The retrieved tweets were retweeted a mean of 3.1 (SD = 68.7) times and given a mean of 13.6 (SD = 319.5) favorites by Twitter users. **Figure 1** shows the volume of tweets per hour.

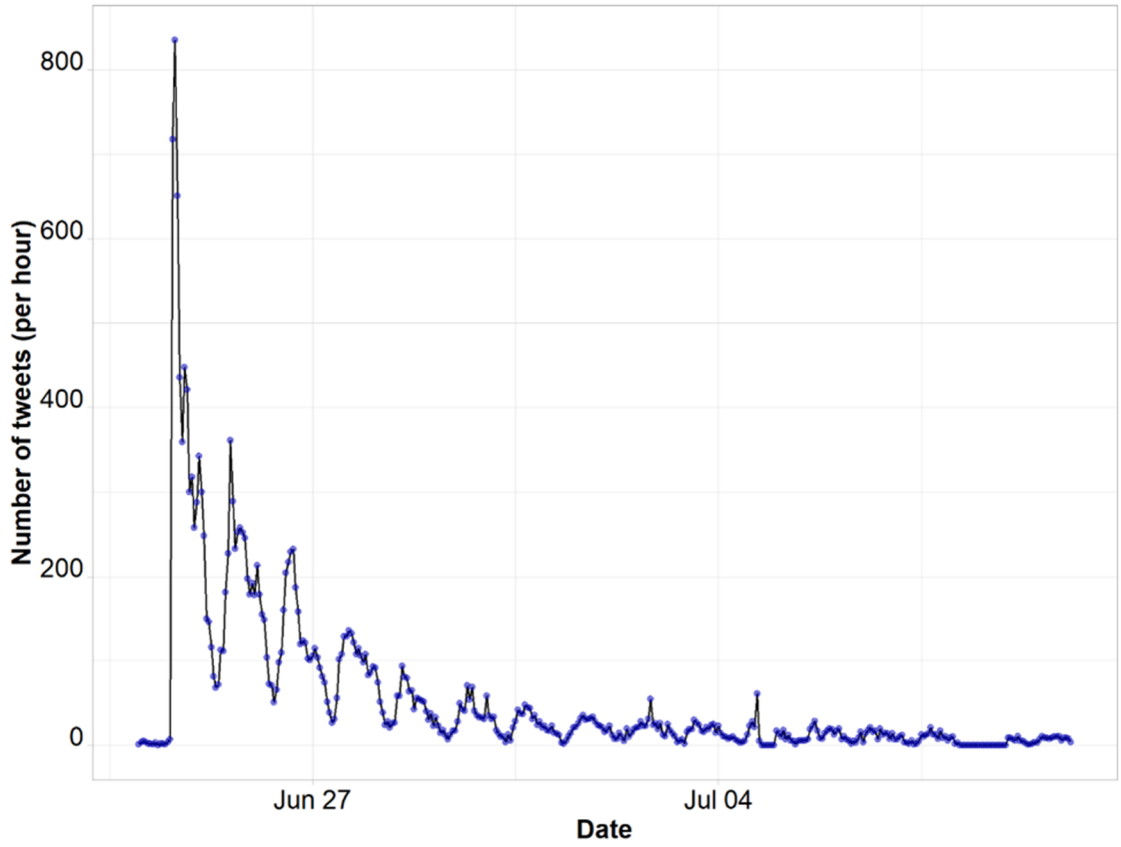

FIGURE 1
Tweet frequency per hour.

There was a total of 282,062 unique words and 1,853,293 characters (excluding stop words). The most frequently used words after preprocessing are shown in Figure 2. The most commonly used word was "white" (10,351). The next 19 most commonly occurring stemmed words were "*women*" (8400), "*overturn*" (6662), "*black*" (6470), "*marriag*" (5963), "*peopl*" (5096), "*racist*" (4162), "*interraci*" (4035), "*abort*" (3995), "*right*" (3021), "*vote*" (2462), "*court*" (2400), "*decis*" (2236), "*thoma*" (2139), "*color*" (1913), "*suprem*" (1668), "*racism*" (1579), "*justice*" (1455), "law" (1417) and "*babi*" (1400).

Sentiment polarity analysis

There was an overall negative sentiment polarity in related to racism, race and ethnicity in *Roe vs. Wade* Twitter discourse, with mean polarity scores of −0.4 [standard deviation (SD), 1.5]. Majority of tweets (60.0%, $n = 12{,}092$) were classified as expressing negative sentiments, with 39.0% ($n = 8{,}145$) expressing positive sentiments and 3.0% ($n = 619$) expressing neutral sentiments. In addition, tweets with a negative sentiment polarity declined at a slower rate over time (Figure 3B).

Emotion analysis

Of the eight basic emotions, trust was the most common emotion expressed in approximately one-fifth ($n = 29{,}144$) of all tweets with themes ranging from the decision impacting more women, children and people of color, being rooted in racism and having repercussions beyond abortion. Examples:

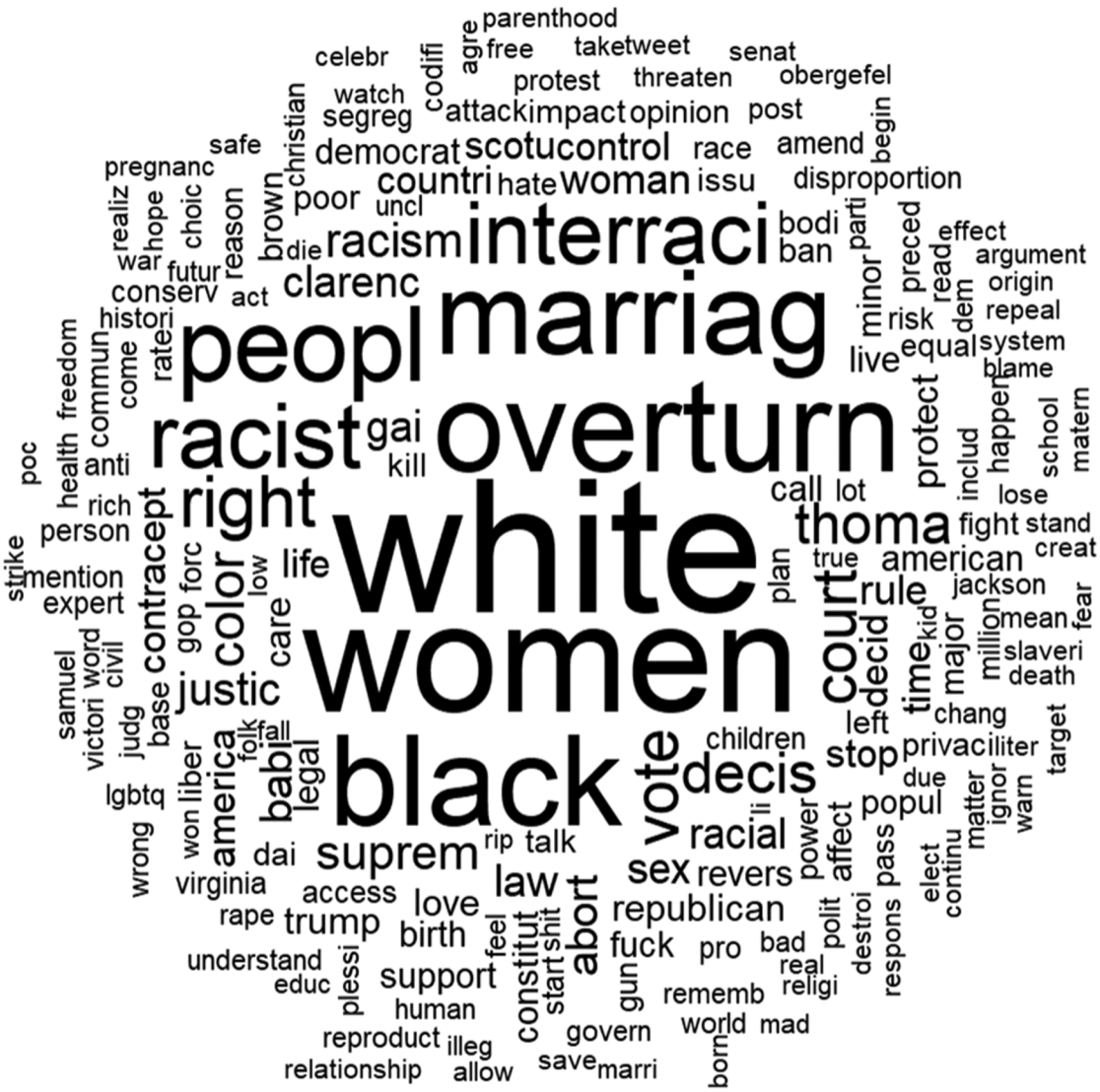

FIGURE 2
Word cloud of top 200 words (stemmed) related to Roe vs. Wade and race, ethnicity, and racism. Words with larger fonts represent higher frequency in the corpus after preprocessing text.

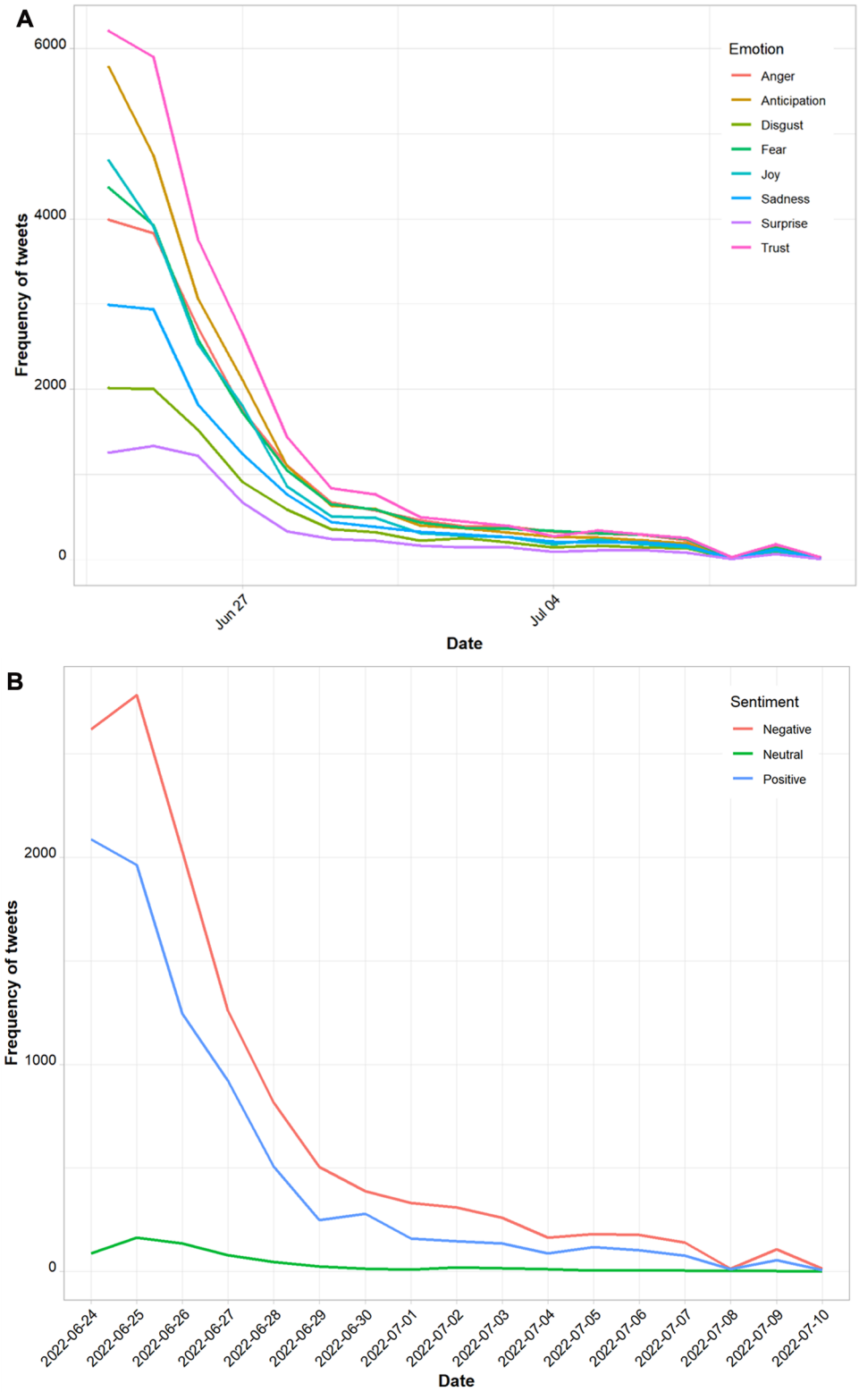

FIGURE 3
Analysis of (A) tweet emotions (anger, anticipation, disgust, fear, joy, sadness, surprise and trust) and (B) sentiment polarity over time.

> "*This past Friday, Roe fell. This is not the beginning nor the end of the attack on our rights, and we will continue fighting. We trust people who are able to get pregnant to know what is best for their bodies and lives. #whatifdmv #racialjustice #roevwade*"

and

> "*@username I agree every woman should have every right to make her own reproductive choices. But it's not about race. Really restrictions to obtaining a safe abortion are going to affect women of colour more, so there's not going to be more white people because Roe was overturned.*"

and

> "*This concerns not only the women of US, but all women in the world. Unsafe abortions might increase across the globe, risking many lives. Reversing Roe vs. Wade is also a masked form of racism. Above all,this strengthens the undying culture of sexism. Read* [Link]"

Anticipation was the second most common emotion present in 18.2% ($n = 25{,}459$) of tweets. Example:

> "*It's been in data for decades tho. They knew this was coming. The overturning of roe* vs. *wade was simply symbolic..the overturning of roe* vs. *wade was a pathetic attempt to reverse the pendulum and make whites the majority. Unless you all have cave men on Ice, it'll never happen*"

and

> "*@username @username @username They're just getting started. Their reaction to COVID Trump, Roe, and the insurrection should alert you that nothing is off the table. Many women will die, blacks and other minorities will be second or third class citizens under their control. It's already begun.*"

The third most common emotion was joy (15.5%) and include topics ranging from saving black lives, highlighting the impact on racial disparities and satisfaction with the Supreme Court's decision. Example:

> "*@username I was really pleased to see @username issue an official statement making some of the same structural connections, emphasising also the racially disparate impact. [Link]*".

and

> "*Overturning Roe* vs. *Wade should be a huge victory for black people because 1,200 to 1,500 black babies are aborted everyday and 70 percent of the abortion meals are located in the inner cities and not the suburbs*"

The least common emotions found in tweets were anger (11.6%.), disgust (6.2%) and surprise (4.2%). It is noteworthy that these emotions are indicative of words rather than tweets.

Structural topic modeling

This section provides an overview of the output from the trained topic models, results from the STM, themes that are most relevant to the objectives of this study, topic co-occurrence network and topic variations by sentiment polarity. By doing so, we provide nuanced insights into the array of discourses related to race, ethnicity, and racism that users of Twitter generated following the overturn of *Roe vs. Wade*. **Figure 4** and **Table 1** represent outputs from the training models for the various number of topics. Both show that the model with 20 topics performed well relative to the other models and was chosen as the best-fitting model after validation of the different models.

Figure 5 illustrates the 20 latent themes found with the corpus each accompanied by their top three words together with their prevalence in the data. The interpretations of these topics are further listed in the second column of **Table 2**. The top 10 words for each topic are listed in the fourth column of **Table 2**. The predominant topics which emerged from the STM were related to "racial resentment" (topic 2, 11.3%), "human rights" (topic 2, 7.9%), and "socioeconomic disadvantage" (topic 16, 7.4%) Together, these topics accounted for approximately one-third of all topics. The topic with the least prevalence was related to "Protestations" (topic 10, 1.6%).

Figure 6 is a co-occurrence network analysis which depicts the frequency with which a specific topic occurred with other topics on the corpus of tweets and thus enabling examination of several pairs of co-occurring topics simultaneously. Each topic observed with one or more co-occurrence was plotted and represented by word tags referred to as nodes. Larger nodes depict topics with a higher frequency co-occurrence in the corpus while smaller nodes represent topics which co-occurred less frequently. Furthermore, nodes in close proximity with each other are connected directly or indirectly implying that they were mentioned together, have similar neighbors, or are connected together by other nodes. On the other hand, nodes distant from each other are less connected which suggest that they are mentioned less frequently and may not be directly or indirectly connected by a neighbor. Also, topics are connected by connecting lines (edges) with the width of each line directly proportional to the number of times a connection of observed. The complete network of connections comprised 20 interconnected nodes (i.e., topics) and 400 edges (i.e., interconnecting lines between nodes).

Figure 7 is a graphical illustration of the relationships between the between the 20 topics and sentiment polarity based on the expected topic proportions with the panel divided by the zero value of the beta coefficient on the x-axis representing a neutral line. The dots represent point estimates (mean values) for the difference between topic prevalence for the positive and negative sentiments while the lines bracketing

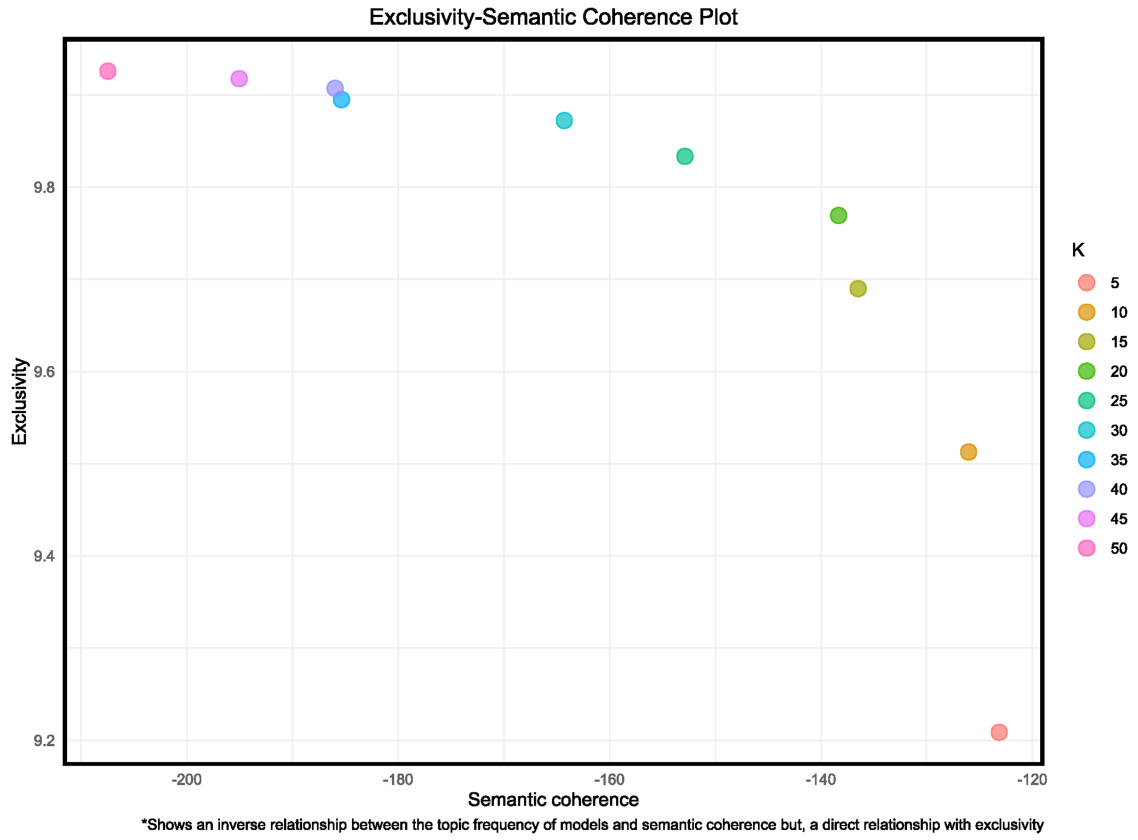

FIGURE 4
Exclusivity-semantic coherence plot for refined STM model.

TABLE 1 Structural topic model diagnostic table.

Number of Topics	Exclusivity	Semantic Coherence	Held-out Likelihood	Residual
5	9.21	−123.13	−5.79	5.58
10	9.51	−126.03	−5.68	4.84
15	9.69	−136.49	−5.65	4.40
20	9.77	−138.34	−5.65	4.10
25	9.83	−152.87	−5.63	3.95
30	9.87	−164.29	−5.63	3.94
35	9.89	−185.37	−5.63	4.23
40	9.91	−185.97	−5.62	3.94
45	9.92	−195.05	−5.62	3.93
50	9.93	−207.47	−5.60	4.33

the dots indicate the 95% confidence intervals (CIs) of the differences. Confidence intervals that include 0.0 are considered not statistically significant.

Topics on the left of the zero line indicated topics associated with negative sentiments while topics to the right of the zero line indicate topics that were associated with positive sentiments. The STM found a significant association between positive sentiments and topics related to Black genocide, disproportionate harm, gun control, Jackson attacking Clarence, vitriolic and racial attacks on Clarence, codifying Roe, socioeconomic disadvantage and rape claim. In contrast, LGBT rights, human rights, racial resentment, interracial marriage, protestations and equal protection all exhibited a significant association with negative sentiments.

Discussion

This study extends abortion public opinion literature in several ways. By employing computational methods, this paper used multiple methods of inquiry (topic modeling, sentiment, and emotion analyses) to understand public opinions about race, ethnicity, and racism in Twitter conversations related to the reversal of *Roe vs. Wade*. Firstly, this study demonstrates the utility of user-generated content from social media as an important tool for the rapid assessment of public reactions to changes in reproductive health legislation. Secondly, it provides a nuanced understanding of the varied perspectives regarding the links between race/ethnicity and racism and the reversal of *Roe*. Thirdly, it extends the extant but limited literature on abortion restrictions and racial and ethnic disparities.

The sentiment analysis revealed that majority of the tweets identified and analyzed in this study expressed predominantly negative sentiments. On the other hand, emotion analysis demonstrated a dominant pattern of tweets linked mainly to trust (~20%), anticipation and joy. There were 20 topics identified from our structural topic modeling were related to ethno-racial discourses in post-*Roe* related tweets. Of these, ten that were

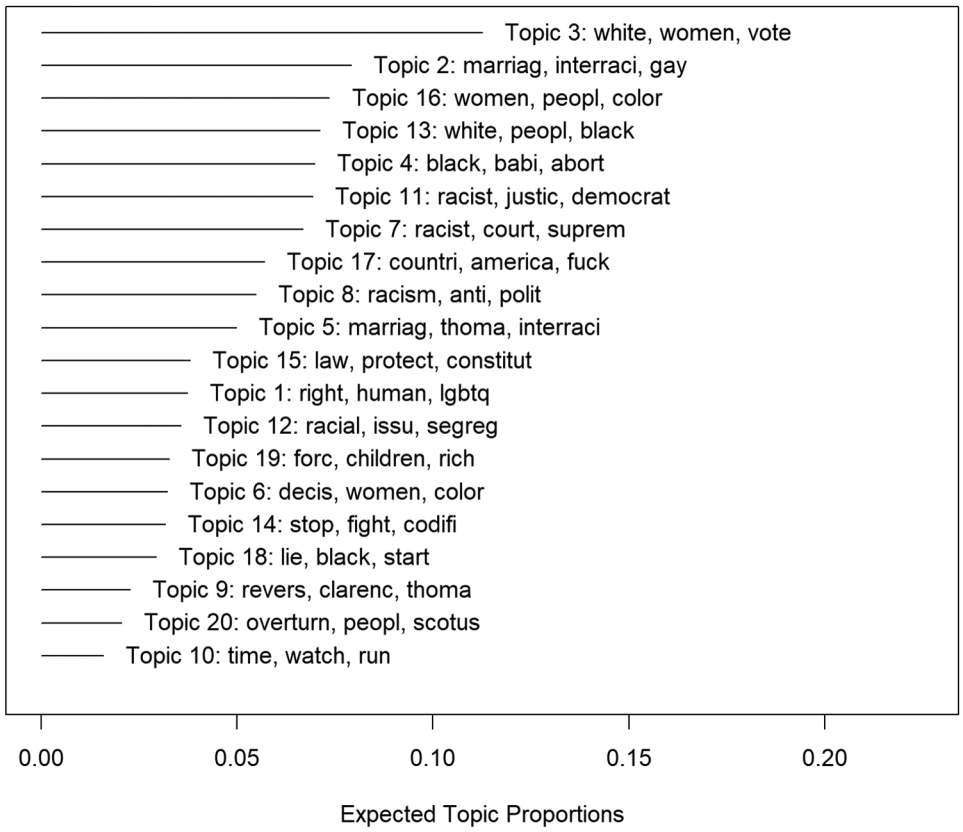

FIGURE 5
20-topic solution generated by the STM of tweets including the top three associated word stems.

classified as having expressed positive sentiments, seven contained tweets expressing negative sentiments, and three themes neither explicitly expressed positive nor negative sentiments. Overall, the topics uncovered in the discourses were predominantly related to racial resentment, human rights, socioeconomic disadvantage, women's autonomy, and black genocide. Several studies have also used social media data to examine perceptions related to the reversal of *Roe vs. Wade*. One study examining temporal trends in public perceptions on Twitter to the overturning of *Roe vs. Wade* showed that towards the year 2022, sentiments became increasingly negative and less neutral and positive (2). However, despite the large sample of tweets collected over time, this study did not examine racial discourses. Another study (4) which used Twitter content to examine backlash to Georgia's abortion ban also showed that concerns regarding race, minorities, and immigrants featured during the discourse further demonstrating concerns about the links of abortion restrictions with racial disparity and thus, a consistent subject of public interest with abortion bans. While limited by a small sample size, this study did not also examine sentiments associated with tweets. Overall, the findings from these studies therefore raises the question about whether and, to what extent the findings of negative sentiments are related specifically to racial concerns or generally to the Supreme Court's decision.

Our natural language processing (*nlp*) approach underscores that there is some evidence that Twitter users linked the Supreme Court ruling in *Dobbs*, and probably other state-level abortion restrictions, to race, ethnicity, and racism. According to the literature on abortion restriction, the plausibility of this link relates to evidence that suggests that Black women are more likely to seek an abortion and consequently, are more likely to be more adversely impacted by policies restricting access to safe and legal abortion (47). Given the relative importance of access to abortion care, the predominance of negative sentiments expressed in tweets in this study, though not surprising, can be explained by the psychological reactance theory. According to this theory, individuals would express motivation to restore specific behavioral freedoms (real or perceived) whenever these freedoms are threatened or eliminated (48). This motivation (reactance) comprises negative feelings such as the expression of arguments against freedom restrictions as well as negative cognitions. Drążkowski and Trepanowski (49) while employing this theory in their study showed an increased reactance following Poland's abortion rights restriction. The finding of "joy" in the sentiment analysis of discussions of abortion access and race may highlight the positive emotions expressed by some individuals in relation to the reversal of *Roe vs. Wade* possibly

TABLE 2 Themes identified by structural topic modeling.

Topic #	Label	Percentage	Top 10 words	Sample Tweet
3	Racial Resentment	11.27	white, women, vote, overturn, trump, major, minor, republican, power, blame	"@username I mean, also 53% of white women voted for Trump, so… demographically, white women have to own this. Every other category of women showed up and did what they needed to do, but white women voted for this. Without his 3 appointments, we'd still have Roe."
2	Human Rights	7.91	marriag, interraci, gay, sex, contracept, legal, privaci, overturn, control, ban	"@username @username @username @username @username @username @username It's not but the Roe vs. Wade WAS underpinned by the right to privacy, the scotus rules it's not a protected right in this judgement, that same right to privacy underpins the right to contraception,gay marriage, interracial marriage and was used to repeal sodomy laws."
16	Socioeconomic disadvantage	7.35	women, peopl, color, affect, overturn, poor, access, communiti, disproportion, die	"imagine someone's tweeting "damn latinx and black ppl are gonna suffer cuz of the Roe vs. Wade overturn" and ur only take away is the use of the word latinx… now imagine if u redirected all that anger towards the word latinx over to real life issues [Link]"
13	Women's Autonomy	7.11	white, woman, overturn, decid, black, bodi, protest, person, choic, peopl	"But passing Roe vs. Wade was quite literally these "old white men" agreeing that no man should decide what a woman does with her body hence why it was passed. Had they rejected it that would have concluded Gilead states get to decide what a woman can do with her body #Backfired [Link]"
4	Black Genocide	6.97	black, babi, abort, popul, plan, million, kill, american, racist, live	"@username @username Lol huh? Bro if anything the black population has slowed it's growth due to Roe vs. Wade. 20million black babies have been killed since 1973 because of Roe vs. Wade. The founder of Planned Parenthood was a known racist and targeted black babies."
11	Justice Clarence Attacked	6.94	racist, justic, democrat, call, liber, left, thoma, overturn, attack, hate	"@username @username Have you notice they trying to put all these decisions on black men by posting Clarence thomas everywhere. They STILL wana put it on us. And its exactly why white liberals keep losing. #RoeVWade #RoeOverturned"
7	Education	6.68	racist, court, suprem, overturn, life, brown, wrong, plessi, victori, republican	"@username @username @username Both. He's saying that Brown v Board cancelled the precedent set by Pelsey(?) in the same way SCOTUS just got rid of the Roe precedent. But he's doing it for plausible deniability to be racist and speaking to his base while he's doing it. Gaslighting."
17	Systematic Inequality	5.71	countri, america, fuck, peopl, day, white, care, futur, world, free	"@username @username So sad when the facts are considered hate. You don't like the fact that for RW extremists the abortion issue started in racism & segregation? It's a fact. They didn't care when Roe was decided. [Link]"
8	Gun Control	5.03	racism, anti, polit, talk, gun, histori, system, supremaci, overturn, christian	"It's not too late. History is still unfolding. That said, if you'd told me what lay in wait for my 2017 self (a botched pandemic, an insurrection, Roe gone, anti-anti-racist backlash, metastasizing gun violence, etc.) I would have been skeptical that it could be THAT extreme"
5	Interracial Marriage	4.98	marriag, thoma, interraci, love, justic, overturn, court, clarenc, virginia, rule	"@username And noticeably omits interracial marriage which was not permitted in the Constitution. A later right which he availed of just like Roe and these cases this hypocrite mentioned. ["
15	Equal Protection	3.67	law, protect, constitut, reason, rule, equal, pass, govern, bad, creat	"@username @username @username That's not what that means. States have had different laws and regulations from other states since our founding. Now if the court had come out and said Roe is the law of the land for black women but it's overturned for whites women that would be an equal protections issue."
1	LGBTQ Civil Rights	3.53	right, human, lgbtq, take, civil, act, begin, come, step, remov	"If you *like* these times; Roe vs. Wade overturned, trans people hurt and killed, gun rights over school shootings and cop budgets expanded while they keep killing black people, please consider why. Why pain and death of people trying to live their own lives feels like your victory"
12	School Desegregation	3.57	racial, issu, segreg, educ, school, gender, inter, public, religi, social	"Some of the impacts from the end of #Roe:—Limits of education & career advancements—Ongoing systemic racism—Criminalization of pregnancy—Maintaining gender inequality—Ongoing poverty cycle"
19	Forced Pregnancy	3.41	forc, children, rich, white, support, kid, birth, famili, pay, child	"Politicians care more about money than your rights. Both sides want to keep the debate alive because it rakes in $$$. The fight around Roe is more insidious than religion or life. It's another example of political greed at the expense of women, especially women of color."
6	Disproportionate Harm	3.21	decis, women, color, impact, expert, post, threaten, destroy, warn, reproduct	"How outlawing abortion will worsen America's maternal mortality crisis. The SCOTUS decision will disproportionately impact Black women, who are 3× more likely to die during pregnancy or childbirth than whites. Blacks are also more likely to be uninsured. [Link]"
14	Codifying Roe	3.16	stop, fight, codifi, dem, slaveri, won, elect, war, kill, biden	"SCOTUS enshrining minority rule for the white evangelical snowflakes. Let's call all white people minorities now. They are acting like such fragile babies they have to hide behind such the SCOTUS religious minority protection. [Link]"
18	Rape Claim	2.93	lie, black, start, pro, rape, base, claim, told, friend, girl	"The overturning of Roe vs. Wade was influenced by fears that white people are becoming the minority. They're terrified of losing political power and banning

(*continued*)

TABLE 2 Continued

Topic #	Label	Percentage	Top 10 words	Sample Tweet
				abortion to increase the "domestic supply" of white infants is their solution. [Link]"
9	Jackson Rips Clarence	2.19	evers, clarenc, thoma, risk, uncl, interraci, marriag, jackson, samuel, rip	"Please know, the Democrats had plenty of time to codify Abortion with a constitutional amendment, but knew it would never pass. They relied on a poorly scripted SCOTUS judgment (of white men). She's trying to satisfy the base while admitting #RoeVWade had no legal standing. [Link]"
20	Liberalism & Abortion	2.05	overturn, peopl, scotus, white, make, support, real, happen, busi, week	"I ironically find myself without a lot to say on #Roevs.Wade / #DobbsVsJackson. I think this ruling is a loss for #womensrights. At the same time, what does centrist liberalism expect when it can't even have a discussion about how #MargaretSanger hated black people? "
10	Protestations	1.59	time, watch, run, mention, video, suprem, minut, forgot, apolog, beg	"I can't help but see how folks are responding to the overturning of Roe vs. Wade like "this is too far."…..so is y'all saying antiblack racism is acceptable? The interest convergence with white liberal prerogative isn't lost on me…..#Roevs.Wade"

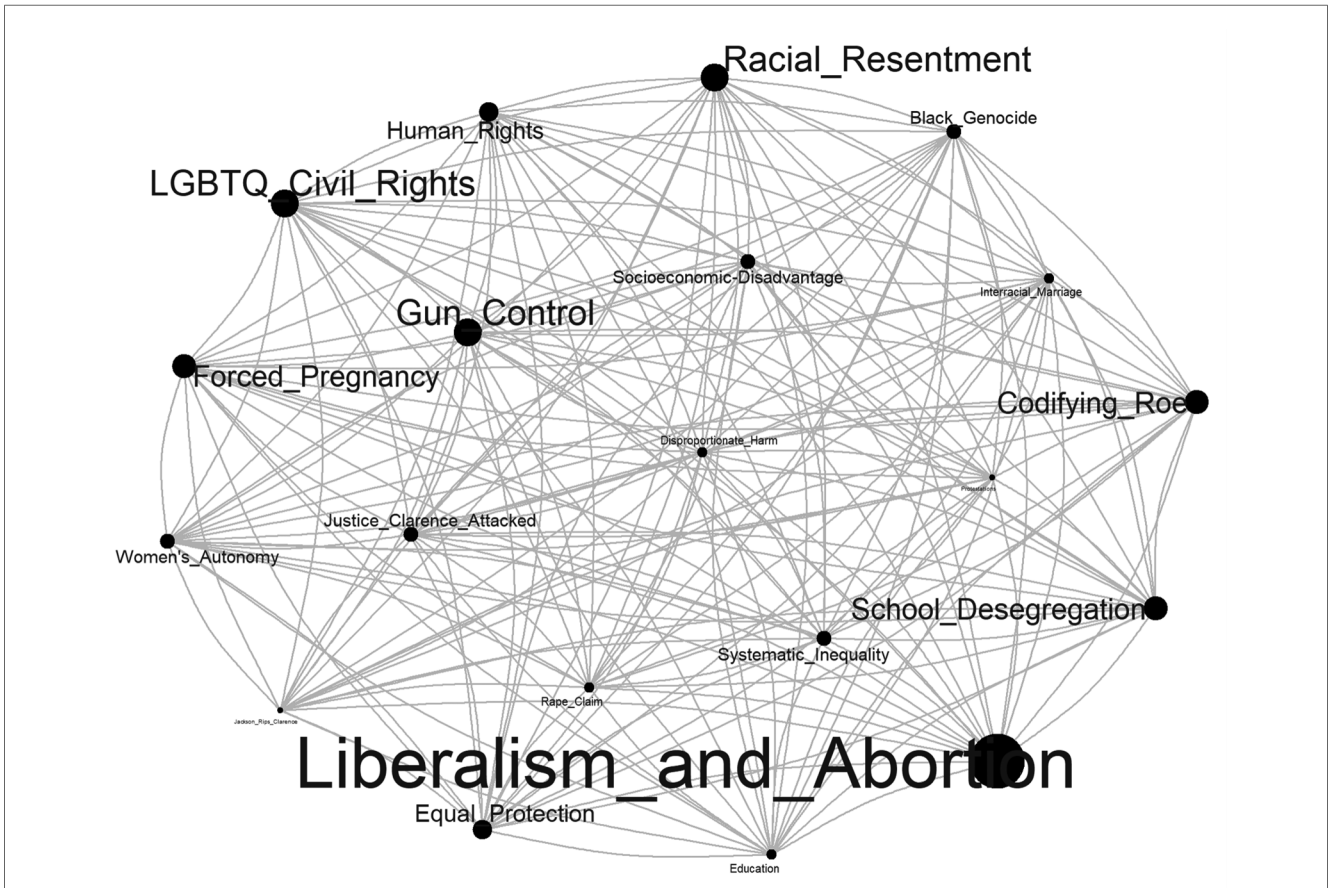

FIGURE 6
Network analysis for all co-occurring topics from the STM.

because the decision aligns with their moral beliefs and values. It is however important to note that the presence of "joy" in a sentiment analysis does not necessarily imply that the sentiment is universally positive or that everyone is experiencing joy as there are likely to be a range of emotions and perspectives regarding this the issue, including those who are deeply concerned or upset by the reversal of *Roe vs. Wade*. A thorough analysis from real-world observational studies that takes into account multiple factors such as moral beliefs and values of different groups, as well as the potential impact of the decision on women's health and well-being would further strengthen the findings from this study.The prevalent negative sentiments together with reactance as shown in our study are reflected in the topics related to racial resentment and protestations which emerged from the topic modeling analysis. Also, findings from the STM showed that within the ethno-racial discourse on

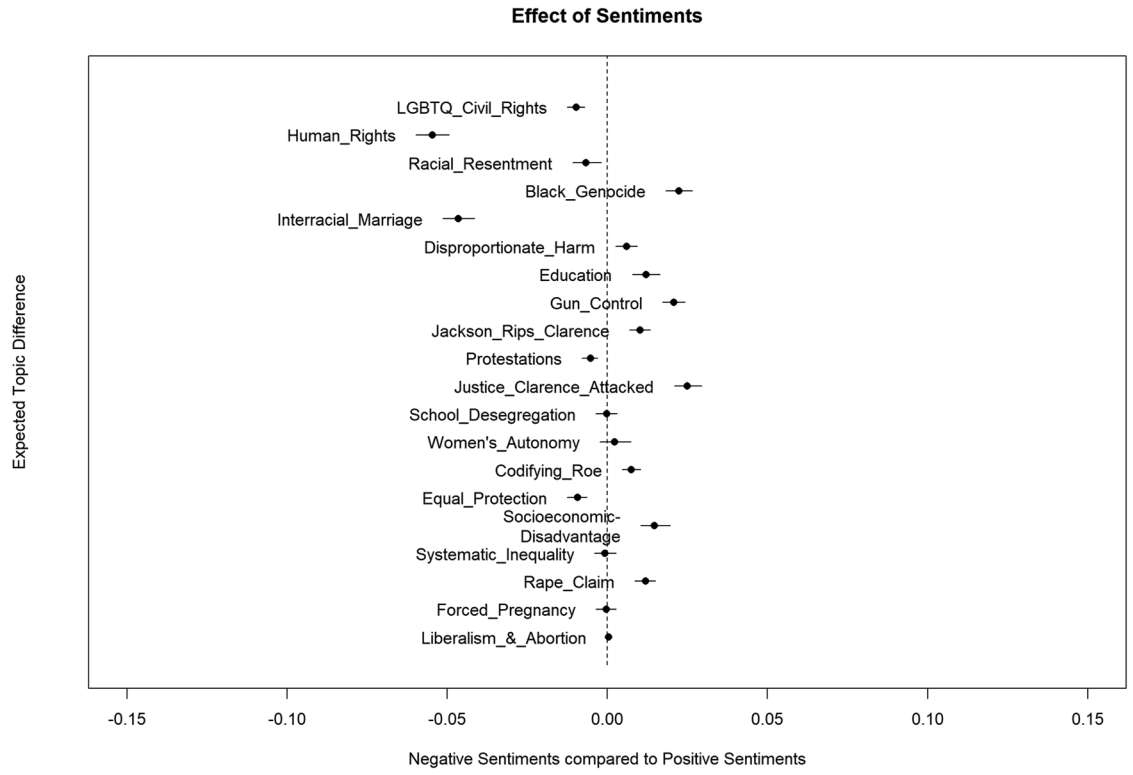

FIGURE 7
Difference in topic prevalence by sentiment polarity.

Twitter related to the fall of *Roe*, themes related to the LGBTQ rights, interracial marriage, equal protection, systematic inequality and gun control emerged. The emergence of these themes could be an indication of the perceived aftermath that is likely to follow *Dobbs*.

As the Supreme Court's ruling in *Dobbs* creates uncertainties for racial inequalities amongst other concerns, our findings reiterate the need for more evidence to determine how policies restricting legal abortion might affect access to abortion services by women of color. Furthermore, while it is expected that future studies will examine real-world repercussions of *Roe vs. Wade* on racial disparities, this study helps to lay the foundation upon which these studies can leverage to evaluate whether and, to what extent early public concerns as expressed on social media reflect individual experiences and in addition, will provide further validation regarding the utility of social media data for investigating public perceptions of social and health-related phenomena including reproductive health.

There are several limitations of this study. Data for this study was obtained from Twitter. While it is one of the most popular microblogging platforms, the findings from this study may not be representative of reactions or perceptions on other social media platforms. In addition, tweets used for analysis may not be representative of the entire US population given the demographic and geographic diversity of Twitter users. However, the extent of the diversity is sufficient to capture public concerns that could be used to inform future research. Also, because Twitter demographic data does not include race, it was not possible to examine how sentiments and topics varied by race/ethnicity which could have been valuable to the findings in this study. Second, this study only used tweets posted in English language thus leaving out a proportion of tweets expressed in other languages (for example, Spanish), especially with the growing population of Latinx population in the US (50) which would have generated findings relevant to the conclusions in this study. A third limitation is related to the keywords used to retrieve *Roe vs. Wade* related tweets. Although wildcards for one or any of the queries can help capture misspellings, we did not, however use this in our study. This would have increased the sample size for this study and in turn, provide additional information relevant to the objectives of this study. Finally, this study focused on Twitter reactions after the overturn of *Roe* and hence was not able to examine the evolution of sentiments and themes before the Supreme Court draft opinion was leaked and the reactions after it was leaked before the official reversal of *Roe*.

Conclusion

User-generated content from Twitter can be leveraged to monitor reactions to changes in reproductive health policies and legislations. The use of natural language processing to perform text analysis of tweets posted in response to the

reversal of *Roe* revealed the dynamic nature of sentiments and several themes which emerged in Twitter discourse following the federal abortion restriction. The findings from our study illustrate a wide range of ethno-racial concerns following the reversal of *Roe*. With available evidence suggesting that only socially-advantaged women had limited access to abortion services in the pre-*Roe* era, our study strengthens the need for ongoing surveillance of racial and ethnic disparities in abortion access in the post-*Roe* era.

Data availability statement

The original contributions presented in the study are included in the article/supplementary materials, further inquiries can be directed to the corresponding author/s.

Ethics statement

Ethical review and approval was not required for this study in accordance with the local legislation and institutional requirements.

Author contributions

Writing–original draft, OIU and PO; Writing—review and editing, OIU, PO and OCN; validation, OIU; investigation and resources, OIU and CEO; software and visualization, OIU and CEO; conceptualization and supervision, OIU and RSK. All authors have read and agreed to the published version of the manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

References

1. Chen S, Gu X, Qi L, Qi Q, Zhou J, Wang L. Reflections on abortion rights: from policy to medicine. *Biosci Trends*. (2022). doi: 10.5582/bst.2022.01354

2. Mane H, Yue X, Yu W, Doig AC, Wei H, Delcid N, et al. editors. Examination of the Public's Reaction on Twitter to the Over-Turning of Roe vs. Wade and Abortion Bans. Healthcare (2022). MDPI.

3. Gold RB. Lessons from before Roe: will past be prologue? *Guttmacher Rep Public Policy*. (2003) 6(1):8–11. https://www.guttmacher.org/sites/default/files/article_files/gr060108.pdf.

4. Doan AE, Bogen KW, Higgins E, Orchowski LM. A content analysis of twitter backlash to Georgia's abortion ban. *Sex Reprod Healthc*. (2022) 31:100689. doi: 10.1016/j.srhc.2021.100689

5. Weitz TA, Yanow S. Implications of the federal abortion ban for women's health in the United States. *Reprod Health Matters*. (2008) 16(sup31):99–107. doi: 10.1016/S0968-8080(08)31374-3

6. Chakraborty P, Murawsky S, Smith MH, McGowan ML, Norris AH, Bessett D. How Ohio's proposed abortion bans would impact travel distance to access abortion care. *Perspect Sex Reprod Health*. (2022) 54(2):54–63. doi: 10.1363/psrh.12191

7. McCurdy SA. Abortion and public health: time for another look. *Linacre Q*. (2016) 83(1):20–5. doi: 10.1080/00243639.2015.1133019

8. Feinberg EC, Kawwass JF, Cedars MI. Roe vs. Wade and the threat to fertility care. *Obstet Gynecol*. (2022) 140(4):557–9. doi: 10.1097/AOG.0000000000004928

9. Coen-Sanchez K, Ebenso B, El-Mowafi IM, Berghs M, Idriss-Wheeler D, Yaya S. Repercussions of overturning Roe vs. Wade for women across systems and beyond borders. *Reprod Health*. (2022) 19(1):184. doi: 10.1186/s12978-022-01490-y

10. Dickey MS, Mosley EA, Clark EA, Cordes S, Lathrop E, Haddad LB. "They're forcing people to have children that they can't afford": a qualitative study of social support and capital among individuals receiving an abortion in Georgia. *Soc Sci Med*. (2022) 315:115547. doi: 10.1016/j.socscimed.2022.115547

11. Kulczycki A. Dobbs: navigating the new quagmire and its impacts on abortion and reproductive health care. *Health Educ Behav*. (2022) 49(6):924–8. doi: 10.1177/10901981221125430

12. Redd SK, Rice WS, Aswani MS, Blake S, Julian Z, Sen B, et al. Racial/ethnic and educational inequities in restrictive abortion policy variation and adverse birth outcomes in the United States. *BMC Health Serv Res*. (2021) 21(1):1139. doi: 10.1186/s12913-021-07165-x

13. Ishola F, Ukah UV, Nandi A. Impact of abortion law reforms on women's health services and outcomes: a systematic review protocol. *Syst Rev*. (2021) 10(1):192. doi: 10.1186/s13643-021-01739-w

14. Johnson R. Dobbs vs.. Jackson and the revival of the states' rights constitution. *Polit Q*. (2022) 93(4):612–9. doi: 10.1111/1467-923X.13193

15. Paltrow LM, Harris LH, Marshall MF. Beyond abortion: the consequences of overturning Roe. *Am J Bioeth*. (2022) 22(8):3–15. doi: 10.1080/15265161.2022.2075965

16. Fay KE, Diouf K, Butler SK, Onwuzurike C, Wilkinson BE, Johnson NR, et al. Abortion as essential health care and the critical role your practice can play in protecting abortion access. *Obstet Gynecol*. (2022) 140(5):729–37. doi: 10.1097/AOG.0000000000004949

17. Kaufman R, Brown R, Martínez Coral C, Jacob J, Onyango M, Thomasen K. Global impacts of Dobbs vs. Jackson women's health organization and abortion regression in the United States. *Sex Reprod Health Matters*. (2022) 30(1):2135574. doi: 10.1080/26410397.2022.2135574

18. Mosley EA, Ayala S, Jah Z, Hailstorks T, Hairston I, Rice WS, et al. I don't regret it at all. It's just I wish the process had a bit more humanity to it … a bit more holistic": a qualitative, community-led medication abortion study with Black and Latinx Women in Georgia, USA. *Sex Reprod Health Matters*. (2022) 30(1):2129686. doi: 10.1080/26410397.2022.2129686

19. Räsänen J, Gothreau C, Lippert-Rasmussen K. Does overruling Roe discriminate against women (of colour)? *J Med Ethics*. (2022) 48(12):952. doi: 10.1136/jme-2022-108504

20. Stevenson AJ. The pregnancy-related mortality impact of a total abortion ban in the United States: a research note on increased deaths due to remaining pregnant. *Demography*. (2021) 58(6):2019–28. doi: 10.1215/00703370-9585908

21. Altshuler AL, Gerns Storey HL, Prager SW. Exploring abortion attitudes of US adolescents and young adults using social media. *Contraception*. (2015) 91(3):226–33. doi: 10.1016/j.contraception.2014.11.009

22. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process*. (1991) 50(2):179–211. doi: 10.1016/0749-5978(91)90020-T

23. Crawford BL, Jozkowski KN, Turner RC, Lo W-J. Examining the relationship between Roe vs. Wade knowledge and sentiment across political party and abortion identity. *Sex Res Soc Policy*. (2022) 19(3):837–48. doi: 10.1007/s13178-021-00597-4

24. Jozkowski KN, Crawford BL, Turner RC, Lo W-J. Knowledge and sentiments of Roe vs. Wade in the wake of justice kavanaugh's nomination to the U.S. Supreme court. *Sex Res Soc Policy*. (2020) 17(2):285–300. doi: 10.1007/s13178-019-00392-2

25. Sinnenberg L, Buttenheim AM, Padrez K, Mancheno C, Ungar L, Merchant RM. Twitter as a tool for health research: a systematic review. *Am J Public Health*. (2017) 107(1):e1–e8. doi: 10.2105/AJPH.2016.303512

26. Dehlendorf C, Fox E, Sharma AE, Zhang J, Yang S, Centola D. Birth control connect: a randomized trial of an online group to disseminate contraceptive information. *Contraception*. (2020) 101(6):376–83. doi: 10.1016/j.contraception.2020.01.014

27. Han L, Han L, Darney B, Rodriguez MI. Tweeting PP: an analysis of the 2015–2016 planned parenthood controversy on twitter. *Contraception*. (2017) 96(6):388–94. doi: 10.1016/j.contraception.2017.08.011

28. Chen K, Tomblin D. Using data from reddit, public deliberation, and surveys to measure public opinion about autonomous vehicles. *Public Opin Q*. (2021) 85 (S1):289–322. doi: 10.1093/poq/nfab021

29. Aranda AM, Sele K, Etchanchu H, Guyt JY, Vaara E. From big data to rich theory: integrating critical discourse analysis with structural topic modeling. *Eur Manage Rev*. (2021) 18(3):197–214. doi: 10.1111/emre.12452

30. Macanovic A. Text mining for social science—the state and the future of computational text analysis in sociology. *Soc Sci Res*. (2022) 108:102784. doi: 10.1016/j.ssresearch.2022.102784

31. Merz AA, Gutiérrez-Sacristán A, Bartz D, Williams NE, Ojo A, Schaefer KM, et al. Population attitudes toward contraceptive methods over time on a social media platform. *Am J Obstet Gynecol*. (2021) 224(6):597.e1–.e14. doi: 10.1016/j.ajog.2020.11.042

32. Paul MJ, Dredze M. Discovering health topics in social media using topic models. *PLoS One*. (2014) 9(8):e103408. doi: 10.1371/journal.pone.0103408

33. Crawford BL, Jozkowski KN, Turner RC, Lo W-J. Examining the relationship between Roe vs. Wade knowledge and sentiment across political party and abortion identity. *Sex Res Soc Policy*. (2022) 19(3):837–48. doi: 10.1007/s13178-021-00597-4

34. Valdez D, Jozkowski KN, Montenegro MS, Crawford BL, Jackson F. Identifying accurate pro-choice and pro-life identity labels in Spanish: Social media insights and implications for comparative survey research. *Perspect Sex Reprod Health*. (2022) 54 (4):166–76. doi: 10.1363/psrh.12208

35. Boon-Itt S, Skunkan Y. Public perception of the COVID-19 pandemic on twitter: sentiment analysis and topic modeling study. *JMIR Public Health Surveill*. (2020) 6(4): e21978. doi: 10.2196/21978

36. Klein C, Reimann R, Quintana IO, Cheong M, Ferreira M, Alfano M. Attention and counter-framing in the black lives matter movement on twitter. *Humanit Soc Sci Commun*. (2022) 9(1):367. doi: 10.1057/s41599-022-01384-1

37. Hunt K. Twitter, social movements, and claiming allies in abortion debates. *J Inf Technol Politics*. (2019) 16(4):394–410. doi: 10.1080/19331681.2019.1659901

38. Gintova M. Use of social media in Canadian public administration: opportunities and barriers. *Can Public Adm*. (2019) 62(1):7–26. doi: 10.1111/capa.12298

39. Bisgin N, Bisgin H, Hummel D, Zelner J, Needham BL. Did the public attribute the flint water crisis to racism as it was happening? Text analysis of twitter data to examine causal attributions to racism during a public health crisis. *J Comput Soc Sci*. (2022):1–26. doi: 10.1007/s42001-022-00192-6. https://link.springer.com/article/10.1007/s42001-022-00192-6

40. Agarwal S, Sarkar S. Topical analysis of migration coverage during lockdown in India by mainstream print media. *PLoS ONE*. (2022) 17(2):e0263787.

41. Stracqualursi L, Agati P. Tweet topics and sentiments relating to distance learning among Italian twitter users. *Sci Rep*. (2022) 12(1):9163. doi: 10.1038/s41598-022-12915-w

42. Lindstedt NC. Structural topic modeling for social scientists: a brief case study with social movement studies literature, 2005–2017. *Soc Curr*. (2019) 6(4):307–18. doi: 10.1177/2329496519846505

43. Roberts ME, Stewart BM, Tingley D. Stm: an R package for structural topic models. *J Stat Softw*. (2019) 91:1–40. doi: 10.18637/jss.v091.i02

44. Sterling J, Jost JT, Hardin CD. Liberal and conservative representations of the good society: a (social) structural topic modeling approach. *SAGE Open*. (2019) 9 (2):2158244019846211. doi: 10.1177/2158244019846211

45. Roberts ME, Stewart BM, Airoldi EM. A model of text for experimentation in the social sciences. *J Am Stat Assoc*. (2016) 111(515):988–1003. doi: 10.1080/01621459.2016.1141684

46. Tonidandel S, Summerville KM, Gentry WA, Young SF. Using structural topic modeling to gain insight into challenges faced by leaders. *Leadersh Q*. (2022) 33 (5):101576. doi: 10.1016/j.leaqua.2021.101576

47. Mosley EA, Redd SK, Hartwig SA, Narasimhan S, Lemon E, Berry E, et al. Racial and ethnic abortion disparities following Georgia's 22-week gestational age limit. *Womens Health Issues*. (2022) 32(1):9–19. doi: 10.1016/j.whi.2021.09.005

48. Bélanger JJ, Schumpe BM, Nisa CF, Moyano M. When countermessaging backfires: the role of obsessive passion in psychological reactance. *Motiv Sci*. (2021) 7:83–95. doi: 10.1037/mot0000206

49. Drążkowski D, Trepanowski R. Religious Beliefs and Protesting Poland's Abortion Rights Restriction: A Study of Motivational Pathways. (2022). PsyArXiv. September 29. doi: 10.31234/osf.io/hx4ke

50. Solon M, Kaplan AM, Crawford BL, Turner RC, Lo W-J, Jozkowski KN. Knowledge of and attitudes toward Roe vs. Wade among US latinx adults. *Hisp J Behav Sci*. (2022) 44(1):71–93. doi: 10.1177/07399863221116849

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Main barriers to services linked to voluntary pregnancy termination on three grounds in Chile

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Introduction: After decades of absolute criminalization, on September 14, 2017, Chile decriminalized voluntary termination of pregnancy (VTP) when there is a life risk to the pregnant woman, lethal incompatibility of the embryo or fetus of genetic or chromosomal nature, and pregnancy due to rape. The implementation of the law reveals multiple barriers hindering access to the services provided by the law.

Objectives: To identify and analyze, using the Tanahashi Model, the main barriers to the implementation of law 21,030 in public health institutions. This article contributes to the follow-up of this public policy, making visible the obstacles that violate women's rights of women to have dignified access to abortion and that affect the quality of health care in Chile.

Material and method: Qualitative design, following the postpositivist paradigm. The sample consisted of relevant actors directly related to pregnancy termination. Snowball sampling and semi-structured interviews were used. Grounded theory was used through inductive coding, originating categories regrouped into meta-categories following Tanahashi's model. The rigor criteria of transferability, dependability, credibility, authenticity, and epistemological theoretical adequacy were used. The identity of the participants and the confidentiality of the information were protected.

Results: From January 2021 to October 2022, 62 interviews were conducted with 20 members of the psychosocial support team; 18 managers; 17 members of the biomedical health team; 4 participants from of civil society, and three women users. The main obstacles correspond to availability barriers, accessibility barriers, acceptability barriers, contact barriers, and effectiveness barriers.

Conclusions: Barriers to access abortion under three grounds violate the exercise of women's sexual and reproductive rights. It is urgent to carry out actions of control and follow-up of this public policy to the corresponding entities.

KEYWORDS

abortion, barriers in healthcare, conscientious objection, stigma, obstetric violence, sexual and reproductive rights, health policies

1. Introduction

1.1. Decriminalization of abortion in Chile

Since 1931, the Chilean Sanitary Code allowed therapeutic abortion to protect the life and health of women. In August 1989, while the country lived under a military dictatorship and in the absence of Parliament, Law 18,826 was passed, which established that *"no action may be carried out whose purpose is to cause an abortion"* (1), transforming Chile into one of the countries with a total abortion ban, criminalizing abortion, exposing women to situations that threaten their health and life, and preventing the exercise of their sexual and reproductive rights (2).

Starting in 1990, with the recovery of democracy, there were multiple legislative instances to reinstate therapeutic abortion, all of them unsuccessful. Finally, on September 14, 2017, Law 21030 was passed, which decriminalized voluntary termination of pregnancy (VTP) on three specific grounds: when the woman's life is at risk (ground 1); an embryo or fetus with congenital or acquired pathology of a lethal nature (ground 2); pregnancy resulting from rape (ground 3) (3). However, abortion continues to be a crime when performed beyond the three grounds and when the gestational age limit is exceeded in case of rape (12 weeks of gestation in women over 14 years of age and 14 weeks for adolescents under 14) (3).

During the legislative debate, which lasted more than 2.5 years, there were multiple controversies centered on: the recognition of a women's right to choose; the ontological and legal status of the embryo/fetus; the defense of life from fertilization to natural death; the need to accompany women who are in any of the grounds; the duty of confidentiality vs. the mandatory nature of filing a report of rape, and individual and institutional conscientious objection (2, 4). At the same time, from anti-abortion groups, most arguments centered on arguing that the bill did not decriminalize but rather legalized free or unjustified abortion (4). One of the consequences of the aftermath of congress's approval of the law under a polarized debate marked by strong ideological-religious content, coming mainly from representatives of Christian religious groups and right-wing parliamentarians (conservatives), resulted in filing a declaration of unconstitutionality before the Constitutional Court, whose ruling declared the termination of pregnancy constitutional on all three grounds, settled the discussion on the status of the embryo/fetus as a person, ratified conscientious objection as a right for the physician who is required to perform the VTP and extended the right to the rest of the staff (health care professionals including technicians) who work in the surgical ward during the procedure, and allows healthcare institutions to invoke conscientious objections (2, 5).

The law is a restrictive in terms of its scope. Its implementation has been problematic and if a liberal law were to be passed, like abortion on request, it would be likely that new arguments and barriers would be raised, even more than the ones identified in this study.

1.2. Chilean healthcare system

To contextualize access to VTP, we will detail some characteristics of the Chilean healthcare system. Chile has a hybrid, public, and private system. The public system covers around 70% of the population through the *Fondo Nacional de Salud* (*FONASA*), which consists of 4 tiers of users (A, B, C, D), where levels A and B correspond the most vulnerable population. The private health system covers around 17.5% of the population and is provided by health insurance institutions (*ISAPRES*). There are insurers, public or semipublic, one for the armed forces (3%) (6, 7), and private nonprofits covering occupational diseases and labor accidents (7).

Depending on the level of specialization, healthcare is provided at three levels. In the public sector, the first level corresponds to primary healthcare service (APS, in Spanish), providing comprehensive healthcare during the life cycle through promotion, prevention, treatment, and palliative care (8). Care is given in an outpatient setting, provided mainly by municipal healthcare departments and corporations,[1] and regulated and supervised by the Ministry of Health (6, 7, 9). The secondary and tertiary level is provided through 29 Public Health Services, entities dependent of the Ministry of Health that provides specialized outpatient and hospitalized care (6, 7). In the private sector, the first level consists of outpatient medical appointments with an individual health provider at medical centers or private practices. It also includes unspecialized emergency care and home care. The secondary level consists of healthcare given by a specialist in medical centers and medical consults linked to private clinics. The tertiary level consists of specialized healthcare provided in emergency rooms or hospitalization at tertiary care private hospitals or clinics (10).

The guidelines from the technical regulations of the law, determine that services related to the VTP are to be carried out at the obstetrician-gynecological specialty level. Therefore, determining VTP cases, psychosocial support, and procedures to terminate a pregnancy are considered only at the secondary and tertiary levels of care (10).

Law 21,030 not only recognizes the autonomy and self-determination of the pregnant woman to choose but also establishes the right to voluntarily access a psychosocial support program given by a "psychosocial support team," which is conformed of two professionals from the fields of psychology and social work. This accompaniment includes reception and support actions during and after the decision-making process and must be provided with the authorization of the woman in a personalized and respectful manner, regardless of choice to continue the pregnancy or not (3, 10).

1 Chile is territorially and administratively divided into communes, provinces, and regions. Municipalities are agencies responsible for government and community development (9). Even though they have autonomy in their attributions and legal functions, they are part of the public administration.

1.3. Voluntary termination of pregnancy in Chile

Once the bill passed, notorious cases were reported in the Chilean press that already evidenced the obstacles to VTP implementation. One of them occurred in October 2017, affecting a girl under the age of 13, who, despite meeting the criteria for a VTP, was notified by the Health Service in charge that no physicians were willing to perform the procedure at the hospitals under their jurisdiction. They argued that they did not have the regulations of the law, the equipment for the procedure, or the chain of custody for the deoxyribonucleic acid (DNA) samples required for the criminal investigation (11). A year after the bill passed, the press described multiple barriers, such as the high proportion of objectors, reaching 100% in some public institutions; dismissal of the woman's right to choose, and indifference by those who were in charge of the woman's care; the lack of knowledge of the regulations by the members on the healthcare team; a lack of information and empowerment of women that find themselves in one of the three grounds; the lack of action from the entity in charge of the implementation and the stigmatization of healthcare workers who have performed a VTP (12).

Estimates made during the discussion of the law pointed to 2,550 cases of VTP, with 2,000 cases of pregnancy due to rape (13). However, in 5 years, only 3,548 cases have been registered, with 1,113 cases for ground woman's life risk; 1,781 cases in ground fetal lethal impairment, and 654 cases in ground of rape (14). According to the 10th National Youth Survey (2022), 3.1% of young women (15-29 years old) declared having had an abortion. Only 10.9% declare that termination was within one of the three grounds, and 83.2% say the decision was personal. The latter represents an increase of 23.8% compared to 2018 (15).

These figures allow us to assume the existence of accessibility barriers, responsible for the low number of cases that fall under one of the three grounds, and the insufficiency of the current legislation, which restricts a VTP to these specific situations.

The objective of this publication is, based on the statements given by people identified as relevant stakeholders, to identify and analyze, following the Tanahashi Model (16), the main barriers observed in the implementation of the Law 21,030 at public healthcare institutions, contributing to the monitoring of this public policy, making visible the obstacles that infringe the rights of women to access a VTP with dignity and that affect the quality of healthcare in Chile.

2. Materials and methods

2.1. Study design

A qualitative design follows the guidelines of the postpositivist paradigm, which assumes that reality is impossible to understand fully, therefore, objectivity is a regulatory entity and not an end in itself (17). The post-positivist paradigm considers an ontology of the critical realism type, starting from the premise that reality is imperfect and possible to apprehend partially. From an epistemological point of view, it has modified the point of view of classical dualism and objectivism and the critical and communitarian tradition. It seeks probable methodological truths, including triangulation and formulating assumptions. In this paradigm, the construction of knowledge is done by the continuous aggregation of ideas to build blocks by adding knowledge from other disciplines (17).

2.2. Data collection

Semi-structured interviews were used for data collection. A script or guideline was prepared according to the type of participant, subjected to expert assessment and piloting, ensuring a psychosocial perspective.

Due to the health situation context that resulted from the SARS-CoV-2 pandemic, 25 interviews were conducted in person, and 37 were conducted online using the Zoom platform. The interviews were conducted in Spanish by two of the authors with proven experience in this technique and recorded in audio format. After the interview, the transcript was made by two transcribers who signed a confidentiality agreement. Transcription and analysis of the interviews were in Spanish and the excerpts of the interviews were translated verbatim to English for this publication by a professional translator.

2.3. Recruitment

For participant recruitment, authorization was requested from the directors of the public healthcare institutions[2] that provide secondary and tertiary care in the country (18), who are mandated according to Technical Regulations to carry out the voluntary termination of pregnancy (10). At the institutions where the authorization of the director was granted, initial contact was made through a key informant to enroll new participants, then afterward using the snowball technique (19).

Fieldwork was carried out between January 2021 and October 2022, a period in which 62 semi-structured interviews were conducted with relevant stakeholders from 12 public healthcare institutions that perform VTP and two civil society organizations.

The key stakeholders were divided into 20 members of the psychosocial support team, 18 managers, 17 members of the biomedical health team, four participants from civil society, and three women users. Divided by profession, there were: 21 obstetrician-gynecologists, one anesthesiologist, one neonatologist, one public health specialist, 11 midwives, 10 psychologists, 11 social workers, two nursing technicians, and one lawyer. The mean age was 42.45 years, with an age range between 22 - 66 years. The 72.6% were women. The interviews lasted, on average 54.3 min (23–150 min).

2 Law 20,120 establishes that: "All biomedical scientific research must have the express authorization of the director of the establishment in which it is carried out."

2.4. Analysis

For analysis, interview transcripts were verified word for word. The manuscript was read several times to obtain a general idea of its content. Moreover, the analysis was supported by ATLAS.ti Version 9.0.5® software.

For the purposes of this study, the voices of the participants directly involved with the VTP (relevant stakeholders) are considered to capture, through empirical research, the affective, cognitive, and operational aspects that healthcare in this field involves. Bringing decision-making closer to those who participate in and are affected by the healthcare issues allows for greater response capacity to the various health demands enabling the opportunity for intersectoral collaboration to identify actions and services that vulnerable populations require and the social health determinants related to these needs (20).

Data analysis was carried out in two stages. In the first stage, the Grounded theory was used based on the approach proposed by Strauss and Corbin (21), according to which it is possible to describe and explain the content and internal structure of phenomena inductively. The following codes were identified at this stage: Lack of healthcare team training; Unawareness of the law; Lack of dissemination of the law; Restrictive and erroneous interpretation of the legal framework; Psychosocial teamwork hours; Psychiatrist hours; Inadequate infrastructure; Rurality; Referral to more complex health center; Additional requirements for constituting grounds; Expert committees that create additional obstacles; Pandemic effects; Exam costs; Transportation and food costs; Burial costs; Reporting; Abortion stigmatization; Religiosity; Woman's fear; Power relationships; Lack of empathy; Conscientious objection; Obstetric violence; Migrant women's vulnerability; Lack of institutional evaluation of women's satisfaction; Lack of oversight and implementation of the law (Table 1).

During the second stage, these codes originated the following categories: Information barriers; Human resource barriers; Infrastructure barriers; Geographical barriers; Organizational/administrative barriers; Financial barriers; Perception of quality of services; Attention continuity barriers; non-fulfillment of the role of the State (Table 1).

The categories were organized deductively according to thematic families or metacategories, using the model described by Tanahashi, widely used to understand better the impact of public health policies, specifically regarding equity, access, and coverage (16, 22). This model involves assessing health care services considering five aspects of healthcare coverage looking at the relationship between health services and those who are beneficiaries. Five categories are examined: (1) availability referring to the conditions that determine that the service is available (infrastructure, distribution of facilities, supplies and human resources) (2) accessibility referring to which people can make use of services because they are, for instance, geographically accessible, (3) acceptability which includes the analysis of variables such as costs cultural pertinence or relevance that determine the services are acceptable to the target population (4) first contact, which analyzes who can actually make contact with the service and (5) effective coverage which will be the potential population vis-à-vis the actual coverage (16). This framework, a tool for public health management and health coverage evaluation, enables to identify problems and groups with unmet needs (22).

Finally, the categories were grouped into: Availability barriers; Accessibility barriers, Acceptability barriers; Contact barriers, and Barriers to the effectiveness of provided healthcare services (Table 1).

TABLE 1 Main barriers in the implementation of voluntary pregnancy termination in three grounds in public health institutions in Chile.

Metacategory	Category	Codes
Availability barriers	Information barriers	Lack of healthcare team training
		Unawareness of the law
		Lack of dissemination of the law
		Restrictive and erroneous interpretation of the legal framework
	Human resource barriers	Psychosocial teamwork hours
		Psychiatrist hours
	Infrastructure barriers	Inadequate infrastructure
Accessibility barriers	Geographical barriers	Rurality
		Referral to a more complex health center
	Organizational/ administrative barriers	Additional requirements for constituting grounds
		Expert committees that create additional obstacles
		Pandemic effects
	Financial barriers	Exam costs
		Transportation and food costs
		Burial costs
Acceptability barriers	Perception of quality of services	Reporting
		Abortion stigmatization
		Religiosity
		Woman's fear
Contact barriers	Attention continuity barriers	Power relationships
		Lack of empathy
		Conscientious objection
		Obstetric violence
		Migrant women's vulnerability
Effectiveness barriers	Non-fulfillment of the role of the State	Lack of institutional evaluation of women's satisfaction
		Lack of oversight and implementation of the law

In-house elaboration, adapted from Tanahashi T. (16).

Rigor criteria of transferability, dependability, credibility, auditability and epistemological theoretical adequacy were used (23). To safeguard transferability, a sociodemographic survey was designed to be able to collect data from participants that allows other researchers to apply the data in their contexts and research. Dependability was achieved with triangulation analysis by the researchers. Credibility was safeguarded through an exhaustive process of methodological design, fieldwork, and analysis, incorporating notes obtained during the data collection process. Auditability was obtained through strict interview transcription and a detailed description of the methodological path. Theoretical and epistemological relevance was the last criterion to be incorporated. The research team considered different models and perspectives, selecting the Grounded theory consistent with post-positivism (17).

2.5. Ethical considerations

Ethical aspects were related to protecting participants and the risk-benefit ratio, particularly when discussing sensitive issues.

Authorization from participants was required for the recording in audio format and transcription. The right to suspend the interview or withdraw from the study when considered appropriate was explicitly expressed to participants, as well as to refuse the inclusion of information provided in the processing or analysis phases without having to justify their decision.

Informed consent was obtained prior to the interviews, which were conducted in a secure space in agreement with the participants to avoid interference and safeguard confidentiality, which was further protected by encrypting all audio files and transcripts with a password available only to the team of researchers and transcribers. The information from the interviews was anonymized to be unable to identify the participants and avoid linking them to the healthcare facility from which they came. The identity of the participants is only known by those who conducted the interviews.

The research from which these results derive was approved by the Ethics Committee for Research in Human Beings, Faculty of Medicine, Universidad de Chile (Act No. 009 - 2020).

3. Results

As noted, starting from analyzing the data obtained from 62 relevant stakeholders, different codes and categories emerged, which were then regrouped into five metacategories, described below.

3.1. Availability barriers metacategory

This metacategory includes the following categories: Information barriers; Human resources barriers, and infrastructure barriers.

3.1.1. Information barriers

These refer to the difficulties expressed by participants regarding access to reliable information provided by those in charge. They include: Lack of healthcare team training; Unawareness of the law by users, healthcare teams, and the general population; Lack of dissemination of the law; Restrictive and erroneous interpretation of the legal framework.

The healthcare team is comprised of members of the psychosocial support team and members of the biomedical health team. The psychosocial support team is a special group of professionals comprised of a psychologist and social worker who provide psychosocial support to the women receiving care. This team also provides technical support about the law to the medical team in charge of the procedure. The biomedical health team is made up of obstetrician-gynecologists, an anesthesiologist, a neonatologist, midwives, and nursing technicians.

Healthcare team training was conducted inconsistently and focused on technical aspects without addressing biases and attitudes. Training occurred mainly at the beginning of the law's implementation and focused on those directly related to the VTP, but was not repeated over the years. Several participants refer to a self-training process and value the training received from and organized by civil society unconnected to the Ministry of Health, stressing the urgent need to update knowledge.

> *"No, training, no, they only provided us with the information of technical protocol the accompaniment program manual, that was like, it was [provided] super-fast, like given within the same week, and this was learning from theory, but in practice, it was something we learned together with the other members of the team" (E32, Psychosocial support team).*
>
> *"Nothing, nothing, that does not exist, what I know and what I learned was by myself, because I read the technical standard, I asked other colleagues, but from here at the hospital, nothing and nothing from the Ministry either" (E42, Psychosocial support team).*

There is also a lack of information in healthcare teams that are not directly linked to VTP but eventually could be, for example, Medicine or the Intensive Care Unit (ICU) personnel, who are unaware of the content of the law, regulations, and associated protocols, where the support team has had to assume this role.

> *"When a patient who has been here at the high obstetric risk has to be hospitalized and suffers a decompensation and is sent to the ICU. We, as part of the accompaniment team, have had to go to those places and explain who we are, what we do, and why we are there. In the medicine ward, too, we have had to inform them" (E50, Psychosocial support team).*

The situation is further complicated by a lack of information in the general population, with an absence of awareness campaigns. This situation is compounded by the erroneous interpretation of the law, which, though it prohibits publicizing VTP, indicates that this does not impede complying with the

State's duty to inform.[3] The duty to inform is also explicitly expressed in Law 20,584, which regulates the rights and duties of healthcare users, guaranteeing the patient's right to receive sufficient, timely, truthful, and understandable information visually, verbally, or in writing (24). According to the participant accounts at some institutions dissemination through posting posters and printed handouts (brochures) is prohibited. Moreover, in places where they are allowed, few visual materials to potential users are placed in inaccessible areas, the opposite of what occurs with posters for law 20,584 on the rights and duties of patients, which are placed in multiple areas of the healthcare establishments.

As observed, information barriers impact women, and there are reports of those who, while eligible to access a VTP, did not do so because they considered that they were not entitled to do so.

> *"The barriers mainly have to do with access to information, with the general population, from the women themselves to the clinical teams, not always informed" (E8, Psychosocial support team).*
>
> *"At some point, we were told that we were prohibited from publicizing information about the law because the law said that we could not publicize it, like openly, so that everyone could know what the VTP law was about (...). The law specifies that it cannot be publicized to the whole world, I do not remember the specific provision, but it is clear in saying that it cannot be publicized in our health center" (E34, Psychosocial support team).*
>
> *"We continue to meet with users who thought, I do not know, that they were thinking, I do not know, about ground of rape; it happened to us recently, three months ago, a 19-year-old girl who said, 'actually I had no idea that this law existed, I was thinking of having an abortion at home with some group or what do I know because I did not know that I could access this. Ignorance is a tremendous access gap'" (E6, Psychosocial support team).*

3.1.2. Human resource barriers

They are mainly related to the schedule and working hours of the psychosocial support team and the psychiatrist hours. Psychosocial support team members have a 22-hour daytime contract for the week (part-time) and on several occasions, must work in the evenings, weekends, or holidays without receiving overtime compensation or labor protections. Consequently, women's access is undermined when they go to hospitals and consult outside team members' working hours, in the case of raped women, particularly women who are admitted to the emergency room, affecting their right to healthcare.

> *"It is difficult to work part-time because you suddenly have this feeling that there is not enough time, that you cannot do everything you would want to" (E32, Psychosocial support team).*
>
> *"I came after my work hours, and when our doctor tells us that a patient will be hospitalized for termination and tells us, for example, 'no, let us admit her on Sunday at 1 pm', we come with the team and accompany her during the hospitalization process, so that the patient also feels accompanied (...). For example, if she is admitted on a Saturday, we go visit her on Saturday morning when she is hospitalized, and then on Sunday, we also come to see her for a little while in the afternoon" (E30, Psychosocial support team).*

Even though the technical regulations contemplate the availability of at least 11 weekly psychiatrist hours for cases that may require more specialized support, very few teams have this professional resource available.

> *"There was no position opening for a psychiatrist for the cases that the patients require one; if xxxx[4] after evaluating the patients, detects that they have to be referred to a psychiatrist, they are referred to the psychiatrist at our establishment, who has an important waiting list and not, we do not have priority" (E45, Manager).*

3.1.3. Infrastructure barriers

The participants declare a lack of adequate infrastructure for women's healthcare. Most psychosocial teams report not having an office or space that respects the patient's dignity and privacy. On repeated occasions, they must share clinical offices with other professionals, waiting for the right moment to use them, producing an extensive waiting time for the woman and having to carry out psychosocial support in a gynecological care box or an office used for the box to the newborn's attention, significantly undermines the accompaniment process, particularly for those in the grief, as it represents an unwelcoming space due to the symbolic messages derived from the presence of a gynecological bed or ultrasound machine where the examination took place or will be done to confirm the ground.

> *"A great flaw is that there is no space to attend these cases because there is no office where one can receive a mourning mother (...). The fact that there is no place to attend to the cases, I consider it is something serious" (E31, Psychosocial support team).*

During hospitalization, women's care is also affected by the infrastructure within healthcare establishments. Even though there is an effort to hospitalize women in individual rooms, this occurs in spaces with proximity to the postpartum women so that it is possible to hear the cries of newborn babies or fetal monitoring of other pregnant women. During fieldwork, one of the interviewers observed the latter, who, while waiting with other patients in the

3 Law 21,030: "Article 119 *quáter*. Advertisements on the offering of centers, establishments, services, means, technical benefits or procedures for the practice of pregnancy termination in the grounds of the first paragraph of article 119 is strictly prohibited. The latter does not prevent compliance with the duties from informing of the State or the provisions of paragraph 4 of Title II of Law 20,584". The 4th paragraph explains: "The right to have company and spiritual assistance" (3).

4 The name of the worker has been anonymized.

entrance hall of an obstetrics and gynecology service, could hear the fetal heartbeats of women being monitored.

> *"The physical spaces, especially in patients who are mourning, putting them next to the postpartum women is not optimal, with babies crying. In the Obstetric High - Risk Unit, seeing pregnant women, listening to heartbeats, and the gynecology patient's room is the only thing that we have, but there are also women with cancer, and sometimes this causes great distress to women who are in this situation of vulnerability" (E20, Psychosocial support team).*

3.2. Accessibility barriers metacategory

This metacategory includes: Geographical barriers; Organizational/administrative barriers, and financial barriers.

3.2.1. Geographical barriers

Chile's geography limits access to health care because of the long distances from one point to another. One example is the displacement of people from rural areas to urban centers for care.

> *"[The women], are from isolated rural areas in a large province like this, far away, and the only maternity hospital is this one. We had patients from the coast, which is about 2 hours away, so it is not like you can just come and leave..." (E38, Psychosocial support team).*

Local regulations at some establishments mandate the referral of the woman to a more complex health center to constitute ground woman's life risk and ground fetal lethal impairment. Even when this could be established at the hospital of origin, they mandate the referral of the woman, losing valuable time to constitute a ground, particularly in a ground fetal lethal impairment, affecting the exercise of associated rights.

> *"The ground fetal lethal impairment is usually confirmed with the regional hospital because we have a very good sonographer here, who is very good, in general, it could be established here, but they ask us to perform another ultrasound done at the regional hospital" (E24, Manager).*
>
> *"The diagnostic confirmation has to be done there [regional hospital], I think there will be no difference if the tests are taken here and taken there or if they are taken there and evaluated there, there will not be much difference, but the diagnostic confirmation has to be there" (E28, midwife).*

3.2.2. Organizational/administrative barriers

This category includes: Additional requirements for constituting grounds; Expert committees that create additional obstacles and pandemic effects.

The participants mentioned that the physicians on ground woman's life risk requested the intervention of several specialists. In ground fetal lethal impairment, they request additional tests in number and type, where it seems that the fear of the repercussions of a possible diagnostic error or that the pathology of the fetus is not on the list of lethal pathologies incompatible with extrauterine life, demands the need for 100% certainty, leads to a delay in the time of care.

> *"Physicians take a long time to establish a ground, woman's life risk and fetal lethal impairment (...), it is like they want to be sure, and check three times that it is indeed a ground; I do not know if they do not dare to make the decision, I do not know what the problem is, but I feel that they try to extend the decision as long as they can" (E50, Psychosocial support team).*

In ground of rape, where gestational age is a limitation to access a VTP, situations occur where the estimation of the exact date of fertilization is imposed over the actual occurrence of the rape, which has been referred to as "dispersion", a non-medical term, used by the people interviewed. This term refers to the period in which spermatozoa still can fertilize once intercourse has occurred. This type of estimation has been used, mainly by conscientious objectors, to dismiss the ground. When another professional analyzed the same case, considering this biological variability in the fertilization capacity of sperm and the duration of the menstrual cycle between women, the ground was established, and the woman was able to access a VTP.

> *"Each hospital considers the 'dispersion' between what you see in the ultrasound and the gestational age by date of last period and date of the events reported by the patient; they do not allow more than five days, so perhaps, in that other hospital, the dispersion seemed to them too high, and they did not proceed to establish the ground, they did not believe the patient, so the patient sought a second opinion and arrived at the hospital. For me, it was a super coherent account (...); the patient said a very exact last menstrual period date, with a menstrual calendar, and my opinion, was that they did not accommodate the fact that there are short menstrual cycles, so there are follicular phases that are shorter and can make those dispersions higher." (E33, Obstetrician-Gynecologist).*

During the interviews, the figure of the expert committee was mentioned, which analyzes, in addition to the medical staff and the psychosocial support team, the cases of pregnancy termination, delaying healthcare, and placing additional obstacles to constitute a ground.

> *"[The Expert Committee] those intermediate entities created ad hoc to delay, without being conscientious objectors, they are there, they take different forms in the different services, in the different hospitals and I think it is unusual" (E16, Obstetrician-Gynecologist).*

The health crisis derived from the SARS-CoV-2 pandemic, highlighted the failures and weaknesses of the healthcare system. The restrictions derived from lockdowns and isolation measures implemented in Chile, together with the perception of the risk of infection, had an impact on women's choices, in attending health check-ups and in timely consultations to the emergency room, as described in their accounts.

> *"She decided not to terminate because she was terrified of being hospitalized because she knew that there were infections in the hospital ward, so she did not want to expose herself to that and decided to continue; that is, her decision was basically conditioned by the pandemic" (E12, Psychosocial support team).*
>
> *"I noticed that perhaps people were frightened to leave their homes, especially in ground of rape. This ground had picked up recently, when the pandemic subsided, due to fear of getting infected, of attending a hospital" (E20, Psychosocial support team).*

Despite the efforts to minimize the consequences of the pandemic, there was a restriction on visits, preventing or affecting the presence of significant others, and problems guaranteeing individual hospitalization. In places where it had been possible to have a personal space to hospitalize the woman, she had to be reassigned to treat patients with COVID-19.

> *"In a pandemic, the truth is that nobody, that has been very difficult, even a bit traumatic in some cases. Obviously, many exceptions have been made, as much as possible, so that the husband can come to visit, or the partner can come for a little while, but like accompanying her all the time, only one minor that we had could be done that way, but the older ones no, it has not been possible" (E9, Psychosocial support team).*
>
> *"With the pandemic issue, it has been complex because we have had to modify the spaces based on the requests for beds that are needed. When it was implemented, and before the pandemic, we had a unique room for VPT patients, where it was always blocked because if a VPT patient arrived, she would be installed there. She had the right to be accompanied by her partner or the significant person she considered and with the comfort of being alone in the room, having a small chair so that her companion could sleep, having a small table with chairs so that the professionals who were going to talk to her would be comfortable. This was always, always done. After the pandemic, the beds could no longer be exclusive, the unique rooms, these spaces were taken away" (E8, Psychosocial support team).*

An additional effect of the pandemic was the psychosocial support team's follow-up visits to the woman due to the impossibility of conducting home visits and replacing in-person meetings with video calls, affecting the bond and approach to sensitive issues with the woman.

> *"I can no longer make home visits unless strictly necessary. The fact that care is through a video call, addressing such sensitive issues through a camera (...), in terms of the bond that one generates with the patient, that has been conditioned by remote care" (E12, Psychosocial support team).*

3.2.3. Financial barriers

We observe the financial costs associated with exams to constitute ground fetal lethal impairment that had to be covered by the woman, together with transportation, food, and burial costs.

Most public institutions do not have genetic/chromosomal tests. Some establishments cover the cost of these exams to constitute a ground. In most stories, the woman has had to pay for exams such as a cariogram,[5] having to wait several weeks to save money.[6] As one professional pointed out, as gestational age advances, the decision becomes more difficult.

> *"The hospital has an agreement with [a private institution] to perform this exam [cariogram], which is cheaper, but the woman pays for it (...) We have had some cases where: 'I do not have the money to pay for it, or I have to save the money first to be able to take the exam,' which are not the majority, but we have heard it (...). Postponing a couple of months, that is, weeks, not months, weeks, so that she could save up the money to take the exam, yes, that has happened" (E50, Psychosocial support team).*
>
> *"Many times the patients end up spending money, and the pregnancy is more advanced, so it costs more to make the decision" (E3, Obstetrician- Gynecologist).*

When faced with the mandate at some institutions that the constitution of ground fetal lethal impairment must be established at a more complex health center. A woman who is not hospitalized must travel by her own means, assuming the cost of transportation and food.

> *"The issue of tickets, of transportation, used as a stipend up to a limit, unfortunately, to be able providing transportation, it is known that not all patients were provided with that amount, many times due to unawareness, and later, a little before of the pandemic, there was an issue with the budget, and it was eliminated, so there were also complications regarding that. And in stipends, not even patients who have to go to the regional center for chemotherapy are given this" (E37, Psychosocial support team).*

An additional problem, which, although it was not guaranteed in Law 21,030, emerged from the narratives of the participants concerning the burial of the fetus or newborn, whose cost and accessibility depend on the proactiveness of the psychosocial support team and the will and commitment of other stakeholders, such as municipalities, businesses, and foundations.

> *"Look for the cheapest funeral home; I explain the situation in broad strokes; you could say that I even cry a little, like: 'oh, the thing is that its a mommy that the baby had complications and could not reach term, could you sell us the little coffin a little bit cheaper?' (...) I have never had problems with the cemeteries in the surrounding area or the nearby communes, so they do give me free land, they give me little pieces of land (...), but the funeral homes are not going to give me free boxes, So I manage with the*

5 Cariogram is a cytogenetic examination that detects numerical or structural chromosomal alterations, used to constitute ground fetal lethal impairment.

6 Starting from September, 2022 The Government of President Gabriel Boric guarantees free benefits in the public sector for all FONASA beneficiaries (25).

municipality so that they pay for the coffins that are not so expensive" (E30, Psychosocial support team).

"Among all the cemeteries in the city, there is the more economical one, so through negotiations, we were eligible for this, free of charge, and it was eliminated this year. By eliminating it, women must know they must pay for the burial space (...) Women users who apply for the law and have several children have a high rate of socioeconomic vulnerability, so it is unfortunate to hear that they would like to do something. However, they do not have the money (...). There are funeral homes that are born from them, and when we contact them, they offer free of charge the urn and the transfer to the cemetery" (E48, Psychosocial support team).

In the Metropolitan Region, the capital city, free assistance is offered by a program with Catholic roots. Although many users have well evaluated it, especially those who do not have financial resources, there have been instances where praying in the place where the ashes or columbarium have been deposited has generated guilt in the woman.

"She did not like the columbarium, she chose and did not like the sentence that was reflected, I do not remember specifically what the sentence said, but it was like she felt guilty, so she did not like it for that, specifically for having chosen for the program" (E50, Psychosocial support team).

3.3. Acceptability barriers metacategory

Acceptability barriers are related to the perception of the quality of care by people who need to access services, which in turn would be influenced by social, cultural, and religious factors, beliefs and myths, the existence of norms and values, and the perception of treatment and privacy (22). Low acceptability will imply a poor appreciation of the quality of services by the user population, creating a barrier to accessing health facilities.

3.3.1. Perception of quality of services

For this category, the identified barriers are: Reporting; Abortion stigmatization; Religiosity, and the woman's fear of mistreatment.

The report is directly associated with ground of rape. Although Law 21,030 establishes that a woman over 18 years of age is not obliged to report, the information must be delivered to the prosecutor's office so that an investigation by their initiative.[7] The woman must be informed of this matter and her right to be exempted from having to testify and ratify the report according to her decision. In minors under 18 years of age, it is mandatory to report the rape by the heads of the healthcare institutions where the pregnancy termination is requested and must notify the entity in charge of protecting the rights of minors (3, 10). Thus, it is not a requirement to access an abortion to report the crime to the police, including marital rape which is also a crime. However, there is misderstanding of the law by some participants as revealed in some interviews.

This legal mandate regarding the obligation to report and investigate the crime of rape, occurs at a time when the woman undergoing a pregnancy that resulted from this violence may not be emotionally prepared to face this process. In some cases, it is suggested that reporting could act as a dissuasive factor to seeking medical assistance, derived from the particularities of sexual violence, such as: the difficulty of the disclosure process; the fear of victims of being held responsible for the sexual violence and judged by their decision to terminate; fear of the family's reaction and of meeting the aggressor in a hearing; the need to repeat the story with the re-victimization that follows; and the difficulty in accepting as rape pressure exerted by the partner to have sex, due to the social context where this behavior is naturalized as inherent to male sexuality and duty of women in the context of a relationship.

"We are always going to recommend that they file a report, basically because we try to get them out of their situation of violence, but it is very variable; it depends a lot on what is their state of mind, the mood they are in" (E18, Obstetrician-gynecologist).

"The dynamics of abuse, the fear of going to a healthcare center to say: 'I was sexually abused', and the legal prosecution of that crime, then women believe that they have to reveal who was the author that infringed their rights and I also believe that this leads them to back away and not go to a healthcare center, particularly because their sexual aggressor is in one of the spaces closest to them" (E34, Psychosocial support team).

"Many women who have been victims of sexual violence do not dare to go to health centers, and this has to do with the impact that comes from the disclosure and the decision of wanting to terminate a pregnancy after such a traumatic experience as rape. I think that the knot produced in this area in ground of rape, out of shame and fear, what will happen in my family, what will they say, will they believe me?" (E34, Psychosocial support team).

"The husband had insisted and insisted, insisted, and she had to comply until at some point she agreed to have sex with him and became pregnant" (E18, Obstetrician-Gynecologist).

At some healthcare institutions, there was confusion, having cases where service to the woman was conditioned on filing the report, which was clarified by the psychosocial support personnel.

"We cannot condition, because if we do, a woman who was a victim of sexual violence not long ago and who did not dare to report it out of fear, we cannot condition her request to that, and I think that is one of the issues that is not very clear, like sometimes the doctors say 'but the patient has not brought a report', almost like 'we cannot admit her', or 'file the report before to be able to attend'. I tell them, 'no, do not worry; basically the constitution of the ground is independent of the complaint'" (E20, Psychosocial support team).

Even when the report is not a requirement to constitute a ground and the woman may have access to the termination,

7 An investigation by their own initiative mean to start a criminal investigation without a report.

in practice, situations are described that have contributed to re-victimization, where the woman, instead of receiving protection as a victim, is judged and held responsible for the violence.

> *"In the case of rape, the third ground is quite clear; women know that they can opt for that and that there are other barriers that stand in the way of reporting, which are rather, due to the cultural problems that we have always had, of believing that the woman is responsible" (E16, Obstetrician-Gynecologist).*
>
> *"He has been the only doctor who has appalled me a lot, because of his conduct, he re-victimizes (...), one sees that there is a slightly more derogatory behavior and a little more like judging the patient" (E41, Obstetrician- Gynecologist).*

At the beginning of the implementation of the law, due to a lack of awareness in healthcare teams of the legal framework, other situations of re-victimization were reported, generating anxiety in the woman by having them provide a report to the police at the moment of attending the healthcare facility to constitute a ground or by being contacted by the police after discharge. The concurrence of the police to take a statement from the aggressor, whose identity was revealed in a confidential space, is also described.

> *"The hospital management made the report the same day; they reported by their initiative, and I do not know what happened there, but the prosecutor determined at that very moment that the PDI[8] should go to the hospital, so the person who was here, we had promised her that she did not have to tell anyone else if she did not want to tell again (...). The girl was in intervention; she had taken mifepristone, she was nauseated, she had a headache, and she was fainting; how could she talk like that to the PDI!" (E6, Psychosocial support team).*
>
> *"We have been discovering that among the women, there is also this disclosure of information, that even if they do not want to denounce, the PDI still arrives to take the statement of the husband or the father or whomever they referred to in this space of confidentiality that they give to the..., and that finally remains in the clinical record" (E36, Civil Society).*

Regardless of the obligation to report a rape, criminal prosecution is slow and eventually inefficient, with biological samples that remain in the chain of custody for more than a year without being requested for expert examination by the agency in charge of investigating.

> *"The samples are kept through the custodian, the sample waiting if the Prosecutor's Office requests the samples, which has not happened so far; we still have samples from 2018" (E21, Manager).*

Finally, we have erroneous information at the primary care level, resulting in the woman believing that filling a report is required to constitute a ground.

> *"In CESFAM,[9] some have informed the person, but they are not very clear about the information either (...), because they are unaware of the issue of the dates or, for example, in ground of rape, if they do not file the report, they cannot receive attention" (E50, Psychosocial support team).*

Stigmatization refers to a profoundly discrediting attribute, an undesirable difference, derived from the social exchange between the person who stigmatizes the person who suffers the stigma and which results in rejection or discrimination (26). In the interviews, the stigma of abortion, in general, is recognized as a social burden that blames the woman who decides to terminate her pregnancy and does not follow the cultural mandate of motherhood. In practice, it operates as an access barrier, perceived by women as rejection, lack of acceptance, and judgment from the healthcare team, particularly in the case of rape, identifying the patient as "the raped" or "baby murderer."

> *"The prejudices regarding abortion are also internalized; they also receive comments, they say 'am I doing the right thing?' when the decision was already made and when you talk to them, you realize that they want to terminate the pregnancy, but they feel guilty, because they hear..., or even from relatives too, that they are going to murder or..., how can you do this?" (E39, Civil Society).*
>
> *"It would be ideal if there were a friendly space, a space where the patient did not feel judged, because most of the patients, I think they do not consult, now I believe, because of this reason, for fear of being a judgment in general, of feeling like a murderer, in quotes, which is what people against these things promote." (E28, Midwife).*
>
> *"When doctors visit, 'ah, here she is..., the raped one', or 'here she is, oh, now, you know who she is', or they do not look at her, or they do not check her (...) I have spoken with the patients, and they know, and I have also seen that they do not treat all patients equally (...) I think that this has limited patients from not consulting here." (E42, Psychosocial support team).*

Stigmatization permeates healthcare teams by avoiding discussing abortion and making the subject invisible. It also affects the psychosocial support team, who have experienced complicated situations, being negatively labeled as abortion promoters. Likewise, it would influence the invocation of conscientious objection, where peer pressure and the need for acceptance strongly affect it.

> *"There is no instance or program, whether formal or informal, within a team where abortion is discussed, where the voluntary termination of pregnancy is discussed (...) I think that there can be rejection, there are issues that certain people do not talk about, so they are not touched, because of their thoughts, their beliefs, their values..." (E29, Nursing technician).*
>
> *"Ah, they are the ones who are there and do nothing! In other words, practically the ones who go around killing babies (...), we were the people who were encouraging the killing of babies" (E30, Psychosocial support team).*

8 The Investigation Police.

9 CESFAM: Family Health Center, part of primary healthcare level.

> *"So in that hospital, since everyone was an objector, he was an objector, and in the XXX hospital, since there was a wider range, he was able to say 'yes, I am not an objector here'" (E30, Psychosocial support team).*

Religiosity is manifested based on the religious beliefs that predominate in society, which transcends women and their families, affecting decision-making and generating an emotional burden on women derived from the feeling of guilt. The narratives describe the woman's hope for a miracle to occur that reverses the fetal condition in ground fetal lethal impairment, as well as the need to delegate responsibility for the decision to a divine entity. During fieldwork, within some health institutions, it was verified that there are religious images, such as the presence of a saint or the image of the Virgin, whose implicit message is toward motherhood and that could have an impact on those who are in the process of deciding to terminate their pregnancy.

> *"The impact that this decision has about pregnancy, within the family system, within a society that is also very conservative and very religious" (E34, Psychosocial support team).*
>
> *"Emotionally, when they arrive, many of them are in a situation of significant conflict, they are in a situation of emotional crisis, with many feelings of guilt, of feeling the worst, of feeling judged, there is this whole issue there of the Christian worldview that is very entrenched. I would say that 70% of the patients arrive with the tremendous guilt that God is going to punish them for what they are going to do. So, from there, the emotional burden that these women have is tremendous" (E12, Psychosocial support team).*
>
> *"They tell us, 'I was waiting for a miracle'. For example, with ground fetal lethal impairment, especially what happened to us, 'I prayed and talked to God between the first and second ultrasound and told him that I was going to leave this decision in his hands and that if the diagnosis is confirmed, he confirms to me that I should terminate the pregnancy' as if delegating the responsibility of the decision to a divine being" (E6, Psychosocial support team).*

Religiousness transcends healthcare workers, affecting their declaration as conscientious objectors. Situations are described where workers, according to their beliefs, have intervened to speak of the existence of miracles so that the woman would change her decision.

> *"Those who are objectors are super religious people, who go to a church like the church is an important part of their life" (E3, Obstetrician-Gynecologist).*
>
> *"It was in ground two [fetal lethal impairment], that the patient had decided to terminate, and she [the doctor] approached her to talk about her decision if she had made her choice. We had already told her that we had made the decision and the papers were there, everything was on the file, it was signed off (...), then this doctor (...) went to tell her to think about it and to use the Lord, that she had to have faith, that miracles happened so that she would change her mind" (E38, Psychosocial support team).*

The fear of the woman is expressed in the distrust in the healthcare system, perceived as an unsafe space, for fear of mistreatment, as noted in the report of a woman in ground fetal lethal impairment regarding the treatment of the healthcare worker when providing information or when performing an ultrasound, making her feel like an object.

> *"They are afraid that they will be mistreated, that they will say some stupid thing to them, that they do not want to do the procedure, to have to begin the end (...). I have a friend who has had three spontaneous abortions, and the second she called me, she told me, 'I am bleeding' I told her you must go to the emergency room (...). She did not want to go because it had already happened to her that in her previous abortion, which was a desired pregnancy, they maltreated her because they told her, 'You did this to yourself,' as they accused her of having caused an abortion" (E18, Obstetrician-Gynecologist).*
>
> *"It happened to me with a physician; he was not my physician who was always checking up on me (...). I asked him a question, but the way the doctor answered me and his words affected me because he was an icy person (...); he answered me what he was going to answer me, but the coldness with which he said it affected me. He was abrupt in the treatment of the information; he was abrupt at the moment of doing the echo because, at a certain moment, the baby was moving a lot (...), then instead of looking for a gentle method so that 'look, you know we are going to stop, we are going to move to see if the baby moves,' make a different strategy, talk as if you were talking to a doll, lying on a stretcher (...) and while doing the process ignore me 100%" (E40, Woman user).*

There is also the fear of not protecting confidentiality, of questioning the account of the rape, of re-victimization, and there is a fear of being sent to jail. As noted, the SARS-CoV-2 pandemic added the fear of intrahospital infection, preventing women from attending healthcare centers or deciding to terminate a pregnancy.

> *"Obviously, the collective imagination influences what they are going to say about me; my history is going to remain here, this is going to remain in my medical record forever, everyone is going to know that I had an abortion, and if my children at any moment find out, maybe they will say that I killed their brother" (E12, Psychosocial support team).*
>
> *"Even offering them the termination, telling them that they can do it, it is legal now, we are going to do it here at the hospital, we are going to give them the medicines, a couple of women ask me again if I am sure they are not going to go to jail" (E18, Obstetrician-Gynecologist).*

3.4. Contact barriers metacategory

It refers to everything that creates obstacles in women's healthcare once they have entered the healthcare system, infringing their rights.

3.4.1. Attention continuity barriers

This category includes: Power relationships; Lack of empathy; Conscientious objection; Obstetric violence, and migrant women's vulnerability.

Power relations are manifested through the knowledge-power device, where the healthcare worker imposes their knowledge on decision-making and in hierarchical structures within the institutions. This power, manifested through expert knowledge, affects the sense that the woman's will is not considered when constituting a case, particularly in the risk of life ground, where the *lex artis*[10] is imposed (27). It is also evident that the woman is not a participant in the choice of the method to perform the termination.

> *"The example of the ruptured membrane at eighteen weeks, you are not given alternatives, you are not listened to, not even offered. The law says that the VTP must be offered, and in practice, one sees that this is not done and that is a violation of their rights, and women do not even know that their rights are being violated" (E16, Obstetrician-Gynecologist).*
>
> *"The only thing I could add is that, in general, the indication for the termination [ground* woman's life risk*], although the mother will accept voluntarily, it is not her responsibility; it is made by the medical team that has decided to terminate the pregnancy" (E4, Obstetrician-Gynecologist).*
>
> *"[Physicians] have understood that this law exists, that it must be applied, because, for example, at some point, there was talk of ground woman's life risk, "but that has always existed, that is done, not, lex artis" (E43, Psychosocial support team).*

The power evidenced by the hierarchical structure, emerges mainly from reports made by the psychosocial support team, describing a subordination of the team to the medical staff during the evaluation of cases, affecting a multidisciplinary approach, work environment, and teamwork.

> *"Here, the hospital itself is super hierarchical; I do not know if all the hospitals are the same, but it was something shocking, the TENS[11] sectors, midwives, and doctors are super divided, and I do not know if that is what does not permit to have more specialized teamwork or a better environment to work" (E50, Psychosocial support team).*
>
> *"As a team, we suddenly felt not listened to; it was like 'no, it is just that your opinion does not matter, because it is us, the doctors, who decide in the end'" (E34, Psychosocial support team).*

A lack of empathy from the health team is recognized, with workers who are indifferent toward women's experience and describe a lack of humanity in care and a lack of recognition of women's rights.

> *"The patient is labile, crying profusely, and they come to take blood from her, they come to give her intravenous therapy, I understand that it is a necessary procedure, but they also have to do with it; ethics also comes into play; if someone is restraining the patient, how am I going to go in to draw blood!..." (E42, Psychosocial support team).*
>
> *"There is a lack of empathy. Sometimes, the process comes out like any other administrative thing, so since it is taken so lightly, it goes wrong because it is not something simple; it is not simply a document that has to be signed or a piece of paper to fill out, or a fetus to be transferred, it is more than that, from my point of view that is one of the barriers" (E28, Midwife).*

The conscientious objection by those who are part of healthcare teams, in practical terms, operates as structural violence as a result of its invocation for any action that directly or indirectly contributes to a VTP, the lack of argumentation by those who object, the unawareness of the identity of the objectors by the rest of the team, the relaying of dissuasive and erroneous information, for questioning accounts in the case of rape, for pressuring a woman to retract their decision to terminate, for the obfuscation or delay to constitute a ground and due to false conscientious objection that is presented arbitrarily, without moral support, not to fulfill professional responsibility (28).

The refusal to manage a woman's pain in ground woman's life risk, from the only professional anesthesiologist on duty, crudely depicts this violence.

> *"He said it directly to me: 'I am against it, I am not..., I am not going to sign a sheet so that I can terminate your pregnancy' (...) That he came and told me 'no, I am not going to put the anesthesia and nothing for the pain either,' it was shocking more than anything else, I stayed, just like. . . , I was already tired, the only thing I wanted was to have my baby (...) However, I did not expect it from him, and he was so emphatic in saying that he was not going to sign because it went against his principles (...) I was in bed, waiting, and he came from behind; I did not even see his face (...) He did not introduce himself directly 'it is me, the doctor, name such and such,' no, nothing. I would not know how to tell you his name, neither a face nor how to identify him, no, neither" (E62, Woman user).*[12]

Obstetric violence appears in the interviews, acknowledging its presence today through situations identified as violence directed directly toward women. The previous experiences of the women during the VTP create an obstacle to returning to seek medical attention.

> *"When people talk about obstetric violence, we have to recognize that yes, it existed, it still exists, because many times we impose what we were taught that we consider being correct, and we disregard everything that people expect from that unique moment when perhaps they will have their only child" (E35, Manager).*

10 According to the Pan-Hispanic Dictionary of Legal Spanish, *Lex artis* is: "a set of technical rules to which the performance of a professional when exercise of his art or trade must be adequate" (27).

11 Nursing Technician.

12 The account occurred in 2021.

> *"The typical comments: 'hey, she wants everything fast', 'oh, if it is going to hurt just the same, then why ask for analgesia' (...), 'your pain threshold is low', 'you already knew what you were coming to'. In fact, on one occasion, when I was with a VPT patient, she told me that she felt violated, violated by the comments, so being told that they used violent, aggressive language..." (E48, Psychosocial support team).*

The migration condition in Chile does not affect migrant women equally, with greater vulnerability in Haitian women, where the language barrier, the gender of intercultural facilitators, and entrenched *machismo* based on their idiosyncrasy play an essential role in the decision to terminate or continue with the pregnancy.

> *"Haitian women, the culture in which they live, I think it must be very machista, even more than the Chilean one. We have only had one Haitian patient, but it is striking that with her, aside from the language barrier, she really did not speak any Spanish, and the one who spoke a little more was her partner, even though we even used an intercultural facilitator, I think that intervention is one of the things I regret about how it was done (...). I do not think she understood half of what we were trying to tell her, and they decided to continue with the pregnancy because he decided it was the right thing to do! In the end, even though talking about empowering women, in a situation like this, where on top of that, you have someone who is translating that he is a man and that he is Haitian. We even questioned whether he was telling her what we were trying to explain" (E6, Psychosocial support team).*

3.5. Effectiveness barriers metacategory

Effectiveness barriers are linked to the non-fulfillment of the State's role as guarantor of public policies. The lack of evaluation and oversight of Law 21,030 are observed in interviews across the board.

3.5.1. Non-fulfillment of the role of the State

This category is based on the lack of institutional evaluation of the degree of satisfaction with the care received by pregnant women and a lack of supervision in implementing this public policy.

It is explicitly expressed that the entity in charge of implementing the law is not aware of the problems derived from the implementation, worrying about quantitative aspects and not inquiring about the barriers that have appeared as obstacles that affect women's rights. The absence of feedback to healthcare teams regarding implementing the law at the national level is observed. The failures of the law are also described, whose restrictions operate as barriers to access to VTP and have not been addressed.

> *"Unfortunately, the VTP law was somehow abandoned, there is very little supervision, the number of cases is followed, but the implementation itself is not supervised, conscientious objectors are followed but not trained personnel, and there is no follow-up on the cases, there is no user satisfaction survey to find out, I do not know, that women prefer one method more than another (...), so the law has many failures that are still not being addressed" (E1, Civil society).*
>
> *"The first thing I would do as a Ministry is to tell everyone how it is working because we do not... if you ask me, I have never received a document that says 'look, the country has so many objectors, we have made so many interventions...'" (E2, Manager).*
>
> *"I think that in the end, the information is not clear, at the level of the Ministry, as things are done in the same way; I think they do not know how they are being done, the hospitals that are smaller, more rural, with the little we have we try to give the same response, because as it is the law we have to know how to comply, but do you know at what cost?" (E44, Manager).*

4. Discussion

4.1. Barriers to abortion

Multiple barriers have been identified to access health benefits. They can be classified as personal, social, cultural, geographical, economic, and organizational barriers involving users and individual and institutional healthcare providers (22, 29). Regarding the VTP, we can understand barriers as factors that totally or partially infringe on women's right to choose and access benefits safely and legally.

The legal reform of abortion, implemented since 2017, reveals several public policy pitfalls when analyzed under Tanahashi's framework (16, 22). Although understanding the implementation of a public policy is not always tidy, we can say with certainty that the implementation of the legal reform has been slowed down given political unwillingness from a conservative administration (2018–2022). According to our research, availability is problematic in terms of lack of public campaigns for users, lack of training for healthcare personnel, and understaffing due to conscientious objectors. In terms of accessibility, the distance to hospitals where abortions can be performed is a barrier to women due to the distance and connectivity to those facilities, and the costs of transportation that women must endure. Effective coverage also is deficient when examining the target population vs. the actual women who accessed abortion.

Regarding abortion, the experience in various countries reveals that access to abortion is limited even under legal conditions, mainly due to restrictions in the legislation itself, due to the offering of services that are not adequate to the needs and demands of the women (30, 31) and by the socio-cultural stigmatization of abortion (32), maintaining and deepening inequities by particularly affecting socially, culturally, and economically vulnerable women (30).

A Colombian study (33), 10 years after the Constitutional Court ruling that decriminalized abortion in three circumstances, reveals multiple barriers related to unawareness and restrictive interpretation of the legal framework and the failure to provide healthcare services derived from administrative deficiencies and the negative attitudes and practices of personnel. Many of these barriers have also been identified in other regions of the world (30, 31, 34–38). According to the international organization Ipas, the barriers to accessing a safe abortion in adolescents and young adults are: the high cost of services; lack of transportation for referral;

the influence of the partner in the decision; the stigmatization and prejudices of healthcare personnel; authorization from the legal guardian; obligation to report rape as a requirement to terminate (39).

4.2. Abortion stigma

The stigmatization of abortion is a relevant barrier that afflicts women, their family environment, providers, and those who, in one way or another, intervene in the defense of women's rights (32). Stigmatization has been considered a social, contextual, and dynamic process that profoundly undermines the dignity of the affected person (26, 32). The main consequences can be stress, guilt, and shame, pushing the woman to terminate the pregnancy in unsafe conditions even when legal, or access the termination by directly assuming the cost of the service. Likewise, it would be a factor present in individual conscientious objection, due to the professional's fear of rejection or harassment by peers and the society in which he/she is inserted (32, 40).

4.3. Another barriers to abortion in Chile

In Chile, social monitoring reports carried out by civil society in 2019 and 2020, show multiple issues that infringe on the rights of women, such as insufficient information for users who are unaware of their rights and insufficient training for healthcare teams, mainly in primary care. Conscientious objection within public institutions is seen as an essential obstacle in women's care path, highlighting the highest proportion of objectors in ground of rape. Judgment, mistrust of accounts, mistreatment toward women, the naturalization of sexual violence, confusion regarding the procedures for filling a report, and the delay in the diagnostic confirmation of ground fetal lethal impairment were other barriers identified (41, 42).

4.4. Barriers from the legislation

In addition, the reduction in the number of cases, which is much lower than projected, is worrisome, establishing a precedent that allows us to warn of the existence of barriers that undermine access to services. One of them would be the restrictions imposed in the legal regulation, detailed as follows: the limitation of gestational age in ground of rape (14 weeks in children under 14 years of age and 12 weeks in persons over 14 years of age); the indication to perform the VTP at the obstetric- gynecological specialty level, dismissing the primary level care; the diagnosis ratification by two medical specialists in ground fetal lethal impairment; confirmation of the concurrence of rape through the plausibility of the report, the plausibility of the reported account to produce a pregnancy and the match between the date of rape and the gestational age; the obligation of directors of healthcare establishments to report a rape in the case of minors and to inform the prosecuting entity in the case of women over 18 years of age; the broad consideration of individual and institutional conscientious objection and the prohibition of publicizing any offering, technical services, or procedures for a VTP (3, 10).

The latter has been misinterpreted by healthcare teams, especially in primary care, generating a lack of awareness of the law. At this level, there is evidence of a significant deficiency in training (43), which has been predominantly technical and provided at the beginning of the law's implementation to healthcare personnel at the secondary and tertiary levels who are directly involved in the VTP. It is urgent to update and resume training of healthcare teams, including stakeholders from the judicial field, to promote intersectoral coordination.

4.5. Reporting

Regarding reporting, the obligation to report in the case of minors and to inform the prosecuting agency in the case of adults, performed by healthcare establishments that become aware of these situations, would operate in practice as a barrier. Although the stated objective is to prosecute the crime of rape so that it does not go unpunished, we must remind ourselves that it was an issue that was present during the debate of the law, invoked to prevent women who were not undergoing a pregnancy due to rape, from having access to abortion. In this discussion it was argued that abortion opens the door to unrestricted abortion and perpetuates the abuses of the rapist (44).

It is necessary to place oneself in the situation of the female survivor of sexual violence, who must also face the experience of a pregnancy resulting from this violence and influences the emotional impossibility of undergoing a legal proceeding. For this reason, reporting and its immediacy must consider the emotional condition of the victim to avoid causing additional damage, and must receive the support that allows them to recognize their tools and support networks to face this process without being re-victimized.

4.6. Conscientious objection

Conscientious objection has been globally recognized as one of the main barriers to accessing an abortion (45). Official reports reveal that in public healthcare institutions, the highest frequency of objectors in Chile is registered in ground of rape. Of 1,338 obstetrician-gynecologists, 15.3% object to ground woman's life risk; 23.1% to ground fetal lethal impairment, and 43% to ground of rape. Anesthesiologists objected by 10.9% in ground woman's life risk, 14% in ground fetal lethal impairment, and 21.4% in ground of rape. Non-medical and technical personnel object in a lower proportion (46) (Table 2). For institutional conscientious objection, the official list shows four confessional institutions that object to all and one private health institution without a denominational ideology that objects to ground of rape (47).

4.7. Obstetric violence

Obstetric violence is considered as the practices and behaviors exercised by healthcare personnel toward women during

TABLE 2 Public sector healthcare providers claiming conscientious objection. Chile, march 2022.

Description	Staff	Ground 1 (Woman's life risk)	Ground 2 (Fetal lethal impairment)	Ground 3 (Pregnancy from rape)
	n	%	%	%
Obstetrician/gynecologist	1,338	15.3	23.1	43
Anaesthesiologists	924	10.9	14	21.4
Nurse Midwives	1,061	9	11.6	15.6
Health Technicians	1,971	10	11.3	12.9
Total	5,294	11.3	14.8	22.6

Adapted from: https://www.minsal.cl/todo-sobre-la-interrupcion-voluntaria-del-embarazo-en-tres-causales/ (accessed December 12, 2022).

pregnancy, childbirth, and postpartum, which are violent or perceived as such by the users. It includes inappropriate or non-consensual acts, such as procedures without consent or without analgesia, and unnecessary or overmedication, among others. It considers psychological violence through inappropriate, authoritarian, derogatory, and humiliating treatment, which undermines the dignity of women and violates the exercise of their sexual and reproductive rights (48). The denial of attention is also referenced within this violence (49). Information from the First National Survey of Gynecological and Obstetric Violence reveals that in Chile, 79.3% of women considered they had been victims of this violence. Women belonging to an indigenous group, young women, and women with non-heterosexual sexual orientation have a greater degree of vulnerability (49).

The situations described in the interviews, such as the lack of empathy; the indifference toward the woman's pain, refusing to provide analgesia in the abortion process; stigmatization, judgment, and blaming of the woman in the case of rape; the dismissal of a woman's will in the constitution of ground woman's life risk; referral to another healthcare center or delay of care due to not having non-objecting staff, among others, unfortunately, reveal practices that fall under the category of obstetric violence.

4.8. Additional barriers

An additional barrier is presented with the incorporation of "Circular No. 2" on 03/05/2019. Even though the law and the technical regulations did not establish a limit for the gestational age when the woman's life is at risk (ground 1) or in the presence of a genetic or chromosomal fetal pathology of a lethal nature (ground 2), the circular together with enumerating a list of clinical conditions for ground woman's life risk, limits a VTP to 22 weeks for typical pathologies during pregnancy (50). Consequently, after this gestational age, if the woman finds herself in any of these situations, the physician proceeds as *lex artis*, where the decision is based on medical opinion. Since it is not constituted as a ground, the woman does not have access to the psychosocial support guaranteed by law. When stating this, we do not want to affirm that the medical opinion is wrong, to draw attention to the fact that the spirit of the law is not being respected, which places the woman's will in the foreground.

5. Conclusions

What has been described so far is only a sample of the Chilean reality, which reflects the worrying and complex difficulties that women must face to access the services linked to VTP, corroborating the presence of multiple barriers that would explain the low numbers mentioned above.

The results of our study demonstrate the inadequacy of the Chilean legal, judicial, and healthcare system, which limits the right of women to access VTP, infringing their dignity and exposing them to suffering for their health and life. The findings reveal the limitations to access to abortion in a restrictive legal regime. If abortion were fully legalized it is most likely new barriers would be confronted and the existing would be exarcerbated, especially conscientious objection.

In conclusion, it is essential to recognize that incorporating professionals from the psychosocial field in predominately biomedical teams has facilitated the implementation of Law 21,030. The members of the psychosocial support team have had to assume multiple roles, contributing to the humanization of clinical practice, and becoming watchers and guarantors of women's rights, reducing the obstacles to accessing a VTP with dignity in Chile (51).

To guarantee access to a VTP and reduce social and health inequities derived from the barriers in the implementation of Law 21,030, along with promoting the acknowledgment and respect toward the exercise of sexual and reproductive rights in the population, healthcare personnel, and future personnel, it is essential to end all forms of violence against women. It is urgent and an obligation of the State to be the guarantor of the sexual and reproductive rights of those who inhabit Chile, to have an effective monitoring and oversight mechanism by the State entity in charge to oversee the implementation of this public policy, specifically regarding the difficulties experienced in accessing a VTP, which affect the dignity and prevent the free exercise of woman's rights.

Finally, it is important to point out that even though the enactment of the law 21,030 meant an important step advancing sexual and reproductive rights, however it is still insufficient because it is restricted to three extreme circumstances. In order to guarantee the exercise of women's rights, we should move toward the legalization of abortion. Although Chile is actually governed by a leftist coalition that supports access to abortion, the political scenario changed when a proposed constitution that included, inter alia, gender violence, reproductive rights was rejected in a plesbicite in September 2022. A new constitutional reform ensued but the

recent conformation of the Constitutional Council elected in May 2023 to draft a new constitution predominates the extreme right-wing. The overturning of the U.S. Supreme Court decision on Roe vs Wade is very concerning in the Chilean context. In particular, the risk that the current abortion law is repealed if a conservative constitution is adopted is very real.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by Ethics Committee for Research in Human Beings, Faculty of Medicine, Universidad de Chile. The patients/participants provided their written informed consent to participate in this study.

Author contributions

AM and MR-P made substantial contributions to the conception and design of the work, conducted the interviews, analysis, interpretation of the data, drafted the manuscript, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. PR, LC, LV, and DG participated in the analysis, interpretation of the data, critically reviewed the manuscript, provide approval for publication of the content, and contributed to the article and approved the submitted version. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. Ministry of Justice, Chile. Law Num 18,826. *It replaces Article 119 of the Health Code*. Available online at: https://www.leychile.cl/Navegar?idNorma=30202 (accessed August 13, 2018).

2. Montero A, Villarroel R. A critical review of conscientious objection and decriminalization of abortion in Chile. *J Med Ethics.* (2018) 44:279–83. doi: 10.1136/medethics-2017-104281

3. Ministry of Health Chile. Law no 21,030. *Regulates the Decriminalization of Voluntary Pregnancy Termination on Three Grounds [Spanish]*. Available online at: http://www.diariooficial.interior.gob.cl/publicaciones/2017/09/23/41866/01/1276248.pdf (accessed January 3, 2023).

4. Montero A, Vergara J, Ríos M, Villarroel R. Conscientious objection in the debate on the decriminalization of abortion for three grounds in Chile. *Rev Chil Obstet Ginecol.* (2017) 82:350–60. doi: 10.4067/s0717-75262017000400350

5. Constitutional Court, Chile. *Decision on a Bill to Decriminalize Voluntary Pregnancy Termination on Three Grounds (Spanish), CASE 3729-17-CPT*. (2019). Available online at: https://www2.tribunalconstitucional.cl/CASE%203729-17-CPT (accessed January 8, 2019).

6. Goldstein, E. "The Health System in Chile and Municipal Primary Care. Framework for a Debate on Demunicipalization," in *Library of the National Congress of Chile/BCN*. (2022). Available online at: https://obtienearchivo.bcn.cl/obtienearchivo?id=repositorio/10221/26811/2/BCN_Gobernanza_salud_y_demunicip_para_reposit_final.pdf (accessed July 20, 2022).

7. Becerril-Montekio V, Reyes JD, Manuel A. The health system of Chile. *Salud Publ Mex 53 (Suppl 2).* (2011) S132–43.

8. World Health Organization. *Primary Health Care*. (2022). Available online at: https://www.who.int/es/news-room/fact-sheets/detail/primary-health-care#:~:text=La%20atenci%C3%B3n%20primaria%20de%20salud%20garantiza%20a%20las

%20personas%20una,posible%20de%20sus%20lugares%20habituales (accessed April 8, 2022).

9. Dazarola G. *Legal Framework of the Municipalities. Main Normative Provisions. Library of the National Congress of Chile/BCN*. (2022). Available online at: https://obtienearchivo.bcn.cl/obtienearchivo?id=repositorio/10221/25833/1/GRID_Marco_Juridico_Municipalidades_GD_Def.pdf (accessed July 20, 2022).

10. Ministry of Health Chile. "Department of Public Health," in *Guidelines on Comprehensive Support and Care of Women in Any of the Three Grounds Regulated by Law 21030*. (2018). Available online at: http://www.minsal.cl/wp-content/uploads/2018/02/NORMA-IVEACOMPANAMIENTO_02.pdf (accessed January 2, 2023).

11. Labrin S, Salaberry J. *Chiloe Rape Case Puts Abortion Law to the Test*. Available online at: https://www.latercera.com/noticia/caso-violacion-nina-chiloe-pone-prueba-la-ley-aborto/ (accessed August 14, 2018).

12. Pizarro G. All the Obstacles and Pressures that Prevent Women From Accessing Abortion on Three Grounds. (2022). Available online at: https://www.ciperchile.cl/2018/09/04/todos-los-obstaculos-y-presiones-que-impiden-a-las-mujeres-acceder-al-aborto-por-tres-causales/ (accessed December 12, 2022).

13. Castillo C, Robledo P. "Comprehensive support for women on three grounds in public health system draft of law decriminalizing voluntary pregnancy termination on three grounds," in *Health Ministry Presentation to the House Finance Committee First Report of the Finance Committee First Constitutional Step Bulletin N_ 9895-11*. (2016). Available online at: https://www.senado.cl/appsenado/templates/tramitacion/index.php?boletin_ini=9895-11 (accessed August 13, 2021).

14. Ministry of Health, Chile. *Information on Grounds Constituted within the Framework of Law 21,030 That Regulates the Voluntary Interruption of Pregnancy in Three Grounds*. Available online at: https://informesdeis.minsal.cl/SASVisualAnalytics/?reportUri=%2Freports%2Freports%2F382105c8-521f-4356-b1b8-6bad21ba8b08&sectionIndex=0&sso_guest=true&reportViewOnly=true&reportContextBar=false&sas-welcome=false (accessed December 14, 2022).

15. National Youth Institute. *10th National Youth Survey*. (2022). Available online at: https://www.injuv.gob.cl/sites/default/files/10ma_encuesta_nacional_de_juventudes_2022.pdf (accessed December 12, 2022).

16. Tanahashi T. Health service coverage and its evaluation. *Bull World Health Organ.* (1978) 56:295–303.

17. Lincoln Y, Guba E. "Paradigmatic controversies, contradictions, and emerging confluences, revisited," in *The SAGE Handbook of Qualitative Research, 5a Edn, ed.,* Denzin, N. (London: SAGE). (2017) p. 213–50.

18. Ministry of Health Chile. *Department of Public Health. Law no 20,120: About Scientific Research on the Human Being, Its Genome, and Prohibits Human Cloning [Spanish]*. Available online at: https://www.bcn.cl/leychile/navegar?idNorma=253478 (accessed July 12, 2022).

19. Kirchherr J, Charles K. Enhancing the sample diversity of snowball samples: recommendations from a research project on anti-dam movements in Southeast Asia. *PLoS ONE.* (2018) 13:e0201710. doi: 10.1371/journal.pone.0201710

20. McCollum R, Taegtmeyer M, Otiso L, Mireku M, Muturi N, Martineau T, et al. Healthcare equity analysis: applying the Tanahashi model of health service coverage to community health systems following devolution in Kenya. *Int J Equity Health.* (2019) 18:65. doi: 10.1186/s12939-019-0967-5

21. Bryant, A., and Charmaz, K. *The SAGE Handbook of Current Developments in Grounded Theory, 1 Edn*, Charmaz B. (2019). Los Angeles, CA: SAGE. doi: 10.4135/9781526485656

22. Hirmas M, Poffald L, Jasmen A, Aguilera X, Delgado I, Vega J. Health care access barriers and facilitators: a qualitative systematic review. *Rev Panam Salud Pública.* (2013) 33:223–9. doi: 10.1590/S1020-49892013000300009

23. Rojas X, Osorio B. Quality and rigor criteria in the qualitative methodology [Spanish]. *Gaceta Pedagogía.* (2017) 36:63–75. doi: 10.56219/rgp.vi36.566

24. Ministry of Health, Chile. *Law 20,584: Regulates the Rights and Duties that People Have About Actions Related to Their Healthcare*. Available online at: https://www.bcn.cl/leychile/navegar?idNorma=1039348 (accessed 02 January, 2023).

25. El Mostrador. *Government of President Gabriel Boric announced "Zero Copayment" program that enshrines gratuity in sections C and D of FONASA*. Available online at: https://www.elmostrador.cl/dia/2022/07/27/gobierno-del-presidente-gabriel-boric-anuncio-programa-copago-cero-que-consagra-gratuidad-en-tramos-c-y-d-de-fonasa/ (accessed December 23, 2023).

26. Goffmann E. *Stigma. Impaired identity. 1st ed. 10th reimp*. Buenos Aires: Amorrortu editors, (2006).

27. Panhispanic dictionary of legal Spanish. Available online at: https://dpej.rae.es/lema/lex-artis (accessed January 3, 2023).

28. Montero A, Ramirez-Pereira M, Robledo P, Casas L, Vivaldi L, Gonzalez D. Conscientious objection as structural violence in the voluntary termination of pregnancy in Chile. *Front Psychol.* (2022) 13:1007025. doi: 10.3389/fpsyg.2022.1007025

29. Fajardo G, Gutiérrez J, García S. Effective access to health services: operationalizing universal health coverage. *Salud pública Méx.* (2015) 57:180–6 doi: 10.21149/spm.v57i2.7415

30. Hussein J, Cottingham J, Nowicka W, Kismodi E. Editorial: Abortion in Poland: politics, progression, and regression. *Reprod. Health Matters.* (2018) 26:14–7. doi: 10.1080/09688080.2018.1467361

31. Berro L. Legal barriers to access abortion services through a human rights lens: the Uruguayan experience. *Reprod Health Matters.* (2018) 26:1–8. doi: 10.1080/09688080.2017.1422664

32. Norris A, Bessett D, Steinberg J, Kavanaugh M, De Zordo S, Becker D. Abortion stigma: are conceptualization of constituents, causes, and consequences. *Women's Health Issues.* (2011) 21–3S: S49–S54. doi: 10.1016/j.whi.2011.02.010

33. González A, Castro L. (2016). Access barriers to the voluntary interruption of pregnancy in Colombia. Available online at: http://www.despenalizaciondelaborto.org.co/wpcontent/uploads/2017/05/Barreras_IVE_vf_WEB.pdf (accessed August 13, 2018).

34. Doran F, Nancarrow S. Barriers, and facilitators of access to first-trimester abortion services for women in the developed world: a systematic review. *J Fam Plann Reprod Health Care.* (2015) 41:170–80. doi: 10.1136/jfprhc-2013-100862

35. Diniz D, Madeiro A, Rosas C. Conscientious objection, barriers, and abortion in the case of rape: a study among physicians in Brazil. *Reprod Health Matters.* (2014) 22:141–8. doi: 10.1016/S0968-8080(14)43754-6

36. Gerdts C, De Piñeres T, Hajri S, Harries J, Hossain A, Puri M, et al. Denial of abortion in legal settings. *J Fam Plann Reprod Health Care.* (2015) 41:161–3. doi: 10.1136/jfprhc-2014-100999

37. Bloomer F, O'Dowd K. Restricted access to abortion in the Republic of Ireland and Northern Ireland: exploring abortion tourism and barriers to legal reform. *Cult Health Sex.* (2014) 16:366–80. doi: 10.1080/13691058.2014.886724

38. Paul M, Gemzell-Danielsson K, Kiggundu C, Namugenyi R, Klingberg-Allvin M. Barriers, and facilitators in the provision of post abortion care at district level in central Uganda –a qualitative study focusing on task sharing between physicians and midwives. *BMC Health Serv Res.* (2014) 21:14–28. doi: 10.1186/1472-6963-14-28

39. Skuster P. Young women and abortion: avoiding legislative and political barriers. Chapel Hill, Carolina del Norte: Ipas (2013). [Spanish]. Available online at: http://www.ipas.org (accessed August 13, 2018).

40. Küng S, Danette J, Díaz de León F, Huaraz F, Pearson E. We don't want problems: reasons for denial of legal abortion based on conscientious objection in Mexico and Bolivia. *Reprod Health.* (2021) 18:44.doi: 10.1186/s12978-021-01101-2

41. Action Table for Abortion in Chile - Alchemy Fund. "Social Monitoring Report," in *Implementation of the Law on Termination of Pregnancy on Three Grounds*, (2019). Available online at: https://www.fondoalquimia.org/project/informe-monitoreo-social-ley-ive/ (accessed January 3, 2023).

42. Action Table for Abortion in Chile - Alchemy Fund. Social Monitoring Report. *Access to Voluntary Interruption of Pregnancy and Sexual and Reproductive Health in Times of Coronavirus.* (2020). Available online at: https://mesaborto.cl/wp-content/uploads/2021/05/INFORME-MONITOREO-FINAL.pdf (accessed January 3, 2023).

43. Casas. L, Vivaldi L, Montero A, Bozo N, Álvarez J, Babul J. Primary care and abortion legislation in Chile: a failed point of entry. *Dev World Bioeth.* (2022). doi: 10.1111/dewb.12377

44. First constitutional procedure. *Chamber of Deputies. 1st report Health Commission.* (2015). Available online at: https://www.camara.cl/legislacion/proyectosdeley/informes.aspx?prmID=10315&prmBOLETIN=9895-11 (accessed January 3, 2023).

45. Faúndes A, Shah I. Evidence supporting broader access to safe legal abortion. *Int J Gynecol Obstet.* (2015) 131:S56–9. doi: 10.1016/j.ijgo.2015.03.018

46. Ministry of Health, Chile. *Conscientious objector officials by Health Services as of March*. (2022). Available online at: https://www.minsal.cl/funcionarios-objetores-de-conciencia-por-servicio-de-salud/ (accessed January 3, 2023).

47. Ministry of Health, Chile. "Ministry of Health Chile," in *List of Institutional Objectors.* Available online at: https://www.minsal.cl/listado-de-objetores-institucionales/https://www.minsal.cl/listado-de-objetores-institucionales/ (accessed January 3, 2023).

48. Rodríguez J, Martínez A. Obstetric violence A hidden practice in medical care in Spain. *Gac Sanit.* (2021) 35:211–2. doi: 10.1016/j.gaceta.2020.06.019

49. Cárdenas M, Salinero S. Obstetric violence in Chile: women's perception and differences between health centers. *Rev Panam Salud Publica.* (2022) 46:e24. doi: 10.26633/RPSP.2022.24

50. Ministry of Health Chile. Circular C2 N°2, del 05 Marzo. In: *Instructs on Guidelines for the Constitution of the Grounds Contemplated in Law 21,030*. (2019). Available online at: https://diprece.minsal.cl/wp-content/uploads/2019/03/circular_02_IVE_Directrices.pdf (accessed 22 December, 2022).

51. González D, Montero A, Ramírez-Pereira, M, Tapia B, Robledo P, et al. *The relevance of psychosocial support in the implementing voluntary interruption of pregnancy on three grounds in Chile [Spanish] Revista Facultad Nacional de Salud P. (2022)*. [Unpublished]. Available online at: https://revistas.udea.edu.co/index.php/fnsp

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The impact of hostile abortion legislation on the United States maternal mortality crisis: a call for increased abortion education

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The growing restrictive abortion policies nationwide and the Supreme Court decision on *Dobbs v. Jackson Women's Health Organization* place increasing barriers to abortion access in the United States. These restrictions disproportionately affect low-income people of color, immigrants, and non-English speakers, and have the potential to exacerbate already existing racial inequities in maternal and neonatal outcomes. The United States is facing a Black maternal health crisis where Black birthing people are more than twice as likely to experience maternal mortality and severe maternal morbidity compared to White birthing people. Restrictions creating geographic, transportation, and financial barriers to obtaining an abortion can result in increased rates of maternal death and adverse outcomes across all groups but especially among Black birthing people. Restrictive abortion laws in certain states will decrease already limited training opportunities in abortion care for medical professionals, despite the existing abortion provider shortage. There is an immediate need for federal legislation codifying broad abortion care access into law and expanding access to abortion training across medical education. This commentary explores the impact of restrictive abortion laws on the Black maternal health crisis through multiple pathways in a logic model. By identifying current barriers to abortion education in medical school and residency, we created a list of action items to expand abortion education and access.

KEYWORDS

abortion, health policy, abortion restrictions, maternal health, abortion education, racial disparities

Introduction

In 2021, over 90 restrictive abortion policies had been enacted in the United States (US); more than any other year on record since the *Roe v. Wade* Supreme Court ruling in 1973 (1). The *Roe v. Wade* decision reduced maternal mortality rates by 30–40% for people of color by securing access to safe and legal abortions (2). The Supreme Court's decision on *Dobbs v. Jackson Women's Health Organization* has overturned the 50 years precedent set by *Roe v. Wade*, resulting in an immediate impact on abortion access (3). This decision overturned the rulings of *Roe v.*

Wade and *Planned Parenthood v. Casey*, removing federal protection for abortion access and allowing states to regulate, limit, or ban abortion. As of September 2019, the majority of reproductive-age people living in the US live in abortion-hostile states (4). The Supreme Court's decision to overturn *Roe v. Wade* in the *Dobbs v. Jackson Women's Health Organization* decision has paved the way for 28 states with laws in place or proposed to ban abortion almost entirely through new legislation or preceding trigger laws that previously could not be enforced following the *Roe v. Wade* ruling (5–7).

Currently, 11.3 million individuals have to travel over an hour to reach the nearest abortion clinic (8). The repercussions of each clinic closing ripple out as more pregnant people seek services at a smaller number of centers, impacting not only the distance patients have to travel but also the congestion of each center, as they serve both local patients and patients from nearby states (9). A 25-mile increase in travel distance has been associated with a 5% reduction in abortions; as abortion clinics close, the remaining clinics experience an influx of patients that results in a decrease in abortions in their community (9). The increase of patients at facilities that provide abortions as other nearby facilities close negatively impacts the delivery of other care offered at reproductive health care clinics, such as preventative breast exams, mammograms, and pap smears (10).

Low-income and birthing people of color have increased rates of abortion compared to White and high-income birthing people (11). The abortion rate among White individuals in the US is 10 per 1,000, while it is 27.1 per 1,000 among Black individuals (12). Approximately 70% of pregnancies that were documented in 2014 were reported as unintended among Black people, while the rates were 57 and 42% among Hispanic and White people, respectively (13). Increased hostility toward accessing abortion creates an even more dangerous climate for Black people, who are already 2–4 times as likely to experience maternal mortality and morbidity than their White counterparts (14). Socioeconomic status, racial discrimination, and disproportionate access to health care, including more effective forms of contraception, are pivotal determinants in experiencing unintended pregnancies and similarly limit abortion access. Black people live in states with the most restrictive policies regarding abortion (15).

Hostile restrictions to abortion access coupled with the pre-existing Black maternal health crisis will result in increased rates of mortality and morbidity among Black birthing people. One study estimates a total abortion ban in the United States would result in an additional 140 maternal deaths annually (16). This would be a 21% increase in maternal death and a 33% increase for non-Hispanic Black individuals (16). One study estimated that the closure of abortion clinics and early gestational age limits increase maternal mortality by 6–15 and 38%, respectively. Worldwide, unsafe abortion results in the loss of 68,000 lives annually (17). Restrictions on legal and safe abortion can force individuals to resort to unsafe abortions performed by untrained individuals in unsafe settings, using methods that fail to meet healthcare standards (18).

This commentary showcases the impact of restrictive abortion laws on the Black maternal health crisis through multiple pathways in a logic model. The logic model in Figure 1 explores the connections between abortion restrictions and the worsening Black maternal health crisis further, using abortion education and training as both a determinant and strategy (19–21).

Looking forward: abortion education

Abortion education and training for medical students and residents, as well as related reproductive care, will become even more limited than it was prior to *Dobbs v. Jackson Women's Health Organization* (22). These limitations on education will exacerbate racial inequities in maternal health by further limiting the quality of routine obstetric care in certain geographic regions that are already devastated by poor maternal health outcomes and by reducing opportunities to improve abortion provider diversity and provider concordance that was lacking prior to the Dobbs decision. In overturning *Roe v. Wade*, a distinction between essential healthcare and abortion has been made. However, routine obstetrical care includes abortion (23). It is imperative that future physicians have access to training on essential healthcare such as abortion. Similarly, abortion providers who have academic appointments in hostile states may be limited in what they can teach, and the number of clinical learning opportunities for abortion during the final 2 years of medical school will likely decrease (21, 22). The decision to overturn *Roe v. Wade* will not only make it more difficult for providers to perform abortions, but could also affect training in and care for patients requiring lifesaving miscarriage and ectopic pregnancy care (21, 24). Across various specialties, such as emergency medicine, residents find themselves weighing the options between facing criminal charges for performing an abortion, or losing their patient whose survival depends on access to an abortion (25). Lack of abortion training access will decrease the quality of care physicians provide and the quantity of physicians able to provide this care in abortion hostile states. Thus, we sought to explore the current atmosphere of abortion training and how it will impact the Black maternal health crisis in our logic model and narrative review.

Abortion education in medical schools

By the age of 40, one in four American birthing people have undergone at least one abortion procedure in their lives, making abortion one of the most common healthcare procedures in the US (4, 26, 27). Professional organizations such as the American College of Obstetricians and Gynecologists (ACOG) recognize abortion as an important and core topic for medical education (28). Despite being one of the most widely utilized maternal health care services and recognized as an essential topic for medical education, the majority of US medical schools lack sufficient abortion education (27). While competing priorities and the breadth of information necessary to provide are causes of limitations in all preclinical education, one cause for the insufficient attention given to abortion during preclinical years lies includes the underlying sexism and racism present in medical education (29). Medical practice inadequately considers gender in the areas of diagnosis, treatment, and disease management for men, women, and gender minorities (30). Gender minorities have been systematically excluded from medical and scientific knowledge. As a consequence, the healthcare system has been shaped by and catered to men. This bias in healthcare and clinical research has far-reaching implications for obstetric health and medical practices compromising the quality of care provided to birthing persons (31, 32). The logic model in Figure 1 showcases the medical bias is worse for racial and ethnic minorities demonstrated by the current Black maternal mortality crisis rooted in the history of obstetric racism present in the US.

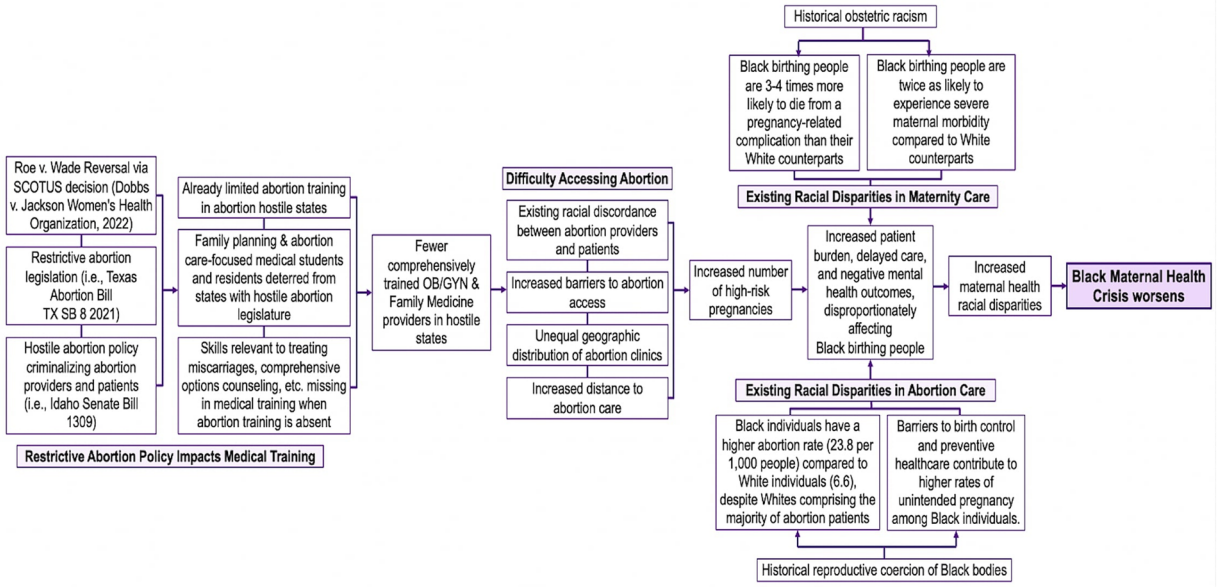

FIGURE 1
The impact of abortion restrictions on the US Black maternal health crisis logic model.

There is very limited data on abortion curricula in US medical schools (33). One of the few studies published on this topic demonstrated that abortion education is not thoroughly incorporated into medical schools' curricula: 17% of medical schools in the US did not formally teach abortion, and less than 50% of schools dedicated at least one lecture on abortion (26). Of the schools that offered clinical abortion care experience, it was included in the third year of medical school as an elective course that interested students had to actively seek out (26). Another study requesting information from the 126 accredited US medical schools' OB/GYN clerkship directors found that nearly a quarter of schools offered no formal abortion education in their clinical and preclinical program years, and a majority of schools only offered one abortion-care lecture elective course (34). An updated preliminary 2020 study reported that since 2005, there have been increases in abortion education availability in American medical schools, but compared to the national demand, the increases are insufficient (35). This is only set to progressively worsen with abortion education being limited in nearly half of the country.

In the year following the Dobbs decision (2022–2023), states with the most severe abortion restrictions found a 3.0% decrease in all applicants into residency programs, with a 10.5% decrease in OB/GYN applicants compared to previous application cycles (36). In a single application cycle, the impact of the Dobbs decision and subsequent abortion bans and restrictions has been made clear by these graduating medical students choosing to practice in other states. This change foreshadows a decrease in the number of physicians in states with abortion restriction, in OB/GYN as well as other specialties.

Abortion training in residency

The Accreditation Council for Graduate Medical Education (ACGME) and ACOG require and recommend all 267 accredited obstetrics and gynecology residency programs in the US provide access to abortion training and routinely teach abortion care to their residents (33). A study published in 2019 surveying OB/GYN Program Directors found that out of 190 respondents, 10 programs do not offer any abortion training at all (5%), 59 offer optional abortion training (31%), and 121 programs routinely schedule training for their residents (64%) (37). This is concerning as contraception, miscarriage management, medication and surgical abortion methods are highly necessary and routine health procedures for a large part of the US population (4).

Recent years have demonstrated increased integration and abortion care training among family medicine physicians. Family medicine physicians are the most common specialty in medicine practicing in abortion-care deserts, places with a lack of abortion-care/abortion-care access limitations (38). In a nationally representative sample of family medicine physicians, over 80% described having treated early pregnancy loss and 73% agreed that abortion was within their scope of practice, whereas only about 15% of family medicine providers in this survey reported offering early abortion care. This discrepancy may be explained by the fact that only 7% of all nationally accredited family medicine residencies offer abortion-care training (38). All medical practitioners who serve reproductive-aged birthing people must understand and be able to adequately facilitate abortion care and comprehensive family planning counseling, even if they do not perform the abortions themselves (33).

Following the Dobbs decision overturning *Roe v. Wade*, approximately 44% of residents in OB/GYN programs will no longer have access to in-state abortion training (39). Before Dobbs, residents in Missouri had to go to Illinois to be fully trained in abortion, now traveling elsewhere to practice these skills will become a reality for residents in Texas and other states that are hostile to abortion, though coordinating this effort will be difficult (21). Physicians in Louisiana are concerned that they will not be able to recruit the best physicians

to the state due to the new laws limiting abortion training and provision opportunities, impacting the quality of care for its residents (24).

Barriers for providers

Over the past several years, the number of abortion providers in most states has significantly declined. As of 2017, 89% of all US counties do not have an abortion provider available for their residents (4). The abortion provider decline is associated with the increasingly restrictive and hostile abortion legislation taking hold in the US (4, 40). Over the last decade, there have been 479 abortion restrictions enacted in 33 states, even though abortion is one of the safest medical procedures (40).

States with abortion bans or restrictions experience adverse outcomes including limited maternity care providers, maternity care deserts, higher rates of maternal mortality and infant death, especially among people of color, elevated death rates for birthing individuals of reproductive age, and greater racial disparities in healthcare (41, 42). Maternal death rates in abortion-restriction states were 62% higher than in states with greater abortion access states (28.8 vs. 17.8 per 100,000 births) (43). Abortion-restrictive states have a 32% lower ratio of obstetricians to births and a 59% lower ratio of certified nurse midwives to births compared to states with abortion access (41). The recent Dobbs decision could exacerbate this disparity as it may deter some maternity care providers from practicing in states where their work faces legal challenges, as seen in the recent residency application cycle (36). Insufficient maternity resources not only restrict access to birthing services, but also make it harder for pregnant individuals to access early and continuous prenatal care. In 2020, states with abortion restrictions had a 62% higher proportion of individuals giving birth who either received no prenatal care or received it late when compared to states with abortion access (44).

Surveyed Maternal-Fetal Medicine (MFM) providers stated that individual, institutional, and state-level factors impact their ability to provide abortion care in their practices (40). Limitations such as abortion public funding, cost, state mandates, waiting periods, and institutional policies impact their ability to provide abortion care (40). MFM physicians practicing in supportive abortion legislation states reported higher abortion provisions than those physicians practicing in abortion-hostile states, resulting in an unequal geographic distribution and representation of abortion providers and abortion clinics across the US and reduced access to reproductive health services (40). The disproportionate distribution of physicians is especially dangerous for high-risk patients whose pregnancies pose impending physical threats to their lives and who are located in areas with reduced or no access to family planning counseling services (Figure 1). All these factors readily contribute to the rising US maternal mortality rates, especially for Black birthing people who face more deadly birth inequities that are slated to worsen as states further eliminate access and support for abortion (15, 40). Abortion providers and clinicians standing up to these injustices are facing immense backlash. For example, a physician in Indiana publicly shared a story of her 10-year-old patient who was raped and could not obtain an abortion in their home state; subsequently she was humiliated by state attorneys, called a liar, and is now facing legal troubles (45).

Provider concordance

Abortion hostility and restrictive legislation throughout institutions is not the only problem in accessing abortion and reproductive health care services, or training abortion provider. The abortion provider and abortion care workforce does not reflect the communities it serves. After centuries of canceled and compromised reproductive autonomy, Black birthing people once again find their health and rights in the hands of people who do not share their lived experiences. The majority of abortion care providers are White and serve largely non-White, immigrant, low-income, and non-English speaking populations (46, 47). This is a result of the systematic exclusion of people of color from the medical profession and results in the exclusion and stigmatization of patients (48). Nearly half of all abortions obtained in the US are by those whose incomes are below the federal poverty level (46). Despite this, wealthy, White individuals still hold the greatest power and leverage over the legislative decisions being made, the pathways created for education, pathways for employment and work, and education curricula surrounding abortion and reproductive health care. As training opportunities for abortion care become more limited across the country, there is further limitation to training culturally concordant providers.

Diverse physicians, healthcare specialists, and administrators are associated with improved health outcomes for underserved, vulnerable, underrepresented, and underprivileged patient populations (49). Not only are there improved health outcomes but a more diverse physician workforce is also associated with White doctors being more culturally competent and better serving minority patients (50). There must be increased workforce diversity in the physician and medical care workforce as a whole, and in abortion provision in particular, as cultural humility, competence, and respect are essential in creating an unbiased, quality healthcare system rooted in justice and equity (51). As opportunities for training become more limited with the elimination and severe restriction of abortion access, increasing provider concordance will become even more difficult, and should remain a focus of programs seeking to improve health equity.

Call to action

In recent years, with advocacy efforts from Medical Students for Choice, the Kenneth J. Ryan Program, and Reproductive Health Education in Family Medicine (RHEDI) programs, the availability of abortion education in some US medical schools has improved (4, 27, 52). The overturn of *Roe v. Wade* will undoubtedly impose limits on education related to miscarriages and other OBGYN health issues (21). To combat this, abortion education must be embedded into the overall medical school curriculum for all US medical schools (27). The healthcare field should be intentional in training the next generation of clinicians. This can be accomplished by requirements set forth by the American Medical Association, Association of American Medical Colleges, and the American Association of Colleges of Osteopathic Medicine, for all medical schools to include evidence-based abortion education in their preclinical curricula, and as possible in their clinical years. For schools in states with limited training to abortion, efforts should be made to offer abortion training experiences or dedicated time to

establish them in other states during clinical years. Further, standardized exams can demonstrate the ubiquity of and normalize abortion by including the topic as an unstigmatized procedure on the United States Medical Licensing Exams and Comprehensive Osteopathic Medical Licensing Examinations. It is crucial to incorporate abortion training into the medical school curriculum, similar to any other surgical or medical procedure, to diminish its associated stigma (28).

Both residents and medical students should be supported by their respective institutions for advocacy work being done to improve access to abortion care. Residents in specialties adjacent to abortion care including pediatrics, anesthesia, and emergency medicine, should be trained on counseling for abortion care options and where to refer patients. Programs that offer abortion training must also be intentional in recruitment of trainees. Not only should the number of abortion providers in training increase, but also the racial concordance between physician and patient should be considered as a determinant of patient experience and outcomes.

Attention should be focused on improving access to abortion medication outside the clinic setting. Self-managed abortions are as safe as those in the clinic and online telemedicine can be highly effective (53, 54). Most importantly, physicians of any specialty should not report individuals who seek care following a self-managed abortion. Legislative action is necessary to secure reproductive rights long-term. The healthcare field should advocate for establishing federal law securing access, in particular, to abortion and reproductive healthcare, including federally enacting the Women's Health Protection Act (55). Given the fact that nearly one-quarter of birthing people in the US will have an abortion in their lifetimes and that abortion restrictions disproportionately impact already vulnerable populations, the medical community must leverage its power to protect the right to abortion and provide appropriate resources through advocacy.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

AK: Conceptualization, Data curation, Investigation, Methodology, Project administration, Visualization, Writing – original draft, Writing – review & editing. SD: Conceptualization, Data curation, Investigation, Visualization, Writing – original draft, Writing – review & editing. PF: Conceptualization, Data curation, Investigation, Writing – original draft, Writing – review & editing. FK: Conceptualization, Data curation, Supervision, Writing – review & editing. AL: Conceptualization, Data curation, Supervision, Writing – review & editing. BM: Investigation, Writing – original draft. LC: Writing – original draft, Writing – review & editing. EA: Writing – original draft, Writing – review & editing. NA-O: Conceptualization, Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. Nash E., Naide S. (2021). *State policy trends at midyear 2021: already the worst legislative year ever for U.S. abortion rights*. Guttmacher institute. Available at: https://www.guttmacher.org/article/2021/07/state-policy-trends-midyear-2021-already-worst-legislative-year-ever-us-abortion.

2. Farin SM, Hoehn-Velasco L, Pesko M. The impact of legal abortion on maternal health: looking to the past to inform the present. *SSRN Electron J*. (2021). doi: 10.2139/ssrn.3913899

3. Gerstein J, Wang A. *Exclusive: supreme court has voted to overturn abortion rights, draft opinion shows* POLITICO (2022) Available at: https://www.politico.com/news/2022/05/02/supreme-court-abortion-draft-opinion-00029473.

4. Polic A, Rapkin RB. Access to abortion training. *Semin Perinatol*. (2020) 44:151271. doi: 10.1016/j.semperi.2020.151271

5. Guttmacher Institute. (n.d.). *Interactive map: US abortion policies and access after roe*. Available at: https://states.guttmacher.org/policies/ (Accessed August 27, 2023).

6. Kheyfets A, Miller B, Amutah-Onukagha N. Implications for racial inequities in maternal health if roe v Wade is lost. *Lancet*. (2022) 400:9–11. doi: 10.1016/S0140-6736(22)01024-8

7. McCann A., Johnston T. (2022). Where abortion could be banned without roe v. Wade *The New York Times*. Available at: https://www.nytimes.com/interactive/2022/us/abortion-bans-restrictons-roe-v-wade.html.

8. Lai K. K. R., Patel J. K. (2019). For millions of American women, abortion access is out of reach. *The New York Times*. Available at: https://www.nytimes.com/interactive/2019/05/31/us/abortion-clinics-map.html, https://www.nytimes.com/interactive/2019/05/31/us/abortion-clinics-map.html.

9. Lindo J., Myers C., Schlosser A., Cunningham S. (2017). How far is too far? New evidence on abortion clinic closures, access, and abortions. *National Bureau of Economic Researh, Working Paper 23366*.

10. Lu Y, Slusky DJG. The impact of Women's health clinic closures on preventive care. *Am Econ J Appl Econ*. (2016) 8:100–24. doi: 10.1257/app.20140405

11. Dehlendorf C, Harris LH, Weitz TA. Disparities in abortion rates: a public health approach. *Am J Public Health*. (2013) 103:1772–9. doi: 10.2105/AJPH.2013.301339

12. Jones RK, Kavanaugh ML. Changes in abortion rates between 2000 and 2008 and lifetime incidence of abortion. *Obstet Gynecol*. (2011) 117:1358–66. doi: 10.1097/AOG.0b013e31821c405e

13. Finer LB, Zolna MR. Declines in unintended pregnancy in the United States, 2008–2011. *N Engl J Med*. (2016) 374:843–52. doi: 10.1056/NEJMsa1506575

14. Creanga AA, Bateman BT, Kuklina EV, Callaghan WM. Racial and ethnic disparities in severe maternal morbidity: a multistate analysis, 2008–2010. *Am J Obstet Gynecol*. (2014) 210:435.e1–8. doi: 10.1016/j.ajog.2013.11.039

15. Redd SK, Rice WS, Aswani MS, Blake S, Julian Z, Sen B, et al. Racial/ethnic and educational inequities in restrictive abortion policy variation and adverse birth outcomes in the United States. *BMC Health Serv Res*. (2021) 21:1139. doi: 10.1186/s12913-021-07165-x

16. Stevenson AJ. The pregnancy-related mortality impact of a Total abortion ban in the United States: a research note on increased deaths due to remaining pregnant. *Demography*. (2021) 58:2019–28. doi: 10.1215/00703370-9585908

17. Hawkins SS, Ghiani M, Harper S, Baum CF, Kaufman JS. Impact of state-level changes on maternal mortality: A population-based, quasi-experimental study. *Am J Prev Med*. (2020) 58:165–74. doi: 10.1016/j.amepre.2019.09.012

18. Haddad LB, Nour NM. Unsafe abortion: unnecessary maternal mortality. *Rev Obstet Gynecol*. (2009) 2:122–6.

19. Bearak J, Popinchalk A, Ganatra B, Moller A-B, Tunçalp Ö, Beavin C, et al. Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990–2019. *Lancet Glob Health*. (2020) 8:e1152–61. doi: 10.1016/S2214-109X(20)30315-6

20. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. *Lancet*. (2006) 367:1066–74. doi: 10.1016/S0140-6736(06)68397-9

21. Weiner. *How the repeal of roe v. Wade will affect training in abortion and reproductive health*. AAMC: (2022) Available at: https://www.aamc.org/news-insights/how-repeal-roe-v-wade-will-affect-training-abortion-and-reproductive-health.

22. Wolters C. *How medical training will change now that roe v. Wade is overturned* Verywell Health (2022) Available at: https://www.verywellhealth.com/abortion-education-threatened-roe-v-wade-5443141.

23. Fay KE, Diouf K, Butler SK, Onwuzurike C, Wilkinson BE, Johnson NR, et al. Abortion as essential health care and the critical role your practice can play in protecting abortion access. *Obstet Gynecol*. (2022) 140:729–37. doi: 10.1097/AOG.0000000000004949

24. Vidal O. (2022). An OB/GYN professor reflects on how the new abortion laws could affect medical education in La. Fox 8 live. Available at: https://www.fox8live.com/2022/06/27/an-obgyn-professor-reflects-how-new-abortion-laws-could-affect-medical-education-la/.

25. Saxena MR, Choo EK, Andrabi S. Reworking emergency medicine resident education post-Dobbs v Jackson Women's health organization. *J Grad Med Educ*. (2023) 15:283–6. doi: 10.4300/JGME-D-23-00300.1

26. Espey E, Ogburn T, Leeman L, Nguyen T, Gill G. Abortion education in the medical curriculum: a survey of student attitudes. *Contraception*. (2008) 77:205–8. doi: 10.1016/j.contraception.2007.11.011

27. Srinivasulu S, Maldonado L, Prine L, Rubin SE. Intention to provide abortion upon completing family medicine residency and subsequent abortion provision: a 5-year follow-up survey. *Contraception*. (2019) 100:188–92. doi: 10.1016/j.contraception.2019.05.011

28. ACOG Committee opinion no. 612. abortion training and education. *Obstet Gynecol*. (2014) 124:1055–9. doi: 10.1097/01.AOG.0000456327.96480.18

29. Prather C, Fuller TR, Jeffries WL, Marshall KJ, Howell AV, Belyue-Umole A, et al. Racism, African American women, and their sexual and reproductive health: a review of historical and contemporary evidence and implications for health equity. *Health Equity*. (2018) 2:249–59. doi: 10.1089/heq.2017.0045

30. Regitz-Zagrosek V. Sex and gender differences in health. *EMBO Rep*. (2012) 13:596–603. doi: 10.1038/embor.2012.87

31. Jackson G. *The female problem: how male bias in medical trials ruined women's health* The Guardian (2019) Available at: https://www.theguardian.com/lifeandstyle/2019/nov/13/the-female-problem-male-bias-in-medical-trials.

32. Young K, Fisher J, Kirkman M. "Do mad people get endo or does endo make you mad?": clinicians' discursive constructions of medicine and women with endometriosis. *Fem Psychol*. (2019) 29:337–56. doi: 10.1177/0959353518815704

33. Martinez R, Bonnin R, Feld Z, Minor S. Abortion opt-in experience in third-year clerkship. *PRiMER*. (2021) 5:38. doi: 10.22454/PRiMER.2021.201254

34. Espey E, Ogburn T, Chavez A, Qualls C, Leyba M. Abortion education in medical schools: a national survey. *Am J Obstet Gynecol*. (2005) 192:640–3. doi: 10.1016/j.ajog.2004.09.013

35. Heger J, Roth J, Kenya S. What are we learning? An update on abortion education in medical schools [29G]. *Obstet Gynecol*. (2020) 135:78S. doi: 10.1097/01.AOG.0000664936.85523.35

36. Orgera K, Mahmoon H, Grover A. *Training Location Preferences of U.S. Medical School Graduates Post Dobbs v* Jackson Women's Health Organization Decision. AAMC (2023) Available at: https://www.aamc.org/advocacy-policy/aamc-research-and-action-institute/training-location-preferences.

37. Turk JK, Landy U, Chien J, Steinauer JE. Sources of support for and resistance to abortion training in obstetrics and gynecology residency programs. *Am J Obstet Gynecol*. (2019) 221:156.e1–6. doi: 10.1016/j.ajog.2019.04.026

38. Patel P, Narayana S, Summit A, Gold M, Morgan Z, Peterson L, et al. Abortion provision among recently graduated family physicians. *Fam Med*. (2020) 52:724–9. doi: 10.22454/FamMed.2020.300682

39. Vinekar K, Karlapudi A, Nathan L, Turk J, Rible R, Steinauer J. Projected implications of overturning roe v Wade on abortion training in U.S. obstetrics and gynecology residency programs. *Obstet Gynecol*. (2022) 140:146–9. doi: 10.1097/AOG.0000000000004832

40. Lappen JR, Vricella LK, Andrews V, Christensen E, Heuser CC, Horvath S, et al. Society for maternal-fetal medicine special statement: maternal-fetal medicine subspecialist survey on abortion training and service provision. *Am J Obstet Gynecol*. (2021) 225:B2–B11. doi: 10.1016/j.ajog.2021.04.220

41. Declercq E, Barnard-Mayers R, Zephyrin LC, Johnson K. *U.S. maternal health divide: limited services and worse outcomes* The Commonwealth Fund (2022) Available at: https://www.commonwealthfund.org/publications/issue-briefs/2022/dec/us-maternal-health-divide-limited-services-worse-outcomes.

42. Maternal deaths and mortality rates per 100,000 live births. (2023). *KFF*. Available at: https://www.kff.org/other/state-indicator/maternal-deaths-and-mortality-rates-per-100000-live-births/.

43. Hoyert DL. Maternal mortality rates in the United States, 2020. *NCHS Health E-Stats*. (2022). doi: 10.15620/cdc:113967

44. Shin P., Rosenbaum S., Morris R., Johnson K., Jacobs F. (2022). *67. In the Wake of Dobbs, are Community Health Centers Prepared to Respond to Rising Maternal and Infant Health Care Needs? | Geiger Gibson Program in Community Health | Milken Institute School of Public Health | The George Washington University*. Geiger Gibson Program in Community Health | Milken Institute School of Public Health. Available at: https://geigergibson.publichealth.gwu.edu/67-wake-dobbs-are-community-health-centers-prepared-respond-rising-maternal-and-infant-health-care.

45. Wilkinson T. A. (2022). Opinion | Dr. Caitlin Bernard was meant to write this with me before she was attacked for doing her job. *The New York Times*. Available at: https://www.nytimes.com/2022/07/15/opinion/doctors-roe-v-wade-ohio-10-year-old.html.

46. Jerman J., Jones R. K., Onda T. (2016). *Characteristics of U.S. abortion patients in 2014 and changes since 2008*. Available at: https://www.guttmacher.org/report/characteristics-us-abortion-patients-2014.

47. Ranji U, Long M, Salganicoff A, Silow-Carroll S, Rosenzweig C, Rodin D, et al. *Beyond the numbers: Access to reproductive health Care for low-Income Women in five communities – executive summary [KFF]* Women's Health Policy (2019) Available at: https://www.kff.org/report-section/beyond-the-numbers-access-to-reproductive-health-care-for-low-income-women-in-five-communities-executive-summary/.

48. Daniel M. The social movement for reproductive justice: emergence, intersectional strategies, and theory building. *Sociol Compass*. (2021) 15:e12907. doi: 10.1111/soc4.12907

49. Jackson CS, Gracia JN. Addressing health and health-care disparities: the role of a diverse workforce and the social determinants of health. *Public Health Rep*. (2014) 129:57–61. doi: 10.1177/00333549141291S211

50. Chapman MV, Hall WJ, Lee K, Colby R, Coyne-Beasley T, Day S, et al. Making a difference in medical trainees' attitudes toward Latino patients: a pilot study of an intervention to modify implicit and explicit attitudes. *Soc Sci Med*. (2018) 199:202–8. doi: 10.1016/j.socscimed.2017.05.013

51. Saha S, Beach MC, Cooper LA. Patient centeredness, cultural competence and healthcare quality. *J Natl Med Assoc*. (2008) 100:1275–85. doi: 10.1016/S0027-9684(15)31505-4

52. *RHEDI Programs – RHEDI*. (n.d.). Available at: https://rhedi.org/rhedi-programs/ (Accessed July 25, 2022).

53. Aiken ARA, Romanova EP, Morber JR, Gomperts R. Safety and effectiveness of self-managed medication abortion provided using online telemedicine in the United States: a population based study. *Lancet Reg Health Am*. (2022) 10:100200. doi: 10.1016/j.lana.2022.100200

54. Moseson H, Jayaweera R, Raifman S, Keefe-Oates B, Filippa S, Motana R, et al. Self-managed medication abortion outcomes: results from a prospective pilot study. *Reprod Health*. (2020) 17:164. doi: 10.1186/s12978-020-01016-4

55. Women's Health Protection Act of 2021. (2021). H.R.3755, 117th Congress (2021–2022).

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Abortion access in the Americas: a hemispheric and historical approach

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This perspective article situates the 2022 United States (U.S.) Supreme Court's overturning of *Roe v. Wade* (1973) within the broader history of abortion rights activism and legislation in the greater Americas. The U.S. public has stereotyped Latin America and the Caribbean (LAC) as socially conservative regarding gender issues and anti-reproductive rights. But twenty-first-century LAC presents a more complicated landscape than this dominant narrative suggests. In the past 15 years, political, legislative, and public health advances and setbacks across the region provide both a blueprint for re-establishing access to safe and legal abortion and a warning on the consequences of the criminalization of abortion for the U.S. Employing a narrative approach that summarizes recent interdisciplinary literature, this perspective traces the history of the expansion of abortion access in the Americas. Mexico (2007, 2023), Uruguay (2012), Argentina (2020), and Colombia (2022) legalized abortion on demand within specific timeframes. These expansions coexist with severe restrictions on abortion in various nations including Haiti (1835), the Dominican Republic (1884, 2009), Honduras (1985, 2021), El Salvador (1997), and Nicaragua (2006), as well as some states in the United States (2022). This perspective finds that legalization occurs when feminist activists eschew U.S.-based feminist rhetoric of individual rights and choice to reframe abortion as a form of gender-based violence within a discourse of health and wellbeing as a human right. According to this perspective, restrictions on access to the procedure constitute a form of violence against women and people capable of bearing children and violate human rights.

KEYWORDS

Latin America, Caribbean, United States, abortion, *Roe v. Wade*, reproductive justice, feminism, human rights

1 Introduction

Latin American and the Caribbean (LAC) is a heterogeneous region comprising over 40 countries with a population of nearly 660 million people (2022) with high levels of geographic and demographic diversity. Residents speak multiple languages of European, African, and indigenous backgrounds and practice various religions (1). Since the new millennium, the region's GDP has grown steadily, although the Great Recession and the COVID-19 pandemic caused some economic setbacks. Inequality has declined, but the region is still the second most unequal worldwide (2). Prior to the COVID-19 pandemic, the major five health indicators – life expectancy at birth and neonatal, infant (up to 12 months of age), under-5, and maternal mortality – had improved (3). Nonetheless, as Kulczycki notes (4), "significant differences in

health status between and within countries" remain (p. 213) as does access to safe and legal abortion. Although abortion-related morbidity and mortality rates have decreased, they remain a public health concern, particularly in countries with restrictive bans (5).

For decades, abortion access in LAC was highly restrictive, generally correlating to a conservative Catholic stance on pregnancy interruption (6). In the United States, media representations and public opinion have contrasted this history with an allegedly more progressive national environment, where legal abortion was a constitutional right guaranteed by the Supreme Court (7, 8). But this is evidence of a U.S.-centric "coloniality of power," in the words of decolonial scholars of Latin America (9–12). As feminist de-colonial thinkers argue, this view elevates Western modernity and rationality above formerly colonized others, who are racialized and gendered beings stuck in an imagined inferior and homogenous past (13–16).[1] If we compare the *Dobbs v. Jackson Women's Health Organization*'s (2022) recent overturning of *Roe v. Wade* (1973), which has allowed some states to ban the procedure, with the legalization of abortion on demand in Uruguay (2012), Argentina (2020), Mexico (2007, 2023),[2] and Colombia (2022), and the blanket ban on abortion in more conservative countries including Haiti (1835), the Dominican Republic (1884, 2009), Honduras (1985, 2021), El Salvador (1997), and Nicaragua (2006),[3] we see a more complicated story that challenges, as Garibotto writes (p. 686), "an ethnocentric view of the so-called South as having historically been more backward than the so-called North and an underlying assumption of Latin America as a monolithic entity" (8).

This perspective compares the simultaneous expansion and restriction of abortion access in LAC in relation to the contraction of access in large areas of the United States. It will show that in places where legalization occurred, feminist activists in LAC have reframed abortion rights within a public health framework that: (1) makes clear that the longstanding double-standard on abortion access in the region, where wealthy women access safe if clandestine procedures while poor women die from unsafe, illegal abortions, is a matter of public health and (2) that disparate access to abortion, resulting in higher rates of maternal mortality among disadvantaged women is form of violence against women and thus a violation of their human rights.

1.1 A brief history of abortion legislation in the Americas

The history of abortion access in the Western Hemisphere has followed a non-linear path in which criminalization and decriminalization reoccur. In the Americas, Catholic doctrine has influenced public opinion toward and legal sanctions of abortion since colonization in the early sixteenth century. In medieval and early modern Europe, most sectors of society understood abortion before quickening, or first fetal movements, as the restoration of the menses and not the intentional ending of a pregnancy. Early modern England did not criminalize the loss of a pregnancy before quickening, even if the woman[4] or her attending midwife or physician deliberately ended the pregnancy. This understanding of when a pregnancy loss became a criminal abortion was transported to British colonies in the Americas, including what would eventually become the United States (24–26). Justice Alito's opinion in *Dobbs* blatantly ignored this longstanding history, presenting a false past in which abortion had been criminalized since the nation's founding (27, 28).

In medieval and early modern Iberian tradition, transferred to the Spanish and Portuguese colonies in LAC, Catholic doctrine condemned abortion as a sin, but the gravity of the act evolved significantly (29–31). Medieval Catholic theologians believed in delayed ensoulment; the fetus gained its immortal soul only after quickening. Abortion prior to quickening was a sin, but not one of murder and thus not excommunicable (32). Although increasingly questioned by theologians during the seventeenth and eighteenth centuries, this position held until the late nineteenth century, when the Church declared life as beginning at the moment of conception and all abortion, regardless the gestational age of the fetus, a sin of murder, and excommunicable (33).

Catholic doctrine coincided with Latin American independence from European colonialism in the nineteenth century, and new legislation criminalized abortion through federal penal codes (29, 34–36). In the United States, the understanding of early fetal loss as distinct from criminal abortion also shifted. In response to demographic changes, in which U.S.-born white birthrates declined as immigration and immigrant birthrates increased, nativist leaders attempted to restrict White women's ability to regulate their fertility (37–39). Successive state-level legislation criminalized the practice in the late nineteenth century, after a professionalizing American Medical Association began a nationwide campaign to crack down on pregnancy termination at all gestational stages (37, 39).

Despite this trend toward criminalization, Brazil and Argentina were some of the first countries in the world to legalize therapeutic abortions in the early twentieth century (34, 35, 40), although they lacked adequate protocols to ensure access to legal procedures. In Brazil – which legalized therapeutic abortions in the late nineteenth century if the mother's life was in danger, and in 1940 expanded this

1 Here, I focus on critical decolonial theory coming from Latin America, but other relevant theoretical models include Stuart Hall's discussion of representation (17) and postcolonial theories of Otherness (18, 19), among others. Bhambra (20) has an excellent synthesis of the two traditions.

2 Mexico City decriminalized abortion up to 12 weeks LMP in 2007. In 2021, the country's Supreme Court declared the criminalization of abortion up to 12 weeks LMP in the state of Coahuila unconstitutional. In 2023, it expanded that decision to all Mexican states.

3 Haiti, the Dominican Republic, and Honduras banned abortion in all circumstances in 1835, 1884, and 1985, respectively. The Dominican Republic and Honduras, in 2009 and 2021 respectively, wrote these bans into their constitutions. Abortion also is completely banned in Jamaica, Suriname, Curaçao, and Aruba (21). In 2020, Haiti passed a new Penal Code that would have legalized abortion on demand up to 12 weeks LMP, but the president was assassinated, and the Code has not been implemented (22).

4 Until the late twentieth century, legal and medical sources, as well as people, used the term "women" or "mother" in relation to abortion care. This article adheres to this terminology for historical accuracy. However, its discussion of contemporary activism and policies employs the more gender-inclusive language of pregnant people (23).

legislation to include cases of rape – medical regulations related to health provisions only appeared in the 1920s (35). The government finally issued regulations regarding rape in 1999 (updated in 2012) and for all reasons in 2005 (41, 42). Argentina criminalized abortion in 1921 except in cases of the risk to the health or life of the mother or in cases of rape (43). As late as 2019, only 10 out of 24 jurisdictions in Argentina had up-to-date medical protocols (44).

By the early twentieth century, abortion was illegal in most of the United States and Latin America and the Caribbean. This hardened approach toward the voluntary ending of a pregnancy remained stable, if not enforceable, until the second half of the twentieth century. For on-demand abortions, the U.S. broke this trend with the passage of *Roe* in 1973. In LAC, Cuba became the first country to legalize on-demand abortion, providing all women free access to the procedure in 1979 (45, 46). In 1988, Canada legalized on-demand abortion and further stipulated the government provide services free of charge under the Canada Health Act (47).

As some nations began decriminalizing abortion, the topic entered the public sphere in LAC, with the better recording and publication of health complications and deaths related to illegal procedures. In Brazil, studies in the 1980s found that poor women, often women of color, disproportionately experienced higher rates of maternal mortality and morbidity related to unwanted pregnancy (48). Although data are incomplete, experts have hypothesized that abortion played an important role in Latin America's overall fertility decline beginning in the 1960s and continuing through the 1980s, until more widespread use of biomedical contraceptives became prevalent (4, 49).

As maternal deaths from abortion became visible, second-wave feminists began organizing around abortion rights (50–52). Many of these feminists lived in countries under authoritarian dictatorships that violently suppressed political dissent. Questions of bodily autonomy thus had broader meanings during the Cold War in Latin America: what did abortion access imply if a military government could "disappear" (kidnap, torture, and murder) one's family members without consequence? Latin American feminists' demands to legalize abortion thus began as part of a human rights narrative in which bodily autonomy for all citizens was a fundamental aspect of redemocratization (53, 54).

Due to this historical context, feminist organizing in Latin America for reproductive health equity had always employed a reproductive justice framework, linking abortion rights to economic and social justice (43, 44, 55, 56). Reproductive justice, according to the Black U.S. feminists who coined the term in the mid-1990s, is a human-rights based theory and praxis of reproductive autonomy in which all people have the "right to maintain personal bodily autonomy, have children, not have children, and parent the children we have in safe and sustainable communities" (57). Yet only the most marginalized in the U.S. – Black, indigenous, and other women of color – have harnessed international human rights laws and discourses framework to fight against a racist and patriarchal state that disregards human life within their communities (28, 58–62). Mainly White feminist organizations focused on choice and the negative right of privacy at the expense of a broader understanding of how abortion access fits into human rights, including the positive right of access to healthcare (38, 63, 64).

1.2 Ready for change

Since the new millennium, feminists fighting for reproductive justice including abortion rights and an end to obstetric violence in LAC have reframed any restriction on abortion as an act of gender-based violence and thus as a human rights violation (53, 54, 65–68). In the 1990s and 2000s, legislative successes to decriminalize or legalize abortion in LAC were few and existed alongside newly enacted blanket bans. El Salvador criminalized abortion under all circumstances in 1998, which has had severe consequences not only for women's lives, as poor women face life-and-death situations when accessing abortion care, but also for gender equality (69). At the same time, the continued activism of feminists and other civil society actors allowed for modest reforms in Mexico, Brazil, and Colombia, which set the stage for more recent changes (4).

In the past 15 years, this human rights foundation has proven crucial for pushing legislative successes forward. Feminists organizing to legalize abortion in Argentina have eschewed discussions of when life begins or privacy rights, instead emphasizing social equality and economic justice (56). Arguing that Argentine women from all classes have abortions, but only poor women die from them, feminists moved the conversation away from the morality of abortion – women need the procedure regardless of its legality – to the inequity of differential health outcomes based on social class (70). They also incorporated demands for safe and legal abortion within larger social justice campaigns, thus expanding their base of supporters (43, 44). Feminists tied longstanding public health arguments in favor of decriminalizing abortion to calls against gender-based violence, likening maternal deaths from abortion to femicides. Following a reproductive justice framing, the bill that legalized abortion in Argentina requires that public hospitals provide the procedure free of charge (71). The final bill also includes gender-inclusive language by allowing access to abortion on demand up to 14 weeks for "women and all gestating persons" (43).

An economic justice argument was also crucial in the legalization of abortion in Colombia in 2022 (53). Strategic litigation activities in the first two decades of the new millennium culminated in the Constitutional Court's passage of one of the world's broadest on-demand abortion laws (72). In Brazil, feminists are pushing the Supreme Court to decide whether the criminalization of abortion violates the human rights of "women, adolescents or girls" (73). As of September 2023, the Brazilian Supreme Court is currently debating the decriminalization of abortion up to 12 weeks LMP on these grounds (74). In September 2023, the Mexican Supreme Court declared all criminal penalties for abortion unconstitutional, stating that they "violate the human rights of women and people with the ability to gestate" (75). A second decision issued only days later made it unconstitutional to define legal personhood as "from conception." It also later invalidated conscientious objection by physicians and other medical practitioners. This decision built upon one two years prior that recognized the constitutional right to free abortion services up to 12 weeks LMP and on specific grounds after that time frame in the Mexican state of Coahuila (76).

Shifting religious patterns also has affected public opinion; Catholic religiosity has declined across the region, and despite a rising percentage of Latin Americans who identify as evangelicals, overall church attendance is down (44, 53). Nonetheless, the Catholic church has proven a stalwart against abortion rights, and since the 1990s, it

also has employed the language of human rights in its pro-life efforts (7). A growing, vocally anti-abortion evangelical movement has joined these endeavors (4, 77). In the U.S., pro-life evangelicals successful restricted abortion access in the decades leading up to the overturning of *Roe* (78, 79). This tactic must be seen as a threat to the viability of any on-demand abortion policy. In the U.S., increasing restrictions at the state level after *Planned Parenthood v. Casey* (1992), severely constrained abortion access for many pregnant people, particularly the most marginalized, by shifting the legal context to an "undue burden" standard (80). As abortion providers and pregnant people know best, legal abortion does not equal accessible abortion services (71, 80–82). For example, the September 2023 Mexican Supreme Court decriminalization of abortion does not automatically equate to full access. As Valero writes, "For decriminalization to really translate into a future with greater access to reproductive health care, abortion-seekers need access to psychological and social support, as well as clinics and hospitals stocked with essential drugs, supplies, equipment, and trained specialists" (83).

2 Discussion

Social science scholars have urged U.S. feminists to reframe their fight for abortion rights by drawing on Latin American successes. Fixmer-Oraiz and Murillo argue that U.S. feminists must name "abortion care denial as *violence*" (54). In the U.S., political culture is strongly focused on individual rights and decision making. This includes a Malthusian approach toward population politics, in which the poor are blamed for allegedly irrational choices, including to get an unsafe abortion. Such exceptionalist discourses exist on both the left and the right, underscoring the rejection of international frameworks including those supporting human and women's rights. Given this, and in the face of extreme efforts to criminalize reproductive choices in the U.S., how can we implement this necessary shift?

Pregnant people will always need access to abortion services regardless the legal restrictions or permissions. To reframe abortion as a public health and thus human rights issue, we must move away from all discussions tied to fetal personhood, which the pro-life movement has successfully operationalized to criminalize abortion. The time parameters for on-demand abortion do not necessarily need to extend until fetal viability. *Roe* marked viability as the end of on-demand abortion. Most Latin American nations that recently legalized abortion on demand have implemented shorter gestational limits. To delink fetal viability and on-demand abortion, two conditions must be met: (1) pregnant people must remain able to terminate pregnancies for expansive health-related issues after on-demand gestational limits end and (2) on-demand abortion access must be available to everyone, not just to those who can afford it, so that people who need an abortion can get it early in the pregnancy. On-demand abortion must be tied to public health calls for broader universal health services and the even distribution of quality reproductive healthcare across the nation. The relevant personhood is that of the pregnant person, not the fetus. So, in this sense, taking one part of LAC platform – that inequity in healthcare is gender-based violence – we can push forward to expand universal healthcare and abortion access.

This reframing must also exist alongside another successful trend coming from LAC: grassroots "accompanist networks" that have created extensive cross-regional networks to provide mainly medication abortion to women who live in areas with restrictive laws (84–86). Pregnant people have long travelled to access abortion, but this travel reinforces economic barriers (87, 88). In the U.S., abortion funds have stepped into this role, providing funding for travel and abortion care in highly restricted contexts. Often deeply embedded within local activist networks, these groups are the collective grassroots organizing that must thrive while policymakers and public health practitioners advance abortion access on the population level. But an initial outpouring of donations in the year following Dobbs has begun to dry up (89), and experts have urged donors to "take the long view" (90).

In the U.S., the rise of self-managed abortions has allowed pregnant people to obtain prescriptions for the drug combination of mifepristone and misoprostol for medication abortions at home (91, 92). Pharmacists in Brazil began providing misoprostol (an ulcer drug) off label to women who wanted to terminate their pregnancies in the 1990s (93–95). Today, accompanist networks in many parts of Latin America have expanded access to medication abortions by providing pregnant people living in restrictive legal contexts misoprostol for self-managed abortions with safety guidelines and support (84, 96–100). Feminist networks are already doing the same in the United States (92), although not without legal consequences (101). As we engage in the crucial work of re-expanding abortion access, we cannot forget the pregnant people who need an abortion right now.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding author.

Author contributions

CR: Conceptualization, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

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References

1. The World Bank. World development indicators: Latin America & Caribbean (2022). Available at: https://data.worldbank.org/region/latin-america-and-caribbean

2. United Nations Development Programme. Regional Human Development Report (2021). Trapped: High inequality and low growth in Latin America and the Caribbean. New York: United Nations Development Programme. Available at: https://www.undp.org/latin-america/publications/regional-human-development-report-2021-trapped-high-inequality-and-low-growth-latin-america-and-caribbean

3. OECD/The World Bank. *Health at a glance: Latin America and the Caribbean 2023*. Paris: OECD Publishing (2023).

4. Kulczycki A. Abortion in Latin America: changes in practice, growing conflict, and recent policy developments. *Stud Fam Plan*. (2011) 42:199–220. doi: 10.1111/j.1728-4465.2011.00282.x

5. Romero M, RGP DL, Baccaro LF, Carroli B, Mehrtash H, Randolino J, et al. Abortion-related morbidity in six Latin American and Caribbean countries: findings of the WHO/HRP multi-country survey on abortion (MCS-A). *BMJ Glob Health*. (2021) 6:e005618. doi: 10.1136/bmjgh-2021-005618

6. Vacarezza NL. Abortion rights in Uruguay, Chile, and Argentina: movements shaping legal and policy change. *Sw J Int L*. (2023) 29:309–47.

7. Morgan LM. Claiming Rosa parks: conservative Catholic bids for "rights" in contemporary Latin America. *Cult Health Sex*. (2014) 16:1245–59. doi: 10.1080/13691058.2014.885086

8. Garibotto V. Uneven reproductive landscapes: the abortion documentary in Latin America. *Lat Am Res Rev*. (2023) 58:685–93. doi: 10.1017/lar.2022.100

9. Mignolo WD. The geopolitics of knowledge and colonial difference. *South Atlant Q*. (2002) 101:57–96. doi: 10.1215/00382876-101-1-57

10. Mignolo WD. Introduction: coloniality of power and de-colonial thinking. *Cult Stud*. (2007) 21:155–67. doi: 10.1080/09502380601162498

11. Quijano A. Coloniality of power and eurocentrism in Latin America. *Int Sociol*. (2000) 15:215–32. doi: 10.1177/0268580900015002005

12. Quijano A. Coloniality and modernity/rationality. *Cult Stud*. (2007) 21:168–78. doi: 10.1080/09502380601164353

13. Alcoff L. The problem of speaking for others. *Cult Crit*. (1991) 20:5. doi: 10.2307/1354221

14. Alcoff LM. Decolonizing feminist theory: Latina contributions to the debate. AJ Pits, M Ortega and JM Medina, (Eds.) *Theories of the flesh: LatinX and Latin American feminisms, transformation, and resistance*. New York: Oxford University Press; (2020). 11–28

15. Figueroa Y. After the hurricane: afro-Latina decolonial feminisms and Destierro. *Hypatia*. (2020) 35:220–9. doi: 10.1017/hyp.2019.12

16. Lugones M. Heterosexualism and the colonial/modern gender system. *Hypatia*. (2007) 22:186–219. doi: 10.1111/j.1527-2001.2007.tb01156.x

17. Hall S. Signification, representation, ideology: althusser and the post-structuralist debates. *CSMC*. (1985) 2:91–114. doi: 10.1080/15295038509360070

18. Said EW. *Orientalism. 25th anniversary*. New York: Vintage Books (1978).

19. Spivak GC. Can the subaltern speak? C Nelson and L Grossberg, (Eds.) *Marxism and the interpretation of culture*. Basingstoke, UK: Macmillan Education; (1988). 271–313

20. Bhambra GK. Postcolonial and decolonial dialogues. *Postcol Stud*. (2014) 17:115–21. doi: 10.1080/13688790.2014.966414

21. Center for Reproductive Right. The World's Abortion Laws, (2023). Available at: https://reproductiverights.org/maps/worlds-abortion-laws/

22. Prévost-Manuel J., Reclaiming safe abortion access in Haiti. YES! Magazine (2023). Available at: https://www.yesmagazine.org/social-justice/2023/03/30/abortion-rights-haiti

23. MacKinnon KR, Lefkowitz A, Lorello GR, Schrewe B, Soklaridis S, Kuper A. Recognizing and renaming in obstetrics: how do we take better care with language? *Obstetric Med*. (2021) 14:201–3. doi: 10.1177/1753495X211060191

24. Brodie JF. *Contraception and abortion in nineteenth-century America*. Ithaca, NY: Cornell University Press (1994).

25. Klepp SE. *Revolutionary conceptions: Women, fertility, and family limitation in America, 1760–1820*. Chapel Hill: University of North Carolina Press (2009).

26. Withycombe S. *Lost: miscarriage in nineteenth-century America*. New Brunswick, NJ: Rutgers University Press (2019).

27. American Historical Association. Abortion, choice, and the supreme court: History behind the headlines. (2022). Available at: https://youtu.be/WdgmmtJrTM4

28. O'Donnell K, Rogers N. Revisiting the history of abortion in the wake of the Dobbs decision. *Bull Hist Med*. (2023) 97:1–10. doi: 10.1353/bhm.2023.0000

29. Jaffary NE. *Reproduction and its discontents in Mexico: Childbirth and contraception from 1750 to 1905*. Chapel Hill: University of North Carolina Press (2016).

30. Few M, Tortorici Z, Warren A. *Baptism through incision: the postmortem cesarean operation in the Spanish empire*. University Park: Pennsylvania State University Press (2020).

31. O'Brien E. The many meanings of Aborto: pregnancy termination and the instability of a medical category over time. *Women's Hist Rev*. (2021) 30:952–70. doi: 10.1080/09612025.2020.1833494

32. van der Lugt M., Formed fetuses and healthy children in scholastic theology, medicine and law. N Hopwood, R Flemming and L Kassell, (Eds.) *Reproduction: Antiquity to the present day*. Cambridge: Cambridge University Press; (2018). 167–180

33. Coriden JA. Church law and abortion. *Jurist*. (1973) 33:184–98.

34. Htun M. *Sex and the state: Abortion, divorce, and the family under Latin American dictatorships and democracies*. New York: Cambridge University Press (2003).

35. Roth C. *A miscarriage of justice: women's reproductive lives and the law in early twentieth-century Brazil*. Stanford, CA: Stanford University Press (2020).

36. Lucero BA. *Race and reproduction in Cuba*. Athens: University of Georgia Press (2022).

37. Beisel N, Kay T. Abortion, race, and gender in nineteenth-century America. *Am Sociol Rev*. (2004) 69:498–518. doi: 10.1177/000312240406900402

38. Luna Z, Luker K. Reproductive justice. *Ann Rev Law Soc Sci*. (2013) 9:327–52. doi: 10.1146/annurev-lawsocsci-102612-134037

39. Reagan LJ. *When abortion was a crime: Women, medicine, and the law in the United States, 1867–1973*. Berkeley: University of California Press (1997).

40. Ruggiero K. Not guilty: abortion and infanticide in nineteenth-century Argentina. CA Aguirre and R Buffington, (Eds.) *Reconstructing criminality in Latin America*. Wilmington, DE: Scholarly Resources; (2000). 149–166

41. da Saúde M. *Atenção humanizada ao abortamento*. Brasília: Ministério da Saúde (2005).

42. da Saúde M. *Prevenção e tratamento dos agravos resultantes da violência sexual contra mulheres e adolescentes: norma técnica*. Brasília: Ministério da Saúde (2012).

43. Gutiérrez MA. Politics of recognition: the National Campaign for the right to legal, safe, and free abortion in Argentina. *South Atlantic Quarterly*. (2023) 122:386–96. doi: 10.1215/00382876-10405147

44. Daby M, Moseley MW. Feminist mobilization and the abortion debate in Latin America: lessons from Argentina. *Polit Gend*. (2022) 18:359–93. doi: 10.1017/S1743923X20000197

45. Andaya E. *Conceiving Cuba: reproduction, women, and the state in the post-soviet era*. New Brunswick, NJ: Rutgers University Press (2014).

46. Hynson R. *Laboring for the state: Women, family, and work in revolutionary Cuba, 1959–1971*. New York: Cambridge University Press (2019).

47. Stettner S ed. *Without apology: Writings on abortion in Canada*. Edmonton, Canada: Athabasca University Press (2016).

48. Berquó E, Bercovich A, Garcia EM. *Estudo da dinâmica demográfica da população negra no Brasil*. Campinas, SP: Núcleo de Estudos de População, UNICAMP (1986).

49. Krejka T, Atkin LC. El papel del aborto inducido en la transición de la fecundidad de América Latina. *Salud Publica Mex*. (1990) 32:276–87.

50. Alvarez SE. *Engendering democracy in Brazil: Women's movements in transition politics*. Princeton, NJ: Princeton University Press (1990).

51. Pieper MJ. *The politics of motherhood: maternity and women's rights in twentieth-century Chile*. Pittsburgh, PA: University of Pittsburgh Press (2009).

52. TMCR DC. Narrativas pró-direito ao aborto no Brasil, 1976 a 2016. *Cad Saúde Pública*. (2020) 36:e00189018. doi: 10.1590/0102-311x00189018

53. Encarnación OG. Latin America's abortion rights breakthrough. *J Democr*. (2022) 33:89–103. doi: 10.1353/jod.2022.0049

54. Fixmer-Oraiz N, Murillo LM. The term life should return to us: learning from Latin America's green wave. *Women Language*. (2023) 46:275–84. doi: 10.34036/WL.2023.013

55. Sternbach NS, Navarro-Aranguren M, Chuchryk P, Alvarez SE. Feminisms in Latin America: from Bogotá to San Bernardo. *Signs J Women Cult Soc*. (1992) 17:393–434. doi: 10.1086/494735

56. Sutton B, Borland E. Framing abortion rights in Argentina's Encuentros Nacionales de Mujeres. *Fem Stud*. (2013) 39:194–234. doi: 10.1353/fem.2013.0016

57. SisterSong: Women of Color Reproductive Justice Collective. Sister Song. Reproductive justice. Available at: https://www.sistersong.net/reproductive-justice

58. Luna Z. *Reproductive rights as human rights: Women of color and the fight for reproductive justice*. New York: New York University Press (2020).

59. Nelson J. *Women of color and the reproductive rights movement*. New York: New York University Press (2003).

60. Ross LJ, Solinger R. *Reproductive justice: an introduction*. Berkeley: University of California Press (2017).

61. Kumar A. Activism for abortion rights and access is global: what the United States can learn from the rest of the world. *J Health Polit Policy Law*. (2023) 48:593–602. doi: 10.1215/03616878-10449923

62. Price K. What is reproductive justice?: how women of color activists are redefining the pro-choice paradigm. *Meridians*. (2010) 10:42–65. doi: 10.2979/meridians.2010.10.2.42

63. Garrow DJ. *Liberty and sexuality: The right to privacy and the making of roe v. Wade*. Berkeley: University of California Press (1998).

64. Ziegler M. *After roe: the lost history of the abortion debate*. Cambridge, MA: Harvard University Press (2015).

65. Palomo LRB, Salgado MPC, Ruiz-Trejo MG, Valenzuela MS, Cruz LRVde la, (Eds.) *Antropologías feministas en México: epistemologías, éticas, prácticas y miradas diversas*. Ciudad de México: Bonilla Artigas Editores; (2020)

66. Grupo de Información en Reproducción Elegida (GIRE). El camino hacia la justicia reproductiva: Una década de avances y pendientes. Ciudad de México; (2021). Available at: https://unadecadajusticiareproductiva.gire.org.mx/

67. Quattrocchi P, Magnone N eds. *Violencia obstétrica en América Latina: Conceptualización, experiencias, medición y estrategias. Buenos Aires*. Argentina: Universidade Nacional de Lanús (2020).

68. Gamlin J, Gibbon S, Sesia PM, Berrio L. *Critical medical anthropology: perspectives in and from Latin America*. London: UCL Press (2020).

69. Viterna J, Bautista JSG. Pregnancy and the 40-year prison sentence: how abortion is murder became institutionalized in the Salvadoran judicial system. *Health Human Rights J*. (2017) 19:81–93.

70. Sutton B, Vacarezza NL. Introduction: abortion rights strategies in Argentina, Colombia, and Mexico. *South Atlant Q*. (2023) 122:378–85. doi: 10.1215/00382876-10405133

71. Romero M, Ramón MA. The shift from criminalization to legalization of abortion in Argentina. *JAMA*. (2022) 328:1699–700. doi: 10.1001/jama.2022.18971

72. González-Vélez AC, Jaramillo-Sierra IC. Abortion reform in Colombia: from Total prohibition to decriminalization up to week twenty-four. *South Atlant Q*. (2023) 122:397–406. doi: 10.1215/00382876-10405161

73. Penteado TSCDB. Equality-based arguments for the decriminalization of abortion in Brazil: towards new legal opportunities. *Revista de Investigações Constitucionais*. (2020) 7:451–72. doi: 10.5380/rinc.v7i2.69881

74. Moncau G. Com um voto favorável, STF começou a julgar descriminalização do aborto nesta sexta (22); veja as expectativas. Brasil de Fato. (2023). Available at: https://www.brasildefato.com.br/2023/09/21/stf-comeca-a-julgar-descriminalizacao-do-aborto-na-madrugada-desta-sexta-22-veja-as-expectativas

75. Sánchez F, Janetsky M. Mexico decriminalizes abortion, extending Latin American trend of widening access to procedure | AP news. Associated Press. (2023). Available at: https://apnews.com/article/mexico-abortion-decriminalize-d87f6edbdf68c2e6c8f5700b3afd15de

76. Pousadela. Mexico on the rights path. Inter Press Service. (2023). Available at: https://www.ipsnews.net/2023/10/mexico-rights-path/

77. Viterna J. The left and "life" in El Salvador. *Polit Gend*. (2012) 8:248–54. doi: 10.1017/S1743923X12000244

78. Schoen J. *Abortion after roe*. Chapel Hill: University of North Carolina Press (2015).

79. Haugeberg K. *Women against abortion: inside the largest moral reform movement of the twentieth century*. Urbana, IL: University of Illinois Press (2017).

80. Roth LM, Lee JH. Undue burdens: state abortion Laws in the United States, 1994–2022. *J Health Polit Policy Law*. (2023) 48:511–43. doi: 10.1215/03616878-10449905

81. Nunes F. Legal but inaccessible: abortion in Guyana. *Social Econ Stud*. (2012) 61:59–94.

82. Montero A, Ramirez-Pereira M, Robledo P, Casas L, Vivaldi L, González D. Main barriers to services linked to voluntary pregnancy termination on three grounds in Chile. *Front Public Health*. (2023) 11:11. doi: 10.3389/fpubh.2023.1164049

83. Valero MV. What comes after decriminalizing abortion? Slate. (2023). Available at: https://slate.com/technology/2023/10/abortion-decriminalization-mexico-challenges.html

84. Calderón-Villarreal A, Carrasco BIV, Friedman J, Schiavon R. Accompaniment on the edge: what can the US learn from Latin America about contested abortion care? *PLOS Global Public Health*. (2023) 3:e0001922. doi: 10.1371/journal.pgph.0001922

85. Krauss A. Archaeologies of the body: imagining abortion care with feminist Acompañantes in Mexico. *South Atlant Q*. (2023) 122:407–16. doi: 10.1215/00382876-10405175

86. Nolan D. How US abortion organisers are learning from Honduran activists. Al Jazeera. (2023). Available at: https://www.aljazeera.com/features/2023/2/19/how-us-abortion-organisers-are-learning-from-honduran-activists

87. Sethna C, Davis G eds. *Abortion across Borders: Transnational travel and access to abortion services*. Baltimore, MD: Johns Hopkins University Press (2019).

88. Murillo LM. A view from northern Mexico: abortions before roe v. Wade. *Bull Hist Med*. (2023) 97:30–8. doi: 10.1353/bhm.2023.0003

89. Sherman C. 'Feels horrible to say no': abortion funds run out of money as US demand surges. The Guardian (2023). Available at: https://www.theguardian.com/world/2023/sep/22/us-abortion-funds-run-out-of-money-demand-surges

90. Wittenberg J, Sealey W. On Dobbs anniversary, donors must take the long view in response to abortion access crisis. The Chronicle of Philanthropy (2023). Available at: https://www.philanthropy.com/article/on-dobbs-anniversary-donors-must-take-the-long-view-in-response-to-abortion-access-crisis

91. Karlin J, Joffe C. Self-sourced medication abortion, physician authority, and the contradictions of abortion care. *J Health Polit Policy Law*. (2023) 48:603–27. doi: 10.1215/03616878-10449932

92. Baker CN. History and politics of medication abortion in the United States and the rise of telemedicine and self-managed abortion. *J Health Polit Policy Law*. (2023) 48:485–510. doi: 10.1215/03616878-10449941

93. Coêlho HL, Teixeira AC, de Fátima Cruz M, Gonzaga SL, Arrais PS. Misoprostol: the experience of women in Fortaleza, Brazil. *Contraception*. (1994) 49:101–10. doi: 10.1016/0010-7824(94)90084-1

94. Löwy I, Dias Villela CM. The abortion pill misoprostol in Brazil: women's empowerment in a conservative and repressive political environment. *Am J Public Health*. (2020) 110:677–84. doi: 10.2105/AJPH.2019.305562

95. Barbosa RM, Arilha M. The Brazilian experience with Cytotec. *Stud Fam Plan*. (1993) 24:236–40. doi: 10.2307/2939191

96. Women on Waves. How to do an abortion with pills?. Available at: https://www.womenonwaves.org/en/page/6104/how-to-do-an-abortion-with-pills

97. Moseson H, Bullard KA, Cisternas C, Grosso B. Effectiveness of self-managed medication abortion between 13 and 24 weeks gestation: a retrospective review of case records from accompaniment groups in Argentina, Chile, and Ecuador. *Contraception*. (2020) 102:91–8. doi: 10.1016/j.contraception.2020.04.015

98. Zurbriggen R, Keefe-Oates B, Gerdts C. Accompaniment of second-trimester abortions: the model of the feminist Socorrista network of Argentina. *Contraception*. (2018) 97:108–15. doi: 10.1016/j.contraception.2017.07.170

99. Walsh A. Feminist networks facilitating access to misoprostol in Mesoamerica. *Fem Rev*. (2020) 124:175–82. doi: 10.1177/0141778919888070

100. Veldhuis S, Sánchez-Ramírez G, Darney BG. Becoming the woman she wishes you to be: a qualitative study exploring the experiences of medication abortion acompañantes in three regions in Mexico. *Contraception*. (2022) 106:39–44. doi: 10.1016/j.contraception.2021.10.005

101. Huss L., Self-managed abortion is not illegal in Most of the country, but criminalization happens anyway. (2022). Available at: https://www.ifwhenhow.org/abortion-criminalization-new-research/

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Renewed calls for abortion-related research in the post-Roe era

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Nearly 50 years after Roe versus Wade, the United States Supreme Court's decision in Dobbs versus Jackson Women's Health Organization unraveled the constitutional right to abortion, allowing individual states to severely restrict or ban the procedure. In response, leading medical, public health, and community organizations have renewed calls for research to elucidate and address the burgeoning social and medical consequences of new abortion restrictions. Abortion research not only includes studies that establish the safety, quality, and efficacy of evidence-based abortion care protocols, but also encompasses studies on the availability of abortion care, the consequences of being denied an abortion, and the legal and social burdens surrounding abortion. The urgency of these calls for new evidence underscores the importance of ensuring that research in this area is conducted in an ethical and respectful manner, cognizant of the social, political, and structural conditions that shape reproductive health inequities and impact each stage of research—from protocol design to dissemination of findings. Research ethics relates to the moral principles undergirding the design and execution of research projects, and concerns itself with the technicalities of ethical questions related to the research process, such as informed consent, power relations, and confidentiality. Critical insights and reflections from reproductive justice, community engagement, and applied ethics frameworks have bolstered existing research ethics scholarship and discourse by underscoring the importance of meaningful engagement with community stakeholders—bringing attention to overlapping structures of oppression, including racism, sexism, and ways that these structures are perpetuated in the research process.

KEYWORDS

abortion, research ethics, health equity, reproductive health research, population vulnerability

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Nearly 50 years after *Roe* versus *Wade*, the United States Supreme Court's decision in *Dobbs* versus *Jackson Women's Health Organization* unraveled the constitutional right to abortion, allowing individual states to severely restrict or ban the procedure. In response, leading medical, public health, and community organizations have renewed calls for research to elucidate and

address the burgeoning social and medical consequences of new abortion restrictions (1–5). Abortion research not only includes studies that establish the safety, quality, and efficacy of evidence-based abortion care protocols, but also encompasses studies on the availability of abortion care, the consequences of being denied an abortion, and the legal and social burdens surrounding abortion (6, 7). The urgency of these calls for new evidence underscores the importance of ensuring that research in this area is conducted in an ethical and respectful manner, cognizant of the social, political, and structural conditions that shape reproductive health inequities and impact each stage of research—from protocol design to dissemination of findings.

Research ethics relates to the moral principles undergirding the design and execution of research projects, and concerns itself with the technicalities of ethical questions related to the research process, such as informed consent, power relations, and confidentiality (8). Critical insights and reflections from reproductive justice, community engagement, and applied ethics frameworks have bolstered existing research ethics scholarship and discourse by underscoring the importance of meaningful engagement with community stakeholders—bringing attention to overlapping structures of oppression, including racism, sexism, and ways that these structures are perpetuated in the research process (9–19).

Scholars have critiqued traditional research ethics models for being too narrowly focused on investigator expertise and conventional measures of scientific validity. While helpful in some scenarios, this narrow focus can obscure the needs of minoritized communities with structural vulnerabilities and silence their voices across the research continuum. In essence, research can only be ethical when it prioritizes equity, justice, and respect for groups burdened with the potential to be most harmed during the research process.

Considering the heightened challenges posed by the post-*Roe* era, the commentary that follows is a call for researchers, research institutions, funding agencies, Institutional Review Boards (IRBs) and other regulatory bodies to safeguard against potential research-related harms by (1) prioritizing the needs, concerns, and preferences of populations burdened by social and structural vulnerabilities (20) promoting reproductive justice-oriented, community-engaged scholarship, and (21) providing evidence-based training and robust support for researchers. Given the history of medical exploitation and reproductive violence in communities with structural vulnerabilities, ethical and respectful research in the post-*Roe* environment requires prioritizing the voices of the most marginalized to mitigate iatrogenic research harms and promote reproductive health equity (20).

The social, ethical, and legal complexities of abortion-related research

Early research on abortion focused on instances in which pregnancy terminations went horribly awry. Physicians published case reports detailing the management of septic, radically ill patients who risked their lives procuring illegal abortions (22). As some states liberalized their abortion laws, other researchers focused their work on the public health impacts of safe and legal abortions enabled by better policies, techniques, and antibiotics (23, 24). Their combined efforts eventually pushed professional medical and public health organizations to support abortion rights through advocacy and amicus curiae briefs filed in the United States Supreme Court cases *Roe* and *Casey*.

Legalized abortion opened new research avenues and sparked ethical debates regarding the social and legal complexities of biomedical research during pregnancy. Notably, concerns about the outcome of *Roe* and pressure from anti-abortion groups shaped the first federal "protections" governing research on pregnant patients—regulations first established in the 1970s that excluded pregnant women from clinical trials and created gaps in knowledge about prescription drug use during pregnancy and the postpartum period (25, 26). In recent years, leading research and federal organizations have discussed the need to address these knowledge gaps and have called for a range of studies on reproductive and maternal health needs with an increased emphasis on the social, behavioral, biological, and environmental forces that shape health outcomes at the individual, local, state, and national levels (13, 14). In response to these calls, equity-focused scholars have conducted a range of important studies that prioritize community perspectives and values (27–30).

Research on maternal and reproductive health requires considerable sensitivity, as it often involves meeting people in especially vulnerable moments. For example, studies on stillbirth may require clinicians to approach grieving parents after a pregnancy loss to obtain consent for fetal tissue sampling. Research on maternal morbidity and mortality often necessitates conversations with women after near-death experiences or with families who have lost loved ones in cases of maternal death (31–34). Abortion research similarly involves these weighty social and emotional considerations, in addition to heightened ethical and legal concerns about stigma, confidentiality, trauma, and criminalization. In environments where abortion is criminalized and stigmatized, contemporary research ethics guidelines call for population-sensitive research practices to protect participants and communities that may face threats of persecution or harm (35). Thus, examining how intersectional structures of oppression, stigma, and vulnerability influence abortion research is critical for advancing and informing research ethics practices and protocols in the context of reproductive and maternal health.

Intersecting structures of oppression and research "vulnerability"

Research ethics guidelines predicated on the assumption of participant autonomy obscure how structural issues threaten reproductive autonomy, perpetuate trauma and stigmatization, and give rise to significant moral distress in groups already burdened by poverty, stigma, and inequitable access to healthcare. Respectful and compassionate research requires an understanding ways in which intersecting, multidimensional structures of oppression shape participant-level vulnerability in research settings. Even in instances where research participants have given informed consent and assumed the individual risks associated with research involving sensitive information, researchers in the post-*Roe* environment have a moral and professional responsibility to grapple with the systems and structures that sharpen participant vulnerability and research risks.

When individuals occupy multiple marginalized identities, they may be rendered more vulnerable in settings where social and

structural forces collide to limit their agency, visibility, and voice (36). However, the traditional approach to categorical research protections outlined in the Belmont Report classifies certain groups as vulnerable based on singularly defined identities, namely, incarcerated individuals, children, and people with disabilities. Recent scholarship has expanded the concept of vulnerability to include the intersectional experiences of communities burdened by excessive research risks.

Pregnant women were officially removed as a vulnerable population under the Revised Common Rule in 2017, a shift to ensure that they were justly represented in biomedical research and development and were able to reap the benefits of scientific advancement (37). However, this adjustment preceded the complications posed by the end of the constitutional right to abortion, including threats of bodily harm, stigma, and criminalization. These threats are particularly salient for Black women living in the United States, who are three times more likely to die from preventable pregnancy complications than white women. Racial disparities in maternal health outcomes are amplified by other forms of oppression, such as lack of access to reproductive healthcare, structural racism, and lack of social support, which make women more vulnerable to harm during pregnancy (38). Furthermore, recent estimates indicate that abortion bans have the potential to increase maternal mortality by 21% overall and up to 33% among Black Americans.

Additionally, women who are denied abortions experience a cascade of economic hardships and serious health complications associated with carrying a pregnancy to term (39). Before *Dobbs,* Texas Senate Bill 8 offered a glimpse into the dangerous future of abortion bans and raised questions about which communities were disproportionately harmed by abortion restrictions and increasingly made vulnerable by the research process (6). Previous scholarship reveals that women in minoritized communities may experience excessive research risks and barriers to meaningful research participation because of preexisting comorbidities, environmental factors, and structural inequities (30, 40, 41). These concerns are heightened in states and territories that restrict or ban abortion. Notably, eroding access to abortion care has the most profound and pernicious ramifications for Black families, as Black people are disproportionately burdened by various forms of economic and social inequalities that diminish birth equity and just access to all forms of reproductive healthcare (13, 14).

As an interdisciplinary group of scholars and practitioners with a focus on reproductive health equity, we raise important questions related to power asymmetries between those conducting research and the individuals volunteering as participants. Our concerns include: how might data intended to better understand various birth control methods be safeguarded from surveillance and criminalization? How might vulnerable populations be prioritized in the current political climate? And how might the conceptual frameworks, underlying assumptions, and language used by researchers perpetuate harmful narratives about sexuality, pregnancy, birth control, and abortion?

In light of these questions, we understand research as a powerful tool to advance social justice. We argue that the inclusion of vulnerable groups in research can be a pathway to affirming the rights of all people to partake in social life, public expression, and bodily freedom. Individuals can share invaluable insights derived from navigating their marginalized social positionality, which otherwise may be undervalued, misunderstood, or concealed. Most evidently, research findings can mobilize healthcare systems to better meet the needs of populations who stand to benefit most from new understandings and health innovations. It is in the spirit of balancing these potential benefits and risks that the authors offer these considerations.

Considerations for ethically responsible abortion research

Abortion restrictions heighten risks for all parties involved in scientific research. However, it is imperative to recognize that research participants are especially vulnerable to research-related harms in the post-*Roe* era. Conducting ethical and respectful abortion research requires investigators to focus on the needs and preferences of marginalized communities across the research continuum, starting with the development of research questions and continuing through the study development, implementation, and dissemination of research findings.

In the absence of formal guidance on abortion-related research ethics, the recommendations that follow have been shaped by the authors' collective experiences working with structurally vulnerable and disadvantaged populations. The considerations presented in the following sections are intended to highlight the value of meaningful community engagement, dialogue, and collaboration when engaging participants burdened by social and structural vulnerabilities.

Community and stakeholder engagement

The equitable and just engagement of individuals and communities in abortion research requires working with community leaders and local organizations to improve ethical decision-making. Sophisticated engagement strategies, especially those that elevate the lived experiences of community members, are critical for understanding and mitigating barriers to reproductive health research participation (9). Community-engaged research prioritizes an iterative, dynamic research process with heightened attention to the needs (i.e., perceived and actual), realities, and experiences of local stakeholders who ultimately shape the research design, implementation, and dissemination of findings (10, 42–44). Notably, community-engaged frameworks shift the emphasis of research away from the benefits received by the research team and instead prioritize the needs and preferences of study participants (45).

Scott, Bray, McLemore, and other scholars highlight the urgent need for collaborative, community-engaged research marked by "radical curiosity and courage" to advance health equity and reproductive justice (27). We follow their lead, embracing cultural humility and meaningful community partnerships, to advocate for a braver, bolder approach to abortion research and reproductive ethics. While traditional research ethics models focus heavily on institutional- and investigator-driven values, we advocate for an expanded understanding of scholarship that accurately reflects and elevates the voices and values of research participants.

Risks to participants with social and structural vulnerabilities

Research with communities burdened with social and structural vulnerabilities has given rise to unique ethical challenges that

require context-specific research protection and stakeholder engagement. Psychological, legal, social, and economic harms are among the many risks relevant to research in post-Roe environments (28, 46). Volunteers in abortion research may face stigma, criminalization, discrimination, health surveillance, and iatrogenic harms. These considerations are especially applicable to abortion research that employs wastewater metabolite testing, health apps for tracking, and interview and focus group research to understand the experiences of people trying to access abortion (38, 47–49). In light of these risks, researchers should seek guidance from trustworthy stakeholders and local organizations to ensure that their involvement and visibility in the community does not exacerbate risks for already vulnerable groups.

Abortion research participants may be hesitant to disclose the location and state of abortion access because of the potential consequences. Indeed, researchers should evaluate relevant legal risks when working with communities living in areas with restricted abortion access and plan to anonymize or minimize location data collection accordingly. Future research is needed to elicit feedback from community stakeholders to understand how various research settings and social contexts influence the experiences and safety of research participants (11). It is especially important to engage in discourse with community stakeholders to understand their interpretation of the current political landscape as it relates to reproductive healthcare so that researchers can avoid perpetuating harm.

Privacy and confidentiality

Prior studies involving individuals with substance use disorders and people who use drugs remind us that privacy and confidentiality concerns are critically important to take into account when data can be used to criminalize and stigmatize individuals and communities (50). Strategies that have been used to enhance privacy and confidentiality include: (1) Certificates of Confidentiality (CoC) which protect the privacy of research participants by restricting access to identifiable, sensitive study information so that it may only be accessed by members of the research team (51); (2) Protocols that require the anonymization and minimization of nonessential sensitive personal health information; (3) Generation of synthetic datasets that mimic the structure and statistical distribution of organically obtained study data while protecting the identity and private health information of the research participants (52); (4) "Shield laws" that protect abortion seekers and their helpers from state interference and other forms of legal harm (53).

Notably, the Department of Health and Human Services (HHS) recently proposed rule changes intended to strengthen the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule to shield private health information related to pregnancy and reproductive health from law enforcement officials (54). Legislators in some states are discussing broader information privacy laws to protect commercially obtained data such as those collected in period-tracking apps. Some states have passed "shield laws" intended to protect abortion providers, patients, and their helpers, but these laws do not include specific protections for persons involved in abortion research (55). Ultimately, researchers and funding agencies must not only consider how to protect private health information, but also how data generated in abortion research will be communicated and disseminated to the public.

Communication and dissemination

Ethical scientific research requires effective communication and timely dissemination of findings to individuals and communities most affected by a particular health issue. Disseminating data to communities is critical for strengthening public trust in clinicians, public health workers, and healthcare systems (56, 57). A thorough, evidence-based understanding of health issues is also integral to advocating for policy changes and interventions that promote reproductive and maternal health equity. This is especially true when a health issue is highly stigmatized or politically charged, as in the case of abortion.

In the current political context, in which abortion research generates partisan divides and purposeful disinformation is rampant, it is critically important to consider how study data are communicated and presented to the public. Ethical attention to abortion research involves engaging trusted community leaders and stakeholders to inform equity-centered research communication. This can be accomplished by developing and committing to communication strategies that outline a plan for if and when research findings are misinterpreted or weaponized against marginalized communities.

Conclusion

Developing, implementing, and translating ethically sound abortion research policies and procedures calls for concrete and tailored strategies to advance equitable access to scientific discovery and translation. Promoting the ethical inclusion of minoritized groups in reproductive and maternal health research requires specific attention to a myriad of issues, including privacy and fairness in the use of abortion information, informed consent, and the return of results to participants. Further, dedicated attention to the historical realities, contextual challenges, and concerns of diverse research communities is critical to promoting equity in research. Fostering research justice also involves demonstrating optimal respect for reproductive preferences, lived experiences, overlapping social identities, and the moral agency of minority women (15, 58).

Conceptually aligning research with reproductive justice, birth justice, and respectful maternity care frameworks fosters analytic liberation and bolsters scientific rigor (59). Centering equity and respect in research also has salient implications for equipping future scientists, investigators, and clinician scholars with the knowledge, skills, and structural competency to disrupt longstanding oppression in the research enterprise that prevents certain topics from being prioritized, namely those affecting the health and well-being of Black women and other populations made vulnerable by overlapping systems of oppression.

Furthermore, respectful and ethical research highlights the importance of bioethicists with empirical and normative training leading robust discourse around abortion-related research and the healthcare needs of Black women. To safeguard against research-related harms in the post-*Roe* era, it is essential that funding agencies, research institutions, IRBs, and investigators elucidate the needs, values, and preferences of marginalized communities across the research continuum. Insights from existing training programs, funding mechanisms, and organizations are foundational for informing broader research

ethics frameworks that responsibly address the complexities that arise in maternal and reproductive health research, especially related to abortion (2, 5, 60). Ethically responsible research in the post-Roe era—especially research with minoritized communities demands equity, justice, and respect.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Author contributions

SS: Conceptualization, Writing – original draft, Writing – review & editing. AA: Writing – review & editing. RD: Writing – review & editing. TM: Writing – review & editing. FL: Writing – review & editing. FF: Conceptualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

References

1. UCSF abortion research rapid response grant (2023). Available at: https://rdo.ucsf.edu/ucsf-abortion-research-rapid-response-grant (Accessed October 7, 2023).

2. Society of Family Planning (2023). Available at: https://societyfp.org/grantmaking/funding-opportunities/previous-funding-opportunities/ (Accessed October 7, 2023).

3. Black Mamas Matter Alliance (2023). Available at: Blackmamasmatter.org (Accessed October 7, 2023).

4. Crear-Perry JA. National Birthing Equity Collective (2023). Available at: https://orwh.od.nih.gov/sites/orwh/files/docs/CrearPerryJoiaBio508.pdf (Accessed October 7, 2023).

5. Mother Lab [Internet] (2023). Available at: https://motherlab.org/meet-the-lab/ (Accessed October 15, 2023).

6. Arey W, Lerma K, Beasley A, Harper L, Moayedi G, White K. A preview of the dangerous future of abortion bans—Texas senate Bill 8. *N Engl J Med*. (2022) 387:388–90. doi: 10.1056/NEJMp2207423

7. Redd SK, Mosley EA, Narasimhan S, Newton-Levinson A, AbiSamra R, Cwiak C, et al. Estimation of multiyear consequences for abortion access in Georgia under a law limiting abortion to early pregnancy. *JAMA Netw Open*. (2023) 6:3. doi: 10.1001/jamanetworkopen.2023.1598

8. Resnik DB. *The ethics of research with human subjects: protecting people, advancing science, promoting trust*. Cham, Switzerland: Springer (2018). 316 p.

9. Israel BA, Coombe CM, Cheezum RR, Schulz AJ, McGranaghan RJ, Lichtenstein R, et al. Community-based participatory research: a capacity-building approach for policy advocacy aimed at eliminating health disparities. *Am J Public Health*. (2010) 100:2094–102. doi: 10.2105/AJPH.2009.170506

10. Fletcher FE, Rice WS, Ingram LA, Fisher CB. Ethical challenges and lessons learned from qualitative research with low-income African American women living with HIV in the south. *J Health Care Poor Underserved*. (2019) 30:116–29. doi: 10.1353/hpu.2019.0122

11. Julian Z, Robles D, Whetstone S, Perritt JB, Jackson AV, Hardeman RR, et al. Community-informed models of perinatal and reproductive health services provision: a justice-centered paradigm toward equity among Black birthing communities. *Sem Perinatol*. (2020) 44:151267. doi: 10.1016/j.semperi.2020.151267

12. Crear-Perry J, Hassan A, Daniel S. Advancing birth equity in a post-Dobbs US. *JAMA*. (2022) 328:1689–90. doi: 10.1001/jama.2022.19468

13. Riley T, Zia Y, Samari G, Sharif MZ. Abortion criminalization: a public health crisis rooted in white supremacy. *Am J Public Health*. (2022) 112:1662–7. doi: 10.2105/AJPH.2022.307014

14. Fletcher FE, Lapite FC, Best A. Rethinking the moral Authority of Experience: critical insights and reflections from Black women scholars. *Am J Bioeth*. (2023) 23:27–30. doi: 10.1080/15265161.2022.2146807

15. Gunn AJ, Hardesty M, Overstreet N, Wallace S. "Every time I tell my story I learn something new": voice and inclusion in research with Black women with histories of substance use and incarceration. *Criminol Crim Just*. (2022) 22:505–24. doi: 10.1177/17488958211005820

16. Gunn A. Testimonies and healing: anti-oppressive research with Black women and the implications for compassionate ethical care. *Hastings Cent Rep*. (2022) 52:S42–5. doi: 10.1002/hast.1369

17. James JE. Black feminist bioethics: centering community to ask better questions. *Hastings Cent Rep*. (2022) 52:S21–3.

18. Thomas SP. Trust also means centering Black women's reproductive health narratives. *Hastings Cent Rep*. (2022) 52:S18–21. doi: 10.1002/hast.1362

19. Kozhimannil KB, Hassan A, Hardeman RR. Abortion access as a racial justice issue. *N Engl J Med*. (2022) 17:1537–9.

20. Sugarman J, Wenner DM, Rid A, Henry LM, Luna F, Klitzman R, et al. Ethical research when abortion access is legally restricted. *Science*. (2023) 380:1224–6. doi: 10.1126/science.adh3104

21. Bartlett RH, Yahia C. Management of septic chemical abortion with renal failure: report of five consecutive cases with five survivors. *N Engl J Med*. (1969) 281:747–53. doi: 10.1056/NEJM196910022811401

22. Gold RB. Lessons from before roe: will past be prologue. *Guttmacher Rep Public Policy*. (2003) 6:8–11.

23. Cates W, Grimes DA, Schulz KF. The public health impact of legal abortion: 30 years later. *Perspect Sex Reprod Health*. (2003) 35:025–8. doi: 10.1363/3502503

24. Waggoner MR, Lyerly AD. Another consequence of overturning roe: imperiling Progress on clinical research in pregnancy. *Am J Bioeth*. (2022) 22:59–62. doi: 10.1080/15265161.2022.2088894

25. Wisner KL, Stika CS, Watson K. Pregnant women are still therapeutic orphans. *World Psychiatry*. (2020) 19:329–30. doi: 10.1002/wps.20776

26. Scott KA, Bray S, McLemore MR. First, do no harm: why philanthropy needs to re-examine its role in reproductive equity and racial justice. *Health Equity*. (2020) 4:17–22. doi: 10.1089/heq.2019.0094

27. Ogbu-Nwobodo L, Shim RS, Vinson SY, Fitelson EM, Biggs MA, McLemore MR, et al. Mental health implications of abortion restrictions for historically marginalized populations. *N Engl J Med*. (2022) 387:1613–7. doi: 10.1056/NEJMms2211124

28. Amutah-Onukagha N, Abrams JA, Stewart CK, Black A, Rhone TJ, Kheyfets A, et al. Black maternal health scholars on fire: building a network for collaboration and activism. *Health Serv Res*. (2023) 58:202–6. doi: 10.1111/1475-6773.14091

29. Goodwin M. *Policing the womb: invisible women and the criminalization of motherhood* Cambridge University Press (2020). 324 p.

30. Management of Stillbirth. Obstetric care consensus no, 10. *Obstet Gynecol*. (2020) 135:e110–32. doi: 10.1097/AOG.0000000000003719

31. D'Alton ME, Friedman AM, Bernstein PS, Brown HL, Callaghan WM, Clark SL, et al. Putting the "M" back in maternal-fetal medicine: a 5-year report card on a collaborative effort to address maternal morbidity and mortality in the United States. *Am J Obstet Gynecol*. (2019) 221:311–317.e1. doi: 10.1016/j.ajog.2019.02.055

32. Koopmans L, Wilson T, Cacciatore J, Flenady V. Support for mothers, fathers and families after perinatal death. *Cochrane Database Syst Rev*. (2013) 6:1–6. doi: 10.1002/14651858.CD000452.pub3

33. Hill PE. Support and counseling after maternal death. *Sem Perinatol*. (2012) 36:84–8. doi: 10.1053/j.semperi.2011.09.016

34. Fisher CB. HIV prevention research ethics: an introduction to the special issue. *J Empir Res Hum Res Ethics*. (2014) 9:1–5. doi: 10.1525/jer.2014.9.1.1

35. Bourgois P, Holmes SM, Sue K, Quesada J. Structural vulnerability: operationalizing the concept to address health disparities in clinical care. *Acad Med*. (2017) 92:299–307. doi: 10.1097/ACM.0000000000001294

36. U.S. Department of Health and Human Services. *HIPAA privacy rule notice of proposed rulemaking to support reproductive health care privacy fact sheet*. Washington, DC: U.S. Department of Health and Human Services (2023).

37. Szpot P, Wachełko O, Jurek T, Zawadzki M. Determination of mifepristone (RU-486) and its metabolites in maternal blood sample after pharmacological abortion. *Molecules*. (2022) 27:7605. doi: 10.3390/molecules27217605

38. Foster DG. *The Turnaway study: ten years, a thousand women, and the consequences of having—Or being denied—An abortion*. New York: Simon and Schuster (2021). 360.

39. Roberts DE. *Killing the Black body: race, reproduction, and the meaning of liberty*. New York: Pantheon Books (1997). 371 p.

40. Washington HA. *Medical apartheid: The dark history of medical experimentation on Black Americans from colonial times to the present*. New York: Doubleday Books (2006). 485 p.

41. Brown VA. Centering social justice for Covid-19 resources and research. *Hastings Cent Rep*. (2021) 51:51–3. doi: 10.1002/hast.1287

42. Solomon SR. Protecting and respecting the vulnerable: existing regulations or further protections? *Theor Med Bioeth*. (2013) 34:17–28. doi: 10.1007/s11017-013-9242-8

43. Israel BA, Krieger J, Vlahov D, Ciske S, Foley M, Fortin P, et al. Challenges and facilitating factors in sustaining community-based participatory research partnerships: lessons learned from the Detroit, new York City and Seattle urban research centers. *J Urban Health*. (2006) 83:1022–40. doi: 10.1007/s11524-006-9110-1

44. Childerhose JE, Finnila CR, Yu JH, Koenig BA, McEwen J, Berg SL, et al. Participant engagement in translational genomics research: respect for persons—and then some. *Ethics Hum Res*. (2019) 41:2–15. doi: 10.1002/eahr.500029

45. U.S. Department of Health and Human Services Human Research Review Section (2008). Available at: https://www.dshs.wa.gov/sites/default/files/hrrs/documents/RisksandBenefits.pdf (Accessed October 7, 2023).

46. Clayton EW, Embí PJ, Malin BA. Dobbs and the future of health data privacy for patients and healthcare organizations. *J Am Med Inform Assoc*. (2023) 30:155–60. doi: 10.1093/jamia/ocac155

47. Dhumal T, Siddiqui ZA, Davidov D. PCR182 study to understand Women's perception on the recent abortion ban (BILL 302) in West Virginia. *Value Health*. (2023) 26:S346. doi: 10.1016/j.jval.2023.03.1958

48. Rudolph AE, Young AM, Havens JR. A rural/urban comparison of privacy and confidentiality concerns associated with providing sensitive location information in epidemiologic research involving persons who use drugs. *Addict Behav*. (2017) 74:106–11. doi: 10.1016/j.addbeh.2017.06.006

49. Information protected by a CoC. (2023). Available at: https://grants.nih.gov/policy/humansubjects/coc/information-protected-coc.htm (Accessed October 7, 2023).

50. Goodday S, Karlin D, Suver C, Friend S. The post-roe political landscape demands a morality of caution for Women's health. *J Med Internet Res*. (2022) 24:e41417. doi: 10.2196/41417

51. Cohen DS, Donley G, Rebouché R. Abortion shield Laws. *NEJM Evid*. (2023) 2:EVIDra2200280

52. Health and Human Services Department. HIPAA privacy rule to support reproductive health care privacy Vol. 88, Federal Register (2023). 1–48. Available at: https://www.federalregister.gov/d/2023-07517 (Accessed October 7, 2023).

53. Spector-Bagdady K, Mello MM. Protecting the privacy of reproductive health information after the fall of roe v Wade. *JAMA Health Forum*. (2022) 3:e222656. doi: 10.1001/jamahealthforum.2022.2656

54. American Public Health Association. (2019). Available at: https://www.apha.org/-/media/files/pdf/membergroups/ethics/code_of_ethics.ashx (Accessed October 7, 2023).

55. Story A, Fletcher FE. Advancing maternal health equity with data transparency: the case of Texas (2022). Available at: https://www.thehastingscenter.org/advancing-maternal-health-equity-with-data-transparency-the-case-of-texas/ (Accessed October 7, 2023).

56. Schelenz L. Artificial intelligence between oppression and resistance: black feminist perspectives on emerging technologies In: *Artificial intelligence and its discontents: critiques from the social sciences and humanities*. Cambridge: Springer International Publishing (2022). 225–49.

57. Office for Human Research Protection. (n.d.) Protecting research volunteers. Available at: https://www.hhs.gov/sites/default/files/ohrp-protecting-research-volunteer-infographic.pdf (Accessed October 7, 2023).

58. Center for Ethics Education. (n.d.) Available at: https://www.fordham.edu/academics/centers-and-institutes/center-for-ethics-education/hiv-and-drug-abuse-prevention-research-ethics-training-institute/about-reti/ (Accessed October 7, 2023).

59. The Center for Reproductive Health Research in the Southeast (2022). Available at: https://rise.emory.edu/ (Accessed October 7, 2023).

60. Birthing Cultural Rigor. (2023). Available at: https://www.birthingculturalrigor.com/ (Accessed October 7, 2023).

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African immigrants' favorable preterm birth rates challenge genetic etiology of the Black-White disparity in preterm birth

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Background: We examined over a million California birth records for 2010 through 2021 to investigate whether disparities in preterm birth (PTB) by nativity and race support the widely held but hitherto unsubstantiated belief that genetic differences explain the persistent Black-White disparity in PTB.

Methods: We examined PTB rates and risk ratios among African-, Caribbean-, and U.S.-born Black women compared to U.S.-born White women. Multivariate analyses adjusted for maternal age, education, number of live births, delivery payer, trimester of prenatal care initiation, pre-pregnancy BMI, smoking, and prevalence of poverty in a woman's residence census tract; and for paternal education.

Results: In adjusted analyses, African-born Black women's PTB rates were no different from those of U.S.-born White women.

Discussion: The results add to prior evidence making a genetic etiology for the racial disparity in PTB unlikely. If genetic differences tied to "race" explained the Black-White disparity in PTB among U.S.-born women, the African immigrants in this study would have had higher rates of PTB, not the lower rates observed. Multiple explanations for the observed patterns and their implications are discussed. Failure to distinguish causes of PTB from causes of the racial disparity in PTB have likely contributed to erroneous attribution of the racial disparity to genetic differences. Based on the literature, unmeasured experiences of racism, including racism-related stress and adverse environmental exposures, are plausible explanations for the PTB disparity between Black and White U.S.-born women. The favorable birth outcomes of African-born Black immigrants may reflect less exposure to racism during sensitive life periods, e.g., childhood, when they were in African countries, where Black people are in the racial majority.

KEYWORDS

preterm birth, Black-White disparity in preterm birth, African immigrant, immigrant health, health disparities

Background

Preterm birth (PTB)—delivery prior to 37 weeks of pregnancy—is a health indicator of great importance across the entire life course. It is a strong predictor of infant mortality, childhood disability, and chronic disease in adulthood (1–5). A large disparity in rates of PTB between Black and White women in the United States has been observed for decades (6–8). Some researchers have hypothesized that the Black-White disparity in PTB may reflect genetic differences between the two racial groups (9–11). This hypothesis appears to be based in part on observations in multiple studies that the racial disparity in birth outcomes persists after control for income or education (12, 13).

Convincing evidence of a genetic contribution to the racial disparity in PTB has not been presented, however (14). The persistence of the racial disparity after control for income or education is not evidence of a genetic basis for the disparity. While income and education are important factors for health, they do not capture all potentially important aspects of socioeconomic status, nor effects of racism that do not necessarily operate through socioeconomic pathways. For example, income and education do not capture accumulated wealth, which, because of structural racism (15), varies even more dramatically between Black and White individuals than income or education (16, 17) and could have strong independent effects on PTB (18). Nor do income and education necessarily capture childhood socioeconomic circumstances, which also could have important independent effects on birth outcomes (19–21).

Even if socioeconomic status was measured more comprehensively, the racial disparity in PTB may also reflect unmeasured effects of racism, such as chronic exposure to racism-related stressors (22), and environmental hazards (23) which affect Black persons across the socioeconomic spectrum; in fact, the Black-White disparity in PTB (13) and LBW (24) has been observed to be widest among women with relatively high levels of income and education (25, 26). Chronic stress due to diverse exposures, including racism-related stress, could, over time, trigger inflammatory and immune processes that are known to be involved in PTB (14, 27–29), as well as cardiovascular changes that could influence birthweight-related outcomes (30).

The assumption that genetic causes explain the Black-White disparity in PTB may also reflect a failure to distinguish between causes of PTB and causes of the Black-White disparity in PTB. To explain the disparity, a hypothesized cause would need to have a different prevalence or effect size among Black women compared with White women; to our knowledge, no study of PTB has met those criteria. PTB risk (overall) appears to be influenced by both maternal and fetal genomes (31), and several maternal genetic variants associated with PTB risk have been identified (32). While these account for only 2% of PTB variance, more are likely to be found, given that family and twin studies suggest that genetics may account for 15 to 40% of the variance in PTB; thus, additional genetic contributors to PTB risk are likely to emerge from on-going research. As with other complex traits, the genetic contribution to risk derives from multiple genetic variants, each with small effect, indicating that gene–environment interactions are likely. The wide range of PTB variance estimated to be accounted for by genetic factors likely reflects difficulties in measuring a genetic effect among family members sharing exposure to multiple social and environmental factors. We conclude from the literature not that genetics is unimportant in PTB but that evidence published to date does not support a role for it in explaining racial differences in PTB.

In 1997, Richard David and James Collins published a paper in the New England Journal of Medicine based on examination of Illinois' 1980–1995 vital records, showing that the birthweight distribution for infants born to Black immigrants from African countries was more similar to that of infants born to U.S.-born White women than that of U.S.-born Black women (33). This pattern also held for low birthweight and very low birthweight. David and Collins (33) did not examine PTB, but noted in a later paper (34) that very low birthweight babies are likely to be preterm. In another investigation, these authors reported that the birthweight distribution of non-Latino Caribbean-born Black mothers was comparable to that of U.S.-born White, but not U.S.-born Black, mothers (24). Caribbean-born Black women also had lower relative risk of moderately low birth weight than U.S.-born Black, but not U.S.-born White women. They hypothesized that these patterns were due to "lifelong minority status" of African American women compared to their Black immigrant counterparts.

Since David and Collins' landmark 1997 paper, several studies have confirmed their finding of more favorable birthweights among infants of Black African immigrants compared with those of U.S.-born Black women (35, 36), and some studies have documented lower PTB rates among Black Caribbean immigrants compared with U.S.-born Black women (37–39). To our knowledge, however, no previous study has directly compared PTB among Black African immigrants, Black Caribbean immigrants, and White U.S.-born individuals, and explored the implications of that comparison for understanding the role of genetics in the racial disparity in PTB. To that end, we used California birth records to compare rates of PTB among Black immigrants from Africa, Black immigrants from the Caribbean, U.S.-born White women, and U.S.-born Black women who gave birth in California during 2010–2021.

Methods

Data for these analyses were drawn from California residents' birth records for 2010 through 2021.[1] 2021 was the most recent year available, and going back to 2010 yielded sufficient sample size. For the purposes of this study, a sample was constructed consisting of women who reported only Black or White race (i.e., who did not also report another race) and who delivered live singleton infants. Throughout this paper, we use the terms "women" or "mothers" to refer to persons giving birth. We acknowledge, however, that not everyone who experiences pregnancy and gives birth identifies as a woman or mother; our data provide no information on gender identity.

This sample was categorized by self-reported race, ethnicity, and maternal country of birth into the following four groups:

1. African-born Black: single-race, non-Latino Black women born in any African country.

1 California Birth Statistical Master File, 2010–2017, and California Comprehensive Master Birth File, 2018–2021.

2. U.S.-born Black: single-race, non-Latino Black women born in one of the 50 United States or Washington, D.C. Women born in the U.S. Virgin Islands or Puerto Rico were excluded, based on reasoning that their life experiences likely resembled those of other women born in the Caribbean to an unknown extent. Latino Black women were excluded because their experiences, including experiences of racism, may differ from those of non-Latino Black women.
3. Caribbean-born Black: single-race Black women born in the Caribbean, excluding Puerto Rico or the U.S. Virgin Islands. Because a sizable proportion (15.5%) of Caribbean-born Black women were Latino, Black Latino women were included in this group. Women born in the U.S. Virgin Islands or Puerto Rico were excluded because they may have some experiences similar to those of women born in the 50 United States.
4. U.S.-born White: single-race, non-Latino White women born in one of the 50 United States or Washington, D.C. For comparability with U.S.-born Black women, those born in the U.S. Virgin Islands or Puerto Rico were excluded. Latino White women were excluded because they may have different experiences of racism than White non-Latino women.

Women having multiple births, those identifying as multiracial or members of other racial or ethnic groups, those who were born in countries other than those noted above, and those with missing data on gestational age were excluded. In addition, for consistency across analyses, women with missing data on any covariates in the models were excluded; these covariates included maternal age (<20, 20–24, 25–29, 30–34, 35+), maternal education (less than high school graduate, high school graduate/GED, some college, college graduate or more), trimester of prenatal care initiation (first, second, third or none), number of live births (1, 2–4, 5 or more), delivery payer [private insurance, Medi-Cal (California's Medicaid program), other, uninsured], height and weight [calculated as body mass index <18.5 (underweight), 18.5–24.9 (healthy weight), 25–29.9 (overweight), 30 or more (obese)], smoking during pregnancy (yes or no), and poverty rate in the census tract of residence (<10%, 10–19%, 20–29, 30%+). Paternal education also was included and categorized the same way as maternal education, but due to a higher percentage of missing data than for other variables, "missing" was included as an additional category for paternal education. Overall, 9.6% of women with live births who fit within one of the four groups of primary analytical interest were excluded due to missing data for at least one covariate; 1,402,606 records were included in final analyses (Table 1).

Data were analyzed using SAS® 9.4. (40). Percentages and 95% confidence intervals were calculated for sample characteristics in each group. Risk ratios and 95% confidence intervals were calculated based on Poisson regression models (41) for preterm birth. Multivariate analyses assessed whether differences in PTB among the groups of interest persisted after adjusting for the above factors. U.S.-born White women were the reference group because the study's focus was on the Black-White disparity in PTB.

TABLE 1 Sample.

Group	Sample size, 2010–2021
African-born Black	21,705
U.S.-born Black	210,759
Caribbean-born Black	3,202
U.S.-born White	1,166,940

Results

Maternal and paternal characteristics varied across the four groups (Table 2). Countries of origin for African- and Caribbean-born women are listed in Supplementary Tables S1, S2. U.S.-born Black women were younger than women in the other groups. Education levels were highest among U.S.-born White and African-born Black women. About 43% of African-born Black women were insured by Medi-Cal, as were 56% of U.S.-born Black women, 39% of Caribbean-born Black women, and 21% of U.S.-born White women. Levels of underweight were similar across the four groups (3.4–3.7%), while U.S.-born Black women were more likely to be obese than other women. Black and White U.S.-born women were more likely to smoke during pregnancy (3.6 and 3.7%, respectively) than were African-born or Caribbean-born women (0.2%). U.S.-born Black women were more likely to live in high-poverty census tracts (25.3%) than were members of the other groups (5.3–12.2%).

Among the four groups, U.S.-born Black women had the highest rate of preterm birth (10.1%), while U.S.-born White women had the lowest rate (5.7%) (Table 3). The rate for African-born Black women was 6.2%.

The main results from multivariate models are shown in Table 4; results for all covariates are shown in Supplementary Tables S1, S2. In unadjusted models, African-born Black women had slightly but statistically significantly higher risk of preterm birth than U.S.-born White women [risk ratio 1.08, 95% confidence interval (CI) 1.02–1.14]. After adjustment for covariates, there was no longer a significant difference in the incidence of preterm birth between African-born Black and U.S.-born White women (risk ratio, 1.02; 95% CI 0.97–1.08). After adjustment for covariates, however, Caribbean-born Black women continued to have a higher risk for PTB than U.S.-born White women. U.S.-born Black women had the highest risk of PTB compared to U.S.-born White women (risk ratio 1.52, 95% CI 1.49–1.54).

To examine whether results would change if Black Latino women were included, sensitivity analyses were performed with and without Black Latino women in all three nativity groups of Black women. Results were very similar for African-born and U.S.-born Black women whether or not Latino women were included in adjusted models. Risk ratios for Caribbean-born Black women were somewhat higher when Latino were excluded [adjusted risk ratio 1.42 (1.25–1.61)] (not displayed).

Because paternal education had so much missing data, sensitivity analyses were computed including and excluding paternal education as a covariate in models. Results did not change whether models included or excluded paternal education, or whether individuals missing paternal education were included in a missing-paternal-education category or excluded from models (not displayed). Results also did not change when additional sensitivity analyses were conducted treating age as a continuous rather than categorical variable, or when splitting the college-educated group into college graduates and those with post-graduate education (not displayed).

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TABLE 2 Characteristics of the sample.

Characteristic	African-born Black		U.S.-born Black		Caribbean-born Black		U.S.-born White	
Total	21,705		210,759		3,202		1,166,940	
	%	Confidence interval	%	Confidence interval	%	Confidence interval	%	Confidence interval
Maternal age (%)								
10–19	0.4	(0.3–0.5)	8.3	(8.2–8.5)	1.4	(1.0–1.8)	2.4	(2.4–2.4)
20–24	5.6	(5.3–5.9)	26.8	(26.7–27.0)	10.7	(9.7–11.8)	12.7	(12.7–12.8)
25–29	23.3	(22.8–23.9)	28.3	(28.1–28.5)	24.8	(23.3–26.4)	26.3	(26.2–26.4)
30–34	36.6	(36.0–37.2)	22.0	(21.8–22.2)	31.9	(30.3–33.6)	34.9	(34.8–35.0)
35 or older	34.1	(33.4–34.7)	14.6	(14.4–14.7)	31.2	(29.6–32.8)	23.7	(23.6–23.8)
Maternal education (%)								
Less than high school graduate	6.2	(5.9–6.5)	12.3	(12.1–12.4)	7.3	(6.4–8.2)	3.7	(3.6–3.7)
High school graduate/GED	20.1	(19.6–20.6)	34.7	(34.5–34.9)	22.3	(20.8–23.8)	18.5	(18.5–18.6)
Some college	29.5	(28.9–30.1)	37.4	(37.2–37.6)	34.9	(33.2–36.5)	29.2	(29.1–29.3)
College graduate	44.3	(43.6–45.0)	15.7	(15.5–15.8)	35.6	(33.9–37.3)	48.6	(48.5–48.7)
Paternal education (%)								
Less than high school graduate	3.3	(3.1–3.5)	8.5	(8.4–8.6)	5.7	(4.9–6.6)	3.8	(3.8–3.8)
High school graduate/GED	15.4	(15.0–15.9)	34.5	(34.3–34.7)	21.7	(20.3–23.2)	23.3	(23.2–23.4)
Some college	23.6	(23.1–24.2)	25.4	(25.3–25.6)	28.8	(27.2–30.4)	27.0	(27.0–27.1)
College graduate	50.0	(49.3–50.7)	10.1	(10.0–10.2)	31.3	(29.7–32.9)	41.3	(41.2–41.4)
Missing	7.7	(7.3–8.0)	21.4	(21.2–21.6)	12.5	(11.4–13.7)	4.5	(4.5–4.6)
Delivery payer (%)								
Medi-Cal	43.3	(42.6–43.9)	55.5	(55.3–55.7)	39.4	(37.7–41.1)	21.4	(21.3–21.5)
Private	45.0	(44.4–45.7)	35.3	(35.1–35.5)	43.1	(41.4–44.9)	70.9	(70.8–71.0)
Other	5.3	(5.0–5.7)	8.0	(7.9–8.1)	15.0	(13.8–16.3)	5.5	(5.4–5.5)
Uninsured	6.3	(6.0–6.7)	1.2	(1.1–1.2)	2.5	(2.0–3.1)	2.2	(2.2–2.2)
Number of live births (%)								
First birth	35.6	(35.0–36.3)	39.7	(39.5–40.0)	41.1	(39.4–42.9)	44.5	(44.4–44.6)
2nd-4th birth	58.9	(58.3–59.6)	53.1	(52.9–53.3)	55.7	(54.0–57.5)	52.8	(52.7–52.9)
5 births or more	5.5	(5.2–5.8)	7.2	(7.1–7.3)	3.2	(2.6–3.8)	2.7	(2.7–2.7)
Trimester of prenatal care initiation (%)								
First	79.5	(78.9–80.0)	80.5	(80.3–80.6)	83.9	(82.6–85.2)	88.9	(88.8–88.9)
Second	15.2	(14.7–15.7)	15.1	(14.9–15.2)	11.3	(10.2–12.4)	9.1	(9.0–9.1)
Third or none	5.3	(5.0–5.6)	4.5	(4.4–4.5)	4.8	(4.1–5.6)	2.0	(2.0–2.1)
Pre-pregnancy body mass index (%)								
Underweight (BMI <18.5)	3.7	(3.4–3.9)	3.6	(3.5–3.7)	3.4	(2.8–4.1)	3.6	(3.5–3.6)
Healthy weight (BMI 18.5–24.9)	45.4	(44.7–46.0)	36.1	(35.9–36.3)	44.9	(43.2–46.6)	53.6	(53.5–53.7)
Overweight (BMI 25.0–29.9)	32.1	(31.5–32.8)	26.4	(26.2–26.6)	30.3	(28.7–31.9)	23.5	(23.5–23.6)
Obese (BMI > =30.0)	18.8	(18.3–19.4)	33.9	(33.7–34.1)	21.5	(20.1–23.0)	19.3	(19.3–19.4)
Smoking during pregnancy (%)	0.2	(0.1–0.3)	3.6	(3.5–3.7)	0.2	(0.1–0.5)	3.7	(3.7–3.8)
Census tract poverty (%)								
Low poverty (<10%)	34.1	(33.5–34.7)	20.2	(20.0–20.4)	35.4	(33.7–37.0)	51.4	(51.3–51.5)
10–19%	35.3	(34.7–36.0)	30.2	(30.0–30.4)	34.5	(32.9–36.2)	32.2	(32.1–32.3)
20–29%	18.4	(17.9–18.9)	24.3	(24.1–24.5)	19.6	(18.2–21.0)	11.1	(11.1–11.2)
High poverty (> = 30%)	12.2	(11.8–12.6)	25.3	(25.2–25.5)	10.6	(9.5–11.7)	5.3	(5.3–5.4)

TABLE 3 Preterm birth rates.

Birth outcomes	African-born Black	U.S.-born Black	Caribbean-born Black	U.S.-born White
Preterm birth (%)	6.2 (5.8–6.5)	10.1 (10.0–10.2)	8.4 (7.5–9.4)	5.7 (5.7–5.8)

TABLE 4 Multivariate models for preterm birth (results for full model with all covariates are in Supplemental Tables S1, S2).

	African-born Black	U.S.-born Black	Caribbean-born Black	U.S.-born White
Unadjusted				
Risk ratio and 95% confidence interval	1.08 (1.02–1.14)	1.77 (1.74–1.79)	1.46 (1.30–1.65)	(ref.)
Adjusted*				
Risk ratio and 95% confidence interval	1.02 (0.97–1.08)	1.52 (1.49–1.54)	1.33 (1.18–1.50)	(ref.)

*Adjusting for maternal age, maternal education, paternal education, number of live births, delivery payer, trimester of prenatal care initiation, body mass index, smoking during pregnancy, census tract poverty.

Discussion

This study confirmed the findings of previous research showing that PTB rates among Black African immigrants are far more favorable than rates among U.S.-born Black women. The main objective of this study, however, was not to confirm the lower PTB rates of Black immigrants relative to U.S.-born Black individuals, which has been well documented, but to compare the PTB rates of Black African and Caribbean immigrants with those of White U.S.-born individuals, and to interpret the implications for understanding the potential role of genetics in the large and persistent disparity in PTB between U.S.-born Black and White women.

In this large population-based sample (n = 1,402,606) of live births in California, where one in every nine U.S. births occurs (42), U.S.-born and Caribbean-born Black women had higher PTB rates than US-born White women and African-born Black women, even after adjusting for differences in characteristics such as age, parity, maternal education, paternal education, delivery payer, trimester of prenatal care initiation, and pre-pregnancy BMI; however, there was no PTB disparity between Black African immigrants and U.S.-born White women.

A number of reasons have been offered for the favorable PTB outcomes of Black African immigrants. The well-documented "healthy immigrant" effect posits that foreign-born individuals are generally in better health prior to immigrating (43, 44), and bring with them healthier behaviors and stronger social support that may buffer the stress of transitioning to a new environment (37, 45). While controlling for maternal education has not accounted for the nativity disparity in PTB, two studies have found paternal education to play a significant role (46, 47). Ekeke et al. (46) attributed 15% of the maternal nativity disparity to low paternal educational attainment among the U.S.-born, hypothesizing that increased paternal educational attainment may reflect increased social and financial support of the mother. Unique to African-born women specifically may be the role of experiences of discrimination. Dominguez et al. (48) found the prevalence of self-reported discrimination, while notable among all Black groups, to be lowest among African-born women, and comparable between US-born and Caribbean-born women. African-born Black women emigrated from countries in which they were in the racial majority and thus likely experienced less or less severe racial discrimination. A life-course perspective emphasizes the impact on birth outcomes of exposures not only during pregnancy, but also throughout life leading up to pregnancy (21). Collins et al. (49) found that the infants born to US-born daughters of immigrant Black women had lower average birthweights than the previous generation, indicating a loss of the "reproductive advantage" of the prior (immigrant) generation. This and other research (22) has suggested that there are features of the U.S. social context, including a range of experiences of racism and its consequences, that are toxic to Black women's childbearing health (20, 50, 51).

Similarly, we can only speculate about why Caribbean-born Black women had lower rates of PTB than their U.S.-born Black counterparts, but higher rates than those of African-born Black women or U.S.-born White women. The characteristics (e.g., maternal and paternal education, delivery payer, census tract poverty rate, weight) of Caribbean-born women were more favorable than those of U.S.-born Black women, but not as favorable as those of African-born Black women or U.S.-born White women. While our analyses controlled for a number of important markers of risk, Caribbean-born Black women may be at higher risk for adverse birth outcomes than African-born immigrants and US-born White women due to unmeasured differences in risk characteristics (14). Caribbean-born Black women may be at higher risk than African-born Black women because Caribbean countries share with the United States a long history of European colonization and slavery (48, 52). That history may have left an enduring legacy of racism, including structural racism, with consequences including pervasive racism-related stress and disadvantage. Dominguez et al. (48) found that Caribbean women's perceptions of racism were more similar to those of U.S.-born than African-born Black women. Many studies have linked racism-related stress to the Black-White disparity in PTB and have concluded that environmental injustice and other manifestations of structural racism likely contribute; plausible physiologic pathways and mechanisms have been identified (14). On the other hand, better outcomes of Caribbean-born Black women compared with U.S.-born Black women may reflect the fact that throughout most of the Caribbean region, Black people constitute the large majority of the population. In 10 of the 13 sovereign states of the Caribbean, over 70% of the population is of African descent; in 9 of those 13 nations, over 80% of the population is of African descent (53). Historically, many political leaders in the region have been and continue to be of African descent (54). The nature, extent, and/or depth of racism experienced

by Caribbean-born Black women and the U.S.-born Black women descendants of American chattel slavery may differ in important ways (48).

While the findings of this and other studies make a genetic etiology of the Black-White disparity in PTB unlikely, they do not rule out epigenetic phenomena or complex interactions between social and genetic contributors to PTB. Genetic research can help to define biological pathways and physiological mechanisms underlying gestational length (31). As genetic contributors to PTB risk are identified, they may also enable studies of gene–environment interactions that could inform interventions to reduce PTB disparities. It is important to underscore, however, that genetic contributors to PTB are not the same as genes tied to "race" as a cause of racial disparities in PTB. Unproven or disproven assumptions about race-based genetic differences as a cause of racial disparities in health outcomes have often been used, sometimes unwittingly, in ways that justify and reinforce racism and White supremacy. These assumptions confuse superficial secondary physical characteristics, such as skin color and hair texture, with fundamental biological differences such as intelligence, perception of pain, or susceptibility to chronic disease; research, however, has not found these to be correlated (55–58).

It is important to be aware that, given the legacy of racism in the U.S., the issue of a genetic etiology for the Black-White disparity in PTB is a particularly sensitive one. The concept of physically distinct superior and inferior "races" emerged in the seventeenth century with the trans-Atlantic slave trade; it was used to justify the enslavement of human beings (59). This history and clear evidence to this day of ongoing White supremacy and oppression of minoritized populations are the essential context for appreciating the importance of understanding that race is a biologically discredited, although highly significant social construct (60, 61).

Strengths of this study include the large sample size and the use of sensitivity analyses that tested whether differences in sample exclusions or inclusions or whether different ways of specifying variables would make a difference in the conclusions. A limitation of this study is that the data do not include genomic markers and thus cannot establish the degree of genetic similarity between the U.S.-born Black women and African immigrants in the sample. Nevertheless, the similarity in PTB rates among African immigrants and U.S.-born White women, along with the striking difference in rates of PTB between African immigrants and U.S.-born Black women argue against a "race"-based genetic cause for the racial disparity in PTB seen in the United States. David and Collins (33) estimated that U.S.-born Black women on average had a 20–30 percent admixture of European genetic material, based on geographic ancestry markers. They reasoned that if the disparity in birthweight among U.S.-born Black and White individuals were genetically based, the risk for low birthweight among U.S.-born Black women compared with that of African immigrants would have been lower, not higher, as was observed, given that the African immigrants would have far less, if any, European genetic admixture than their U.S.-born counterparts. The same reasoning applies to our study of PTB: if genetic differences tied to "race" explained the large and persistent Black-White disparity in PTB among U.S.-born women, the African immigrants in our study would have had higher rates of PTB, not the lower rates observed.

As with all research, the possibility of residual confounding by unmeasured differences cannot be ruled out; it is reassuring, however, that our results were quite robust to many sensitivity analyses. The major limitation of this study is the lack of information on the length of time that immigrants had lived in the U.S. In addition, we lacked information on childhood experiences, including socioeconomic and other social conditions that could have major impact on later reproductive outcomes. Another limitation is the absence of genomic information. Furthermore, in demonstrating that it is unlikely that the Black-White disparity in PTB among U.S.-born individuals reflects genetic differences, this study does not identify the cause(s) of that disparity, which are not definitively known. Most scholars agree that the causation is likely to be complex and multifactorial.

Many downstream and midstream factors are biologically plausible as contributors to the racial disparity in PTB. For example, chronic stress could affect PTB through neuroendocrine and immune mechanisms leading to inflammation and immune dysfunction (28); stress could alter an individual's microbiota, immune response to infection, chronic disease risks, and behaviors, and trigger epigenetic changes influencing PTB risk (29, 62, 63). As an upstream factor, racism in multiple forms has repeatedly been linked with plausible midstream or downstream factors, including socioeconomic disadvantage, stress, and toxic exposures (14). To our knowledge, racism is the only factor that directly or indirectly could explain the observed racial disparities in multiple plausible midstream/downstream causes and the observed social patterning. Historical and contemporary structural racism could explain the racial disparities in socioeconomic opportunities that differentially expose so many African Americans to lifelong financial stress and associated health-harming conditions (15). Segregation places Black women in stressful surroundings and exposes them to environmental hazards (64). Race-based discriminatory treatment is a pervasive stressor for Black women of all socioeconomic levels (65). The results suggest that the nature and/or severity of racism may vary for Black women in different nativity groups, along with resilience to its health-harming effects; timing of exposure to racism may matter, for example, during childhood (as among the U.S.-born) versus adulthood (as among many immigrants) (48). Neuroscience has revealed that chronic stress during childhood has particularly toxic and often lifelong adverse health effects (66). Many scholars have concluded that racism is a highly plausible, major upstream contributor to the Black-White disparity in PTB through multiple pathways and biological mechanisms (14, 19, 67–69). Research to elucidate the social causes of the Black-White disparity in PTB should be a high priority. Action against racism need not await definitive answers, however. While much is unknown, existing knowledge and the core values of equity and justice support addressing racism now in efforts to eliminate the racial disparity in PTB and many other important health outcomes.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found at: https://www.cdph.ca.gov/Programs/CHSI/Pages/Data-Applications.aspx.

Author contributions

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Supplementary material

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References

1. Dong Y, Yu JL. An overview of morbidity, mortality and long-term outcome of late preterm birth. *World J Pediatr*. (2011) 7:199–204. doi: 10.1007/s12519-011-0290-8

2. Saigal S, Doyle LW. An overview of mortality and sequelae of preterm birth from infancy to adulthood. *Lancet*. (2008) 371:261–9. doi: 10.1016/S0140-6736(08)60136-1

3. Kerkhof GF, Breukhoven PE, Leunissen RWJ, Willemsen RH, Hokken-Koelega ACS. Does preterm birth influence cardiovascular risk in early adulthood? *J Pediatr*. (2012) 161:390–6.e1. doi: 10.1016/j.jpeds.2012.03.048

4. Parkinson JR, Hyde MJ, Gale C, Santhakumaran S, Modi N. Preterm birth and the metabolic syndrome in adult life: a systematic review and meta-analysis. *Pediatrics*. (2013) 131:e1240–63. doi: 10.1542/peds.2012-2177

5. Crump C, Howell EA, Stroustrup A, McLaughlin MA, Sundquist J, Sundquist K. Association of Preterm Birth with Risk of ischemic heart disease in adulthood. *JAMA Pediatr*. (2019) 173:736–43. doi: 10.1001/jamapediatrics.2019.1327

6. Costa DL. Race and pregnancy outcomes in the twentieth century: a long-term comparison. *J Econ Hist*. (2004) 64:1056–86. doi: 10.1017/S0022050704043086

7. Martin JA, Hamilton BE, Sutton PD, Ventura SJ, Menacker F, Kirmeyer S, et al. *Births: final data for 2006*. Washington, DC: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System (2009).

8. Hamilton BE, Martin JA, Osterman MJK. *Births: provisional data for 2019*. Washington, DC: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System (2020).

9. Kistka ZAF, Palomar L, Lee KA, Boslaugh SE, Wangler MF, Cole FS, et al. Racial disparity in the frequency of recurrence of preterm birth. *Am J Obstet Gynecol*. (2007) 196:131.e1–6. doi: 10.1016/j.ajog.2006.06.093

10. Crawford N, Prendergast DA, Oehlert JW, Shaw GM, Stevenson DK, Rappaport N, et al. Divergent patterns of mitochondrial and nuclear ancestry are associated with the risk for preterm birth. *J Pediatr*. (2018) 194:40–6.e4. doi: 10.1016/j.jpeds.2017.10.052

11. Goldenberg RL, Cliver SP, Mulvihill FX, Hickey CA, Hoffman HJ, Klerman LV, et al. Medical, psychosocial, and behavioral risk factors do not explain the increased risk for low birth weight among black women. *Am J Obstet Gynecol*. (1996) 175:1317–24. doi: 10.1016/S0002-9378(96)70048-0

12. Behrman RE, Butler AS eds. *Institute of Medicine Committee on understanding premature birth and assuring healthy outcomes. Preterm birth: causes, consequences, and prevention*. Washington, DC: National Academies Press (2007).

13. Braveman P, Heck K, Egerter S, Marchi K, Dominguez TP, Cubbin C, et al. The role of socioeconomic factors in black–white disparities in preterm birth. *Am J Public Health*. (2015) 105:694–702. doi: 10.2105/AJPH.2014.302008

14. Braveman P, Dominguez TP, Burke W, Dolan SM, Stevenson DK, Jackson FM, et al. Explaining the black-white disparity in preterm birth: a consensus statement from a multi-disciplinary scientific work group convened by the March of Dimes. *Front Reprod Health*. (2021) 3:3. doi: 10.3389/frph.2021.684207

15. Rothstein R. *The color of law: a forgotten history of how our government segregated*. America: Liveright Publishing (2017).

16. Thomas M, Herring C, Horton HD, Semyonov M, Henderson L, Mason PL. Race and the accumulation of wealth: racial differences in net worth over the life course, 1989–2009. *Soc Probl*. (2020) 67:20–39. doi: 10.1093/socpro/spz002

17. Braveman PA, Cubbin C, Egerter S, Chideya S, Marchi KS, Metzler M, et al. Socioeconomic status in health research: one size does not fit all. *JAMA*. (2005) 294:2879–88. doi: 10.1001/jama.294.22.2879

18. Cubbin C, Pollack C, Flaherty B, Hayward M, Sania A, Vallone D, et al. Assessing alternative measures of wealth in health research. *Am J Public Health*. (2011) 101:939–47. doi: 10.2105/AJPH.2010.194175

19. Dominguez TP, Dunkel-Schetter C, Glynn LM, Hobel C, Sandman CA. Racial differences in birth outcomes: the role of general, pregnancy, and racism stress. *Health Psychol*. (2008) 27:194–203. doi: 10.1037/0278-6133.27.2.194

20. Braveman P, Heck K, Egerter S, Dominguez TP, Rinki C, Marchi KS, et al. Worry about racial discrimination: a missing piece of the puzzle of black-white disparities in preterm birth? *PLoS One*. (2017) 12:e0186151. doi: 10.1371/journal.pone.0186151

21. Lu MC, Halfon N. Racial and ethnic disparities in birth outcomes: a life-course perspective. *Matern Child Health J*. (2003) 7:13–30. doi: 10.1023/A:1022537516969

22. Williams DR. Stress and the mental health of populations of color: advancing our understanding of Race-related stressors. *J Health Soc Behav*. (2018) 59:466–85. doi: 10.1177/0022146518814251

23. Bullard RD. Environmental racism and invisible communities. *W Va L Rev*. (1993) 96:1037.

24. Pallotto EK, Collins JW Jr, David RJ. Enigma of maternal Race and infant birth Welght: a population-based study of US-born black and Caribbean-born black women. *Am J Epidemiol*. (2000) 151:1080–5. doi: 10.1093/oxfordjournals.aje.a010151

25. Johnson JD, Green CA, Vladutiu CJ, Manuck TA. Racial disparities in prematurity persist among women of high socioeconomic status. *Am J Obstetr Gynecol MFM*. (2020) 2:100104. doi: 10.1016/j.ajogmf.2020.100104

26. Parker JD, Schoendorf KC, Kiely JL. Associations between measures of socioeconomic status and low birth weight, small for gestational age, and premature delivery in the United States. *Ann Epidemiol*. (1994) 4:271–8. doi: 10.1016/1047-2797(94)90082-5

27. McEwen BS. Physiology and neurobiology of stress and adaptation: central role of the brain. *Physiol Rev*. (2007) 87:873–904. doi: 10.1152/physrev.00041.2006

28. McEwen BS. Allostasis and the epigenetics of brain and body health over the life course: the brain on stress. *JAMA Psychiatry*. (2017) 74:551–2. doi: 10.1001/jamapsychiatry.2017.0270

29. Wadhwa PD, Culhane JF, Rauh V, Barve SS. Stress and preterm birth: neuroendocrine, immune/inflammatory, and vascular mechanisms. *Matern Child Health J*. (2001) 5:119–25. doi: 10.1023/A:1011353216619

30. Hilmert CJ, Dominguez TP, Schetter CD, Srinivas SK, Glynn LM, Hobel CJ, et al. Lifetime racism and blood pressure changes during pregnancy: implications for fetal growth. *Health Psychol*. (2014) 33:43–51. doi: 10.1037/a0031160

31. Zhang G, Srivastava A, Bacelis J, Juodakis J, Jacobsson B, Muglia LJ. Genetic studies of gestational duration and preterm birth. *Best Pract Res Clin Obstet Gynaecol*. (2018) 52:33–47. doi: 10.1016/j.bpobgyn.2018.05.003

32. Solé-Navais P, Flatley C, Steinthorsdottir V, Vaudel M, Juodakis J, Chen J, et al. Genetic effects on the timing of parturition and links to fetal birth weight. *Nat Genet*. (2023) 55:559–67. doi: 10.1038/s41588-023-01343-9

33. David RJ, Collins JW Jr. Differing birth weight among infants of U.S.-born blacks, African-born blacks, and U.S.-born whites. *N Engl J Med*. (1997) 337:1209–14. doi: 10.1056/NEJM199710233371706

34. Collins JW, David RJ, Simon DM, Prachand NG. Preterm birth among African American and white women with a lifelong residence in high-income Chicago neighborhoods. *Ethn Dis*. (2007) 17:113–7.

35. Acevedo-Garcia D, Soobader M-J, Berkman LF. The differential effect of foreign-born status on low birth weight by race/ethnicity and education. *Pediatrics*. (2005) 115:e20–30. doi: 10.1542/peds.2004-1306

36. Vang ZM, Elo IT. Exploring the health consequences of majority–minority neighborhoods: minority diversity and birthweight among native-born and foreign-born blacks. *Soc Sci Med*. (2013) 97:56–65. doi: 10.1016/j.socscimed.2013.07.013

37. Elo IT, Vang Z, Culhane JF. Variation in birth outcomes by mother's country of birth among non-Hispanic black women in the United States. *Matern Child Health J*. (2014) 18:2371–81. doi: 10.1007/s10995-014-1477-0

38. Blebu BE. Neighborhood context and the nativity advantage in preterm birth among black women in California, USA. *J Urban Health*. (2021) 98:801–11. doi: 10.1007/s11524-021-00572-9

39. Mason SM, Kaufman JS, Emch ME, Hogan VK, Savitz DA. Ethnic density and preterm birth in African-, Caribbean-, and US-born non-Hispanic black populations in new York City. *Am J Epidemiol*. (2010) 172:800–8. doi: 10.1093/aje/kwq209

40. SAS Institute Inc. Programming documentation for SAS® 9.4 and SAS® VIYA® 3.5. (2021). Available at:https://documentation.sas.com/doc/en/pgmsascdc/9.4_3.5/pgmsaswlcm/home.htm

41. Spiegelman D, Hertzmark E. Easy SAS calculations for risk or prevalence ratios and differences. *Am J Epidemiol*. (2005) 162:199–200. doi: 10.1093/aje/kwi188

42. Osterman M, Hamilton B, Martin J, Driscoll A, Valenzuela C. *Births: final data for 2021*. Hyattsville, MD: National Center for Health Statistics (2023).

43. Cunningham SA, Ruben JD, Narayan KV. Health of foreign-born people in the United States: a review. *Health Place*. (2008) 14:623–35. doi: 10.1016/j.healthplace.2007.12.002

44. Kwapong YA, Boakye E, Obisesan OH, Shah LM, Ogunwole SM, Hays AG, et al. Nativity-related disparities in preterm birth and cardiovascular risk in a multiracial U.S. Cohort. *Am J Prevent Med*. (2022) 62:885–94. doi: 10.1016/j.amepre.2021.12.027

45. Boakye E, Sharma G, Ogunwole SM, Zakaria S, Vaught AJ, Kwapong YA, et al. Relationship of preeclampsia with maternal place of birth and duration of residence among non-Hispanic black women in the United States. *Circ Cardiovasc Qual Outcomes*. (2021) 14:e007546. doi: 10.1161/CIRCOUTCOMES.120.007546

46. Ekeke P, Rankin K, DeSisto C, Collins JW. The excess preterm birth rate among US-born (compared to foreign-born) black women: the role of Father's education. *Matern Child Health J*. (2022) 26:845–52. doi: 10.1007/s10995-020-03117-9

47. DeSisto CL, Hirai AH, Collins JW Jr, Rankin KM. Deconstructing a disparity: explaining excess preterm birth among US-born black women. *Ann Epidemiol*. (2018) 28:225–30. doi: 10.1016/j.annepidem.2018.01.012

48. Dominguez TP, Strong EF, Krieger N, Gillman MW, Rich-Edwards JW. Differences in the self-reported racism experiences of US-born and foreign-born black pregnant women. *Soc Sci Med*. (2009) 69:258–65. doi: 10.1016/j.socscimed.2009.03.022

49. Collins JW Jr, Wu S-Y, David RJ. Differing intergenerational birth weights among the descendants of US-born and foreign-born whites and African Americans in Illinois. *Am J Epidemiol*. (2002) 155:210–6. doi: 10.1093/aje/155.3.210

50. Kramer MR, Hogue CR. What causes racial disparities in very preterm birth? A biosocial perspective. *Epidemiol Rev*. (2009) 31:84–98. doi: 10.1093/ajerev/mxp003

51. Hogue CJR, Bremner JD. Stress model for research into preterm delivery among black women. *Am J Obstet Gynecol*. (2005) 192:S47–55. doi: 10.1016/j.ajog.2005.01.073

52. Sullivan-González BCRD, Wilson CR. *The south and the Caribbean* University Press of Mississippi (2001).

53. The World Factbook. (2023). Available at:https://www.cia.gov/the-world-factbook/countries/ (Accessed January 8, 2023).

54. BlackPast. Caribbean Heads of State. Available at: https://www.blackpast.org/caribbean-heads-of-state/ (Accessed July 25, 2023).

55. Duster T. Medicine. Race and reification in science. *Science*. (2005) 307:1050–1. doi: 10.1126/science.1110303

56. Cooper RS, Kaufman JS, Ward R. Race and genomics. *N Engl J Med*. (2003) 348:1166–70. doi: 10.1056/NEJMsb022863

57. Witherspoon DJ, Wooding S, Rogers AR, Marchani EE, Watkins WS, Batzer MA, et al. Genetic similarities within and between human populations. *Genetics*. (2007) 176:351–9. doi: 10.1534/genetics.106.067355

58. Yudell M, Roberts D, DeSalle R, Tishkoff S. Taking race out of human genetics. *Science*. (2016) 351:564–5. doi: 10.1126/science.aac4951

59. Hannaford I. *Race: The history of an idea in the Wes*. Washington, DC: Woodrow Wilson Center Press (1996).

60. Smedley A, Smedley BD. Race as biology is fiction, racism as a social problem is real: anthropological and historical perspectives on the social construction of race. *Am Psychol*. (2005) 60:16–26. doi: 10.1037/0003-066X.60.1.16

61. Williams DR. Ethnicity, race, and health In: NJ Smelser and PB Baltes, editors. *International encyclopedia of the social and behavioral sciences*. Amsterdam, Netherlands: Elsevier Science Ltd (2001). 4831–8.

62. Rogac M, Peterlin B. Epigenetic signature of chronic maternal stress load during pregnancy might be a potential biomarker for spontaneous preterm birth. *Balkan J Med Genet*. (2018) 21:27–33. doi: 10.2478/bjmg-2018-0023

63. Hantsoo L, Jašarević E, Criniti S, McGeehan B, Tanes C, Sammel MD, et al. Childhood adversity impact on gut microbiota and inflammatory response to stress during pregnancy. *Brain Behav Immun*. (2019) 75:240–50. doi: 10.1016/j.bbi.2018.11.005

64. Williams DR. Race, socioeconomic status, and health the added effects of racism and discrimination. *Ann N Y Acad Sci*. (1999) 896:173–88. doi: 10.1111/j.1749-6632.1999.tb08114.x

65. Nuru-Jeter A, Dominguez TP, Hammond WP, Leu J, Skaff M, Egerter S, et al. "It's the skin you're in": African-American women talk about their experiences of racism. An exploratory study to develop measures of racism for birth outcome studies. *Matern Child Health J*. (2009) 13:29–39. doi: 10.1007/s10995-008-0357-x

66. Shonkoff JP, Boyce WT, McEwen BS. Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. *JAMA*. (2009) 301:2252–9. doi: 10.1001/jama.2009.754

67. Jackson FM, Rashied-Henry K, Braveman P, Dominguez TP, Ramos D, Maseru N, et al. A prematurity collaborative birth equity consensus statement for mothers and babies. *Matern Child Health J*. (2020) 24:1231–7. doi: 10.1007/s10995-020-02960-0

68. Collins JW Jr, David RJ, Handler A, Wall S, Andes S. Very low birthweight in African American infants: the role of maternal exposure to interpersonal racial discrimination. *Am J Public Health*. (2004) 94:2132–8. doi: 10.2105/AJPH.94.12.2132

69. Beck AF, Edwards EM, Horbar JD, Howell EA, McCormick MC, Pursley DM. The color of health: how racism, segregation, and inequality affect the health and well-being of preterm infants and their families. *Pediatr Res*. (2020) 87:227–34. doi: 10.1038/s41390-019-0513-6

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U.S. college students' perspectives on contraception and abortion post-*Dobbs*: the influence of socioeconomic privilege and gender inequity

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This study examined college students' perspectives about contraception and abortion in the context of the United States Supreme Court's decision to eliminate the constitutional right to abortion in June 2022. Individual, semi-structured interviews were conducted between October 2022 and February 2023 with a convenience sample of 20 college students, ages 18–22, attending a public university in the southeastern United States. Qualitative data analysis revealed three main themes. First, most participants conveyed fear, dismay, and anger about the decision in Dobbs v. Jackson Women's Health Organization to overturn Roe v. Wade and a few expressed concerns about potential restrictions on contraception. Second, women participants felt heightened pressure to continue or initiate use of a highly effective contraceptive method, with some lamenting inequitable experiences of the gendered contraceptive burden in their relationships with men. Third, when asked what they would do if they or their partner became pregnant while in college, most asserted they would seek abortion. Notably, participants assumed their socioeconomic advantages would ensure their or their partner's access to abortion, regardless of growing restrictions. The findings illustrate that among a group of relatively privileged young adults, the Dobbs decision simultaneously compelled their increased vigilance regarding contraceptive use and conferred the perception that they would not be personally impacted should they need an abortion.

KEYWORDS

contraception, abortion, college students, reproductive health, United States

Introduction

In June 2022, the United States Supreme Court overturned the federally protected right to abortion in the *Dobbs v. Jackson's Women Health Organization* decision. Prior to *Dobbs*, all states in the U.S. were required to provide access to abortion at least until "fetal viability," although states were allowed to enact obstacles, provided they did not impose an "undue burden" (1). Following the decision, most states controlled by conservative politicians, primarily in the South

and Midwest, have eliminated or severely restricted abortion access (2). These abortion restrictions have far-reaching implications for pregnancy-capable people's reproductive autonomy. Due to increased delays in obtaining abortion care, more people are being denied abortion, and surveilled and criminalized for activities during pregnancy (3). Further, abortion restrictions disproportionately impact people who are young, racially marginalized, and economically vulnerable (4–7). The *Dobbs* decision has also raised concerns about the right to contraception, which was initially established in *Griswold v. Connecticut* in 1965 using the same constitutional provision that supported the *Roe v. Wade* decision in 1973 (1).

Young adults, ages 18–24, have long been the focus of reproductive health research on contraception and abortion, largely because they have higher rates of unintended pregnancy and abortion and lower rates of contraceptive use than older age groups (8–12). Most of this research highlights the racial and socioeconomic disparities in rates of unintended pregnancy, unplanned births, and abortion, and their association with lower rates of contraceptive use, including inconsistent use and non-use (8, 13). While college students have higher rates of contraceptive use and are less likely to experience an unintended pregnancy than the general population of young adults (8, 11, 14), they are also more likely to have adverse sexual health experiences (e.g., sexual assault) due in part to the university environment (15–17). Further, evidence of barriers to accessing contraception and related reproductive health services in this population suggests unmet need (18, 19).

The limited qualitative research focused on college students and contraception has primarily focused on college women's views about and use of long-acting reversible contraception (LARC), trust in healthcare providers, and discursive strategies for negotiating their own LARC use (or lack thereof) in an era of heightened LARC promotion (20–23). Findings indicate that college women lack knowledge about different LARC methods (21), express a range of positive and negative orientations toward LARC (22), and rely on neoliberal ideology to motivate their reasons for adopting or rejecting LARC (20). Less common are studies that include college men (24), in part because contraception is assumed to be a "women's issue." This pattern in the existing research reflects a structural form of gender inequality that Littlejohn (25) refers to as *gendered compulsory birth control*, whereby women of reproductive age are systemically expected to use prescription contraception (e.g., oral contraceptive pills) to prevent pregnancy. Compulsory contraceptive use is thus a burden that women alone are supposed to shoulder. In the face of mounting abortion restrictions post-*Dobbs*, women's reproductive autonomy is not only constrained by laws that restrict their capacity to terminate a pregnancy if needed, but also the potential intensification of pressure to use highly effective forms of prescription contraception (i.e., LARC). Cumulatively, the existing scholarship focused on young adults, contraception, and gender inequity surrounding pregnancy prevention points to the need to better understand college students' perspectives on contraception and abortion in the post-*Dobbs* era.

Materials and methods

Study design

The study draws on individual, semi-structured interviews conducted between October 2022 and February 2023 with a convenience sample of 20 college students attending a large, predominantly white public university located in the southern region of the United States. The region's conservative politics is well-documented and while many of the surrounding states had implemented highly restrictive abortion laws following *Dobbs*, at the time of data collection, abortion was legal up to 20 weeks of pregnancy in the state where the participants were attending college. The interviews examined participants' experiences with sex education, relationship history, current and past contraceptive use, knowledge and attitudes about the *Dobbs* decision, perceptions of the effects of abortion restrictions on their contraceptive use, and whether they would seek abortion should they or their partner become pregnant.

To be eligible to participate in an interview, individuals had to be between ages 18 and 24 and currently attending the university where the data were collected. They did not need to be using contraception at the time of the interview and they could be of any gender. Informed consent was obtained from the participants using a verbal assent procedure whereby the interviewer read participants an informed consent script prior to the beginning of the interview. Participants then verbally consented to participate in an interview and were provided with a copy of the consent script. The study was approved the University of South Carolina's institutional review board.

Study participants

The 20 participants ranged from 18 to 22 years old. Among the participants, 13 were women and seven were men. Thirteen participants were in-state college students while the remainder were from out-of-state ($n = 7$). Most participants indicated they were white ($n = 17$); the remainder identified as Black ($n = 1$) or biracial ($n = 2$). The majority were heterosexual ($n = 15$) while five identified with some other sexual orientation. Eleven participants were in a long-term intimate relationship, while 9 were either single or casually dating. Fifteen participants were using a female-centered prescription contraception method, five indicated they were using condoms only, and one said he was engaging in abstinence for his current contraceptive use (see Table 1).

Data collection

We recruited participants using a digital flyer circulated via university email listservs, social media, and snowball sampling. Respondents then completed a brief anonymous survey hosted on Google Forms, which we used to collect information about respondents' demographic characteristics, history of contraceptive use, and interest in participating in a confidential individual interview. We second then contacted eligible respondents via email and invited them to participate in an interview. While 119 people completed the survey, we only interviewed 20 respondents due to a low response rate to our interview invitations and no-shows. Nonetheless, thematic saturation was reached with these 20 interviews. The second author, a 22-year-old white woman college student, conducted the interviews via Zoom or over the phone, based on each participant's preference. The interviews lasted an average of 25 min. To protect their confidentiality, participants chose their own pseudonyms, which are used in all reports of the study findings. To thank them for their time,

TABLE 1 Demographic characteristics ($n = 20$).

Characteristic	*N*
Mean age, years	*20*
Race/ethnicity	
White	17
Black	1
Biracial	2
Gender	
Woman	13
Man	7
Sexual orientation	
Heterosexual	15
Bisexual	4
Asexual	1
Relationship status	
Currently in a relationship	11
Single	9
Current contraceptive use[1]	
Condoms	11
Oral contraceptive pill	6
Intrauterine device (IUD)	5
Implant	2
Ring	1
Other (e.g., abstinence, withdrawal)	8

[1]Some participants reported currently using multiple methods so numbers do not sum to 20.

participants received a $20 Amazon electronic gift card. Those who completed the survey but not an interview did not receive an incentive.

Data analysis

The first and second authors conducted qualitative data analysis using Dedoose. We used a thematic approach wherein we initially derived deductive codes from the interview guide and developed inductive codes through an iterative process of constant comparison across emerging categories of analysis. Our coding process was informed by the extant literature and the following research questions: What are college students' knowledge and attitudes about the U.S. Supreme Court's decision in *Dobbs v. Jackson Women's Health Organization*? How is *Dobbs* influencing college students' contraceptive use? If the participant found out they or their partner were pregnant, what do they think they would do about the pregnancy? Here we highlight deductive codes focused on participants' narratives about their knowledge of and attitudes about the *Dobbs* decision, the influence of the *Dobbs* decision on their contraceptive use, and whether they or their partner would desire an abortion if they experienced a pregnancy at this point in their lives. Additionally, two inductive codes emerged. One involved unequal gendered dynamics around contraceptive use and the other entailed participants' perceived capacity access to abortion, which included participants' assertions that they were confident they would have the resources needed to obtain an abortion. Our results reflect the patterns we identified in the data via thematic analysis.

Results

Below we highlight major themes that emerged across participants' responses to a series of questions related to the *Dobbs* decision that the interviewer asked during the last section of each interview. Notably, most participants articulated an accurate understanding of the Court's decision. Further, most expressed vehement opposition to the elimination of federal protection for abortion. However, when queried about how they thought the decision impacted their own contraceptive use and access to abortion, participants' responses revealed outrage and concern about the *Dobbs* decision, and a strong conviction that should they require an abortion, they would be able to obtain one. Additionally, among the women participants who were not using highly effective prescription contraception, they disclosed feeling pressure to initiate use. Therefore, while the unequal gendered burden of contraceptive use prior to *Dobbs* is well-documented (25–27), the decision and its cascade effects at the state level appear to be exacerbating this form of gender inequality for young women by further restricting their reproductive autonomy.

Views about *Dobbs*

When the interviewer asked Madeline, a white woman who was using oral contraceptive pills, "What is your understanding of the Supreme Court's decision to overturn *Roe v. Wade*?" she replied,

> [T]he way that I understand it is that it is suddenly way easier for individual states to enact their own abortion laws that are contrary to sort of what *Roe v. Wade* had established on a federal level. It wasn't any sort of immediate change on a nationwide level as much as opening the door for different state governments to establish their own laws… I think it was a massive step backward for American women, for women in a developed country. It was really hard news to hear.

A few participants indicated awareness of the potential implications of *Dobbs* for other rights related to privacy, such as the right to marry a same-sex partner. George, a white man whose female partner was using oral contraceptive pills, expressed,

> I think that it is terrifying. It seems that the Supreme Court has been going through these cycles where every 50 years they look back at cases they decided, and with *Roe v. Wade* being the law of the land, for 50 years, for it to be overturned and to allow states to decide the right of privacy of individuals, I think is a scary idea. Especially [since] I have a lot of friends now in college who are gay and they're thinking, what's next? And I think that there should be a universal right to abortion. And that's what my [home] state does have, thankfully. I wish that would continue into the South and that hopefully over time, we can reestablish those protections that *Roe v Wade* had established for 50 years. It's just crazy to me that we're going back in time.

Like Madeline and George, most participants conveyed fear and dismay about the decision; however, a few participants expressed anger when discussing their understanding of the Dobbs decision. For example, BG, a white woman who was using the implant, said,

> From my understanding, it is trying to take away the right of a woman to be able to go and get an abortion on her free will. Makes me angry. It's scary, as a woman, knowing that that is something that very easily could be a part of my life and knowing that it would be taken away is very scary.

Kiki, a white woman who was using the ring, also did not mince words when she responded,

> Personally, I think it's bullshit that the government thinks that they have a right to patient's privacy with their healthcare provider. This isn't a matter of abortion, this isn't a matter of getting rid of a fetus. This isn't a matter of reproductive rights. It is straight up a matter of the government thinks they have a conversation with you and your healthcare provider. And I think it's bullshit. It makes me so mad.

By contrast, Mary, a white woman who was using an IUD, felt confused and overwhelmed by the decision. While she wasn't entirely sure what the decision legally meant, she nonetheless found it unjust.

> I don't know, I don't really get into all of this. I know it's a huge topic for girls. I don't think it's fair for … My whole thing is I don't like how men are making the decision, I think that's absolutely super absurd, or just how they have any say. I don't know, it's very infuriating. I know the gist of it, I don't follow up with it, if that means anything….I think it's pretty unfair. I'm not really sure who's going to do something about that. I guess my whole thing with political things is my voice. I feel like it's so little that I don't know what to do with it, but I would hope somebody says that's super not right and do something about it.

Notably, Mary indicates awareness of how *Dobbs* reflects and reinforces gender inequity surrounding reproductive matters. At the same time, she does not see herself as someone who could take action to address the injustice of the decision. Instead, she hopes "somebody" else will "do something about it."

Influence of *Dobbs* on contraceptive use

After exploring participants' understanding and interpretations of the *Dobbs* decision, the interviewer queried them on whether the decision was affecting their contraceptive use. Among the women participants already using LARC ($n = 7$), they expressed relief that they had the most effective form of reversible contraception available. For example, Katelyn, a white woman, said,

> Well, it made me really glad that I got my IUD. I was kind of like, I'm very glad that I'm taking the right steps to prevent [pregnancy] even further. It solidified the fact that pregnancy feels a little unreversible. It's not unreversible, but it's a lot harder to reverse and it's terrifying, so it's just kind of reinforced that birth control is a beautiful thing that I want to be on.

Ella, a biracial woman, concurred, and elaborated,

> Oh, I immediately was like, "Well, thank God I have an IUD," because I know it can stay in for years because, God forbid, they make birth control illegal. And a lot of places are already pushing for that to happen, so I was like, "No way I'm taking this out, at least for now." And as soon as I need a new one, if I'm in a place where I can get one, I will. Because the idea of that being in the air in the future is terrifying.

While BG previously demonstrated a clear understanding of the *Dobbs* ruling, later she indicated that she did not think abortion was legally available anymore in her state, even though at the time of data collection, abortion was legal up to 20 weeks. Despite this misinformation, BG conveyed a deep investment in continuing to use the implant to ensure she did not become pregnant.

> I mean, I'm not even thinking about getting off of it. I definitely want to stay on it and that I need to stay on it because I feel like if it is being put mostly on me to protect myself, then I'm going to take those steps to make sure that something doesn't happen that I don't want to happen. And so definitely making sure that I am doing everything in my control, that that wouldn't have to be an option. And now that it's not an option, I definitely want to make sure that I'm doing what I can to protect myself from [pregnancy].

For the women participants who were using a non-LARC prescription method, *Dobbs* prompted them to consider switching to LARC. For example, Emmaline, a white woman using oral contraceptive pills, said,

> I was considering switching to an IUD just because it was a more permanent solution. So, if the next thing to go was birth control, it's not like the government can be like, "Yes, you have to come in and have surgery to get that taken out." Whereas for birth control pills, they could be like, "We're not filling your prescriptions anymore." I did not end up doing that just because I think being from [home state] usually the decisions are a little less extreme than the ones in [current state], so I assumed that it would kind of work out okay. Which so far it has.

By contrast, Nathan, a white man in a relationship with a woman using oral contraceptive pills, said, "It has not really affected me at all, cause I've always used birth control and tried to prevent pregnancy, so I do not think it's had any effect or change to my behavior or anything like that." Despite reporting "always using birth control," Nathan's reliance on oral contraceptive pills indicated that his partner was primarily responsible for contraceptive use.

His lack of concern or change in behavior following the *Dobbs* ruling differed significantly from participants who had a physical capacity for pregnancy and themselves were managing their use of birth control.

Other women participants lamented the pressure they felt to continue or begin using more effective methods of birth control. Mary, a white woman who was using an IUD, said,

> It just makes me even more upset that I'm on it. I feel like they have so little regard for me. My willingness to take birth control, it's just … I don't know, you're going to make me take it, but not help me if I did get pregnant or something?

Similarly, Riley, a white woman using condoms and fertility awareness, was concerned that she might have to use a hormonal contraceptive method.

> It has made me reconsider if I want to go on hormonal birth control or not…As for now, I'm sure I will stick with the birth control that I'm currently using, but if I start to see, this is really becoming big, and a lot of states are now making [abortion] illegal…well then, it's in my hands now. Which kind of stinks because it turns you back onto that argument of who is responsible for birth control. And it's like, "well, now it seems like I am"… there's not really forms of birth control for men. And I think that puts a lot of pressure on women to make sure that they are on the right birth control and they're monitoring it constantly. It's another stress in our lives that I don't think should or needs to be there.

Together, Riley's and Mary's perspectives highlight how *Dobbs* and emerging state-level abortion restrictions can exacerbate *gendered compulsory birth control* (25). By restricting access to abortion, states participate in pressuring pregnancy-capable people to use specific methods of birth control when they would otherwise not prefer to use them.

Perspectives on abortion post-*Dobbs*

At the end of each interview, the interviewer asked participants, "If you were to find out today that you (or your partner) were pregnant, what do you think you would do?" With a few exceptions, participants conveyed a strong desire to terminate the pregnancy. Mary reflected this pattern when she replied,

> I would definitely probably get an abortion, or try to at least. I'm not ready for a child. Financially, no. Mentally, absolutely not. It's crazy, I can't even imagine my life with [a] child right now… There's been conversations [with male partners]. It hasn't been a genuine that's what's going to happen, but I feel like every person that I've been with, we've had that discussion if I would or not. They're pretty much on the same page, if that would happen, they would agree.

While most people focused solely on how they would personally handle a hypothetical unintended pregnancy, Katelyn's response recognized both her own privilege and inequities in abortion access,

> I would try to terminate the pregnancy anyway that I possibly could. That's not in my life plan right now…I think I'm privileged enough that I can handle it myself, that I could have friends who I could stay with in other states. So honestly, realistically for me, if I were to get pregnant in [current state], I still could find a way to access abortion. I would definitely choose to, honestly, but I would be able to access it and I would be able to get to an abortion center that was safe and relatively affordable for me. I think it's kind of BS that a lot of people don't have that option, they don't have the ability to afford it or the ability to travel and there's barriers now that exists that are not okay.

Kiki also perceived that her privilege would ensure her access to abortion, should she need one,

> I live with the security that my parents have the money to fly me to another state. If I do need to get an abortion, my mom would be okay with me wanting to get an abortion. My boyfriend's mom would also be okay with it. She actually has [different anglophone country] citizenship, so if shit hits the fan and I can't get one in the U.S. I can go to [different anglophone country] …I would get an abortion. Definitely.

While a few female participants did express some uncertainty about whether they would seek an abortion should they become pregnant, most were unequivocal. Notably, among the men in the study, their responses highlighted their support for women's reproductive autonomy, even if that might ultimately conflict with their own preferences. Penguin, a white man who was not in a relationship but reported using condoms, reacted to the question by saying,

> God. I mean, I would hope that they would get an abortion, but I wouldn't pressure them. I'd say, "Let's talk about it. Let's see more options." I don't think I could deal with a child right now just with I am so busy with everything going on. But also, it doesn't make sense why men should have a say in women's opinions in the matter. I guess these old white men, I mean, that's going to be me, but it's a woman's body. It's a woman's choice, I guess. But yeah, no, just God, my mom would probably think I was joking if I told her. But I would not want a kid. But it's up to the decision of the girl. But I'd do my best to be there for her, I guess.

Somewhat similarly, Nathan reflected,

> That is a tough question. I'm not sure. I know [my girlfriend] personally disagrees with abortions. She's not pro-life in the sense that she wants them outlawed, but she says that her [*sic*] personally would not get an abortion because of her Catholic religious beliefs. But I'm not sure how that would all work out. I'm not sure how I would feel. I would probably want her to get an abortion, but I'm not going to make anybody do that, so we'd probably have to have a really serious long conversation about that.

Cumulatively, nearly all of the participants were confident they would have the resources to obtain an abortion. At the same time, most were preoccupied with ensuring that they would not need abortion access, provided they were able to access and consistently use highly effective contraception.

Discussion

The study findings have multiple implications, which are both specific to college students and point to broader areas of concern regarding reproductive autonomy, gender inequities in contraceptive use, and collective action. The participants' comprehension and criticism of the *Dobbs* decision indicate a fairly high level of political engagement in this population. This is not necessarily surprising, given studies demonstrating that undergraduate education increases political engagement and in turn, informs active participation in civic life (28). Further, emerging evidence from survey data point to this group's strong support for abortion rights (29). Nonetheless, most participants indicated that they were heavily invested in using highly effective contraceptive methods to try to ensure they or their partner could avoid experiencing an unintended pregnancy.

Notably, some women participants pointed out the unequal gendered burden that fell on them to use female-centered prescription methods and indicated they felt external pressure to initiate using a more effective method as a result of *Dobbs*. While some acknowledge that the state was imposing these contraceptive burdens through abortion bans, most did not recognize that this was an interpersonal problem as well. Instead, most participants, regardless of gender, seemed to take for granted that sexually active women must use prescription contraception to prevent pregnancy. These dynamics point to the ways abortion restrictions exacerbate prevailing gender inequities regarding pregnancy-capable people's capacity to choose abortion and to make autonomous decisions about contraceptive use that reflect their own preferences and needs.

While participants expressed strong feelings when articulating their opposition to the *Dobbs* decision, collectively they did not indicate any motivation to engage in political action that would convey that opposition or seek change that might expand protections for abortion. It is possible this seeming complacency was due to their shared perception that they personally would be able to access abortion, if necessary. Participants' sense that they would always be insulated from the direct consequences of *Dobbs* due to their socioeconomic privilege stood in contrast to their awareness of the possibility of a nationwide abortion ban and threats to contraception access. This disconnect between their political views and actions points to an opportunity for mobilization by the reproductive justice movement. Interest convergence (30) is needed, however, to puncture the apparent naïveté among some participants regarding the state's capacity to infringe on their right to bodily autonomy, despite their advantages.

Interpretation of our findings must account for the limitations of the study design. We relied on a convenience sample of college students attending a large public university in the southeastern United States that was racially homogenous (e.g., predominately white) and high socioeconomic status; therefore, our findings cannot be construed to represent the views and experiences of U.S. college students generally. Nonetheless, a majority of the participants indicated that they would seek abortion if they or their partner became pregnant during this period of their lives. Previous research finds that abortion is significantly under-reported in survey research (31). By contrast, this prospective question about abortion decision-making elicited affirmative responses and revealed that some participants had determined (often in conversation with their partners) that abortion would be their preferred option in the case of an unintended pregnancy while in college. Many had even considered how they would obtain care in the face of legal restrictions in the region where their university was located. We are unable to determine whether these patterns are a result of the selective sample, the interviewing method, or the prospective (vs. retrospective) nature of the question. Future research should consider these differences to measure potential interest in and need for abortion care at the population level, particularly in states where abortion is banned or otherwise restricted.

This study also adds to the small but growing body of research on college student's attitudes, perspectives, and decision-making around the use of LARC. While other studies have documented pressures to use LARC from healthcare providers and intimate partners (25, 27, 32), our analysis highlights how the U.S. state at both the federal and state levels can essentially pressure young women into using prescription contraceptive methods and unequal gendered compulsory contraceptive use as a result of the *Dobbs* decision. Further, we interviewed college students within the first year that *Roe v. Wade* was overturned, a decision that is dramatically curtailing reproductive autonomy; as our findings reveal, *Dobbs* is shaping people's perspectives and behaviors related to their contraceptive use. Although participants expressed anger and outrage at the decision, they often described how their individual contraceptive decisions and behaviors would protect them from needing an abortion. Those who were using LARC and hormonal methods were "grateful" for this protection, while those using other methods felt pressure to change to methods that were more effective at preventing pregnancy. Recent data shows that 59% of people who obtained abortion in the United States prior to *Dobbs* had completed at least some college (25% were college graduates) (33), suggesting that college attendance does not shield people from needing abortion care. Reflecting either their socioeconomic privilege or naïveté about current and future abortion restrictions, as well as access to contraception, most participants we interviewed assumed they would be able to obtain abortion care if they needed it. Current research efforts are under way to document people's ability to access abortion post-*Dobbs*, which will aid in expanding our understanding of the role of social class, including educational attainment, in access to care. While we await the results of these studies, we encourage reproductive justice advocates to focus on targeting U.S. college students for political mobilization against mounting legal constraints on pregnancy-capable people's reproductive autonomy.

Data availability statement

The datasets presented in this article are not readily available because of the sensitive nature of the interview data. Enquiries about this data should be directed to EM, emily.mann@sc.

Ethics statement

The studies involving humans were approved by the University of South Carolina Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was not required from the participants in accordance with the national legislation and the institutional requirements.

Author contributions

EM: Conceptualization, Formal analysis, Methodology, Supervision, Writing – original draft, Funding acquisition, Project administration. JM: Conceptualization, Methodology, Writing – review & editing, Funding acquisition. KB: Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. Davis MF. The state of abortion rights in the US. *Int J Gynecol Obstet*. (2022) 159:324–9. doi: 10.1002/ijgo.14392

2. Guttmacher Institute (2023) *Interactive map: US abortion policies and access after roe*. Available at: https://states.guttmacher.org/policies/?_gl=1*1bx1ius*_ga*MTcwNjg1NTI3Ni4xNjgwMTIwNTY0*_ga_PYBTC04SP5*MTY4NTQ3MTAxMy4xMS4xLjE2ODU0NzEwODQuMC4wLjA.

3. Kimport K. Abortion after Dobbs: defendants, denials, and delays. *Sci Adv*. (2022) 8:eade5327. doi: 10.1126/sciadv.ade5327

4. Foster DG. New abortion bans will increase existing health and economic disparities. *Am J Public Health*. (2022) 112:1276–7. doi: 10.2105/AJPH.2022.306993

5. Hernandez J. (2022) Adolescents faced obstacles getting abortions. The supreme court just made it harder *NPR*. Available at: https://www.npr.org/2022/06/28/1108198265/adolescents-abortions-supreme-court-roe-v-wade (Accessed July 28, 2022).

6. Kimport K. *No real choice: how culture and politics matter for reproductive autonomy*. New Brunswick, NJ: Rutgers University Press (2022).

7. Redd SK, Mosley EA, Narasimhan S, Newton-Levinson A, AbiSamra R, Cwiak C, et al. Estimation of multiyear consequences for abortion access in Georgia under a law limiting abortion to early pregnancy. *JAMA Netw Open*. (2023) 6:e231598. doi: 10.1001/jamanetworkopen.2023.1598

8. Finer LB, Zolna MR. Declines in unintended pregnancy in the United States, 2008–2011. *N Engl J Med*. (2016) 374:843–52. doi: 10.1056/NEJMsa1506575

9. Jones RK, Jerman J. Abortion incidence and service availability in the United States, 2014. *Perspect Sex Reprod Health*. (2017) 49:17–27. doi: 10.1363/psrh.12015

10. Kavanaugh ML, Pliskin E. Use of contraception among reproductive-aged women in the United States, 2014 and 2016. *F S Rep*. (2020) 1:83–93. doi: 10.1016/j.xfre.2020.06.006

11. Kost K, Zolna M, Murro R. Pregnancies in the United States by desire for pregnancy: estimates for 2009, 2011, 2013, and 2015. *Demography*. (2023) 60:837–63. doi: 10.1215/00703370-10690005

12. Ricketts S, Klingler G, Schwalberg R. Game change in Colorado: widespread use of long-acting reversible contraceptives and rapid decline in births among young, low-income women. *Perspect Sex Reprod Health*. (2014) 46:125–32. doi: 10.1363/46e1714

13. Dehlendorf C, Park SY, Emeremni CA, Comer D, Vincett K, Borrero S. Racial/ethnic disparities in contraceptive use: variation by age and women's reproductive experiences. *Am J Obstet Gynecol*. (2014) 210:526.e1–9. doi: 10.1016/j.ajog.2014.01.037

14. American College Health Association (2020) *American college health association-National College Health Assessment III: undergraduate reference group executive summary spring 2020*. Available at: https://www.acha.org/documents/ncha/NCHA-III_Spring_2020_Undergraduate_Reference_Group_Executive_Summary.pdf.

15. Fedina L, Holmes JL, Backes BL. Campus sexual assault: a systematic review of prevalence research from 2000 to 2015. *Trauma Violence Abuse*. (2018) 19:76–93. doi: 10.1177/1524838016631129

16. Wade L. *American hookup: the new culture of sex on campus*. New York, NY: W.W. Norton (2017).

17. Whiting W, Pharr JR, Buttner MP, Lough NL. Behavioral interventions to increase condom use among college students in the United States: a systematic review. *Health Educ Behav*. (2019) 46:877–88. doi: 10.1177/1090198119853008

18. Bersamin M, Fisher DA, Marcell AV, Finan LJ. Reproductive health services: barriers to use among college students. *J Community Health*. (2017) 42:155–9. doi: 10.1007/s10900-016-0242-2

19. Lederer AM, Hoban MT, Lipson SK, Zhou S, Eisenberg D. More than inconvenienced: the unique needs of U.S. college students during the COVID-19 pandemic. *Health Educ Behav*. (2021) 48:14–9. doi: 10.1177/1090198120969372

20. Grzanka PR, Schuch E. Reproductive anxiety and conditional Agency at the Intersections of privilege: a focus group study of emerging adults' perception of long-acting reversible contraception. *J Soc Issues*. (2020) 76:270–313. doi: 10.1111/josi.12363

21. Hall K, Ela E, Zochowski M, Challa S, McAndrew L, Steel M, et al. College women's knowledge of and perceived barriers to long-acting reversible contraceptive methods. *Contraception*. (2015) 92:404–5. doi: 10.1016/j.contraception.2015.06.198

22. Mann ES, White AL, Beavin C, Dys G. Foreign objects in college bodies: young women's feelings about long-acting reversible contraception (LARC). *Women Health*. (2020) 60:719–33. doi: 10.1080/03630242.2019.1710891

23. Moore CL, Edie AH, Johnson JL, Stevenson EL. Long-acting reversible contraception: assessment of knowledge and interest among college females. *J Am Coll Heal*. (2019) 67:615–9. doi: 10.1080/07448481.2018.1500473

24. Dalessandro C, James-Hawkins L, Sennott C. Strategic silence: college men and hegemonic masculinity in contraceptive decision making. *Gend Soc*. (2019) 33:772–94. doi: 10.1177/0891243219850061

25. Littlejohn KE. *Just get on the pill: the uneven burden of reproductive politics*. Oakland: University of California Press (2021).

26. Granzow K. De-constructing "choice": the social imperative and women's use of the birth control pill. *Cult Health Sex*. (2007) 9:43–54. doi: 10.1080/13691050600963948

27. Mann ES. The power of persuasion: normative accountability and clinicians' practices of contraceptive counseling. *SSM*. (2022) 2:100049. doi: 10.1016/j.ssmqr.2022.100049

28. Perrin AJ, Gillis A. How college makes citizens: higher education experiences and political engagement. *Socius*. (2019) 5:237802311985970. doi: 10.1177/2378023119859708

29. Bryant J. (2022). *39% of prospective undergrads say roe v. Wade ruling impacts college decision, BestColleges*. Available at: https://www.bestcolleges.com/research/roe-v-wade-impacts-college-students/.

30. Bell D. *Silent covenants: Brown v. Board of Education and the unfulfilled hopes for racial reform*. New York: Oxford University Press (2004).

31. Mueller J, Kirstein M, VandeVusse A, Lindberg LD. Improving abortion underreporting in the USA: a cognitive interview study. *Cult Health Sex*. (2023) 25:126–41. doi: 10.1080/13691058.2022.2113434

32. Biggs MA, Tome L, Mays A, Kaller S, Harper CC, Freedman L. The fine line between informing and coercing: community health center clinicians' approaches to counseling young people about IUDs. *Perspect Sex Reprod Health*. (2020) 52:245–52. doi: 10.1363/psrh.12161

33. Jones RK, Chiu DW. Characteristics of abortion patients in protected and restricted states accessing clinic-based care 12 months prior to the elimination of the federal constitutional right to abortion in the United States. *Perspect Sex Reprod Health*. (2023) 55:80–5. doi: 10.1363/psrh.12224

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Early national trends in non-abortion reproductive care access after *Roe*

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Background: *Roe* was overturned in 2022. No peer-reviewed evidence exists for the indirect spillover effects of overturning *Roe* on non-abortion reproductive care access for diverse patient populations.

Methods: National data were from 2013–2023 HHS Title X Directory, 2013–2020 CDC Artificial Reproductive Technologies (ART) Surveillance and 2021–2023 manual collection, and Guttmacher Institute. Outcome measures included numbers of ART clinics and Title X entities. Title X entities are those that receive federal funds to establish and operate voluntary family planning projects, especially for low-income patients. We reported pre-and post-*Roe* changes, associations between changes in measures and abortions, and characteristics of changed measures by region and political geography.

Results: Post-*Roe* America witnessed national declines of 1.03% in ART clinics and 18.34% in Title X entities, and average state decreases of 0.08 ART clinics ($p < 0.05$) and 18 Title X entities ($p < 0.001$). State-level ART clinic closures and abortion reductions had little association except for Texas, Oklahoma, Arizona, New York, and California. Plummets in Title X entities and abortions were positively associated: Reducing 100 abortions was associated with defunding two Title X entities ($p < 0.05$). The South experienced the largest losses of both, while 83.39% of lost Title X entities were in states that voted Republican in the 2020 presidential election, disproportionate to the 49.02% of states that voted Republican and the 42.52% of US population residing in these states.

Conclusion: We provide one of the first few evidence of spillover impacts of overturning *Roe* on non-abortion care access for diverse populations: low-income men and women, single parents by choice, and biologically and socially infertile patients. Early evidence warns of worsening challenges of inequities and calls for immediate policy actions.

KEYWORDS

***Roe* v. Wade, *Dobbs* v. Jackson Women's Health Organization, reproductive health services, abortion clinics, Title X entities, artificial reproductive technology clinics, access, equity**

Introduction

Procreation is a fundamental right protected by the Fourteenth Amendment to the US Constitution (1), along with other essential reproductive rights (2). Historical state statutes deprived certain individuals of the right to have children and were challenged. In *Skinner v. Oklahoma (1942)*, the US Supreme Court struck down compulsory sterilization laws and affirmed that "procreation [is] fundamental to the very existence and survival of the race" (3).

However, recent US Supreme Court rulings may prevent diverse populations from exercising the right to procreate. The Court accepted *Dobbs v. Jackson Women's Health Organization (2022)* for review on May 17, 2021. The issue was "whether all pre-viability prohibitions on elective abortions are unconstitutional." The Court held that "the Constitution does not confer a right to abortion; *Roe* and *Casey* are overruled" on June 24, 2022 (4). The decision triggered immediate enactment of statutes in 13 states that enforced near-total bans on abortion (5). In response, the National Academy of Medicine emphasized potential consequences on health inequities among women (6). The US Congress held hearings on post-*Roe* abortion policy (7), and the Biden Administration issued an executive order protecting access to reproductive care in July 2022 (8). The direct effects of overturning *Roe* on reduced abortion access have been discussed and empirically documented (9).

No peer-reviewed study has quantified the indirect spillover impacts of overturning *Roe* on non-abortion care access for diverse patient populations. Broad-spectrum reproductive services include not only abortion but also contraceptive, fertility, preventive, maternal and prenatal health services (2). Diverse stakeholders stressed the potential spillover impacts on these services (10, 11). The American Society for Reproductive Medicine declared: "The clearest danger is the ambiguity about the legal status of *in vitro* fertilized [IVF] eggs" (12). Indeed, some abortion trigger laws define an unborn child as an embryo at any gestational stage from fertilization to birth. Such restrictive legal definitions of an embryo as a person may discourage assisted reproductive technology (ART) service supplies, harming patient access (5). Yet, no relevant evidence has existed about the spillover impacts of overturning *Roe* on non-abortion reproductive service supply, thus access. An urgent need presents to disentangle the complexity of post-*Roe* reproductive care access from multiple sources: the relationships between abortion and non-abortion care, federal and state health authorities, and judicial and legislative checks and balances.

This article is the first that used administrative and manually-collected data to report post-*Roe* early national trends of declining non-abortion care access, and their positive associations with diminishing abortions in certain states and the nation. It documents early evidence on the spillover impacts of federal judicial overturn of abortion precedent on nationwide state-level non-abortion care access through state abortion trigger laws as mechanisms. As gender, income, marital status, and sexual orientation inequities endure in non-abortion care access for diverse patient populations, the early evidence warns of worsening challenges and calls for immediate policy actions.

Measures and data

We extracted nationwide state-level administrative data, whose current data were partially unreleased and thus manually collected, and compared two measures of non-abortion reproductive care access before and after the overturn of *Roe*. Forward-looking agents (e.g., administrators and physicians) make decisions based on predictions (13). An overturn was predicted as more likely (14). Thus, we also compared measures before and after the review of *Dobbs*.

The two measures were the numbers of ART clinics and entities that receive funding through Title X of the US Public Health Service Act (PHSA). They largely complement each other regarding the tax-exempt status of organization, type of provided services, service insurance coverage, and patient income levels. Title X entities are public or nonprofit private entities that receive federal funds to establish and operate voluntary family planning projects, especially for low-income patients. The PHSA does not define "voluntary family planning projects," which commonly include contraceptive and preventive services, does not explicitly include or exclude advanced fertility services (e.g., ART), but does explicitly exclude abortion as a reimbursable service (15).

In contrast, ART clinics are usually for-profit private entities (16), and procedures are often expensive and uncovered by insurance. In the US in 2017, an IVF cycle cost about $12,400 (17), and only 26% of employers with over 500 employees included IVF in employer-sponsored insurance plans (18). Unsurprisingly, we found in 2020 data that no ART clinics received Title X funding. The numbers of ART clinics and Title X entities complementarily measure access to non-abortion reproductive services.

Administrative data were extracted from the US Department of Health and Human Services (HHS) Title X Family Planning 2013–2021 Annual Reports and 2022–2023 Monthly Directory (19), and the Center for Disease Control and Prevention (CDC) 2013–2020 Annual ART Fertility Clinic and National Summary Reports. The CDC takes two years to process and release such data (20). As 2023 data will be unavailable until 2025, we collected the 2021–2023 operation status of all 495 clinics, and closure date if applicable, in the 2020 report manually.

In addition, we sought to detect whether changes in ART clinics or Title X entities were associated with changes in abortion clinics. Recall that the primary objective of ART clinic services is to induce pregnancies, while that of abortion clinic services is to terminate pregnancies. Thus, the number of ART services and clinics and that of abortion services and clinics are seemingly uncorrelated. However, consistent with the hypothesis in literature (11), we suspect that these two numbers are logically correlated as a result of the federal judicial law change. Specifically, the federal judicial overturn of the abortion precedent may negatively impact ART clinics through the mechanism of state abortion trigger laws that restrict the definition of personhood of embryos; that is, changes in ART and abortion clinics may be positively associated. Similarly, we also suspect that changes in Title X entities and abortion clinics are positively associated. This hypothesis is motivated by the following two facts. First, a Title X entity may refer patients to an abortion clinic upon request. Second, an entity can simultaneously provide non-abortion services using Title X funds and provide abortion services for which Title X funds are prohibited (15). For example, Planned Parenthood treated about 40% of 1.7 million Title X patients (21) and conducted over 383,000 abortions in 2021 (22). Therefore, either through the complementary referral relationship between Title X entities and abortion clinics or through the complementary services relationship within the same entity, the changes in Title X and abortion entities may also be positively associated.

Data on changes in abortion clinics were publicly unavailable from the CDC Abortion Surveillance Report (23) and other administrative sources after 2020 and incomplete from the Guttmacher Institute (24),

which would reduce the statistical power and preclude unbiased estimates. Therefore, we use a proxy measure, changes in abortions performed in each of the 50 states and DC, whose complete data were available during April–December 2022 from the Society of Family Planning (25) and Guttmacher Institute; these are the only complete and publicly available data as of this writing.

For each measure, national and state-level changes before (May 2022) and after (February 2023) the overturn were reported. We also reported the descriptive results of Pearson correlation and association between changes in ART clinics and abortions (April–December 2022), similarly for Title X entities. Finally, we reported characteristics of changed clinics or entities from the review (May 18, 2021 or April 2021) to date (February 2023) and from the overturn (June 25, 2022 or May 2022) to date by census region, political geography, and publicly-released reason for closure. April 2021 and May 2022 were chosen as bases to calculate changes in Title X entities, rather than May 2021 and June 2022, in which the review and overturn occurred because the data were monthly and changes may have already occurred in the remaining dates of these months.

Early national trends based on post-*Roe* data

ART clinics before-after overturn

A national declining trend existed in ART clinics in the past decade (Figure 1A). Four ART clinics were closed between March 2020 and March 2021, two due to mergers and two due to the COVID-19 pandemic. ART clinics dropped from 487 before the overturn to 482 to date, a 1.03% decrease nationwide. State-level group means before and after the overturn indicated a statistically significant average closure of 0.08 ART clinics per state (95% confidence interval [CI], −0.0021 to −0.1579; $p = 0.022$). Moreover, state-level changes in

FIGURE 1
2013–2023 national trends in assisted reproductive technology (ART) clinics and Title X entities. **(A)** The total number of ART clinics in the US from 2013 to 2023. Data were retrieved from the HHS-CDC 2013–2020 annual ART Fertility Clinic and National Summary Reports (20). All clinics reporting and unreporting success data were included in this graph. The 2021–2023 annual reports are unavailable as of this writing; we manually collected operation status data of all 495 clinics in the 2020 report and, if closed, the closure date. We estimated 2021 ART clinics by subtracting closed ones from the 2020 report and estimated 2022 and 2023 ART clinics similarly. We observed a drop in the total number of ART clinics in 2020 at the onset of the COVID-19 pandemic, a fall in 2021 when *Dobbs* was accepted for review, and a steeper decrease in 2022 when *Roe* was overturned. **(B)** The total number of Title X entities (grantees, sub-recipients, and service sites) in the US from 2013 to 2023. Data were retrieved from the HHS-Office of Population Affairs (OPA) 2013–2021 Family Planning Annual Reports (19). The 2022 and 2023 annual reports are unavailable as of this writing, and we retrieved monthly data from the OPA Title X Directory from January 2022 to February 2023 (19). We observed a sharp drop in 2019 when the March 2019 Trump gag rule took effect, a surge in January 2022 following the November Biden-Harris rule repealing the gag rule, and shortly after the overturn in June 2022, a plummet starting in July 2022.

ART clinics and abortions show little association except for Texas, Oklahoma, Arizona, and New York, with positive relationships, and California, with a negative relationship (Figure 2A).

Characteristics of closed ART clinics after review (May 18, 2021)

From the review of *Dobbs* to date, eight ART clinics have closed. Regarding regions, five (62.5%) were located in the South, two (25%) in the West, one (12.5%) in the Northeast, and none in the Midwest. Concerning political geography, six (75%) were in precincts that voted Democratic in the 2020 US presidential election, and two (25%) in precincts that voted Republican (26). Four were in states that voted Democratic, and four were in those that voted Republican. Closure reasons varied. Three clinics (37.5%) were closed because of practice cessation, two (25%) because of relocation, merger, or acquisition, one (12.5%) because of financial losses, and two (25%) with unspecified reasons (see Supplementary material for references).

Characteristics of closed ART clinics after overturn (June 25, 2022)

From the overturn of *Roe* to date, four ART clinics have closed. Two were located in the South, one in the West, one in the Northeast, and none in the Midwest. Two were in precincts and states that voted Democratic in the 2020 presidential election, and two were in those that voted

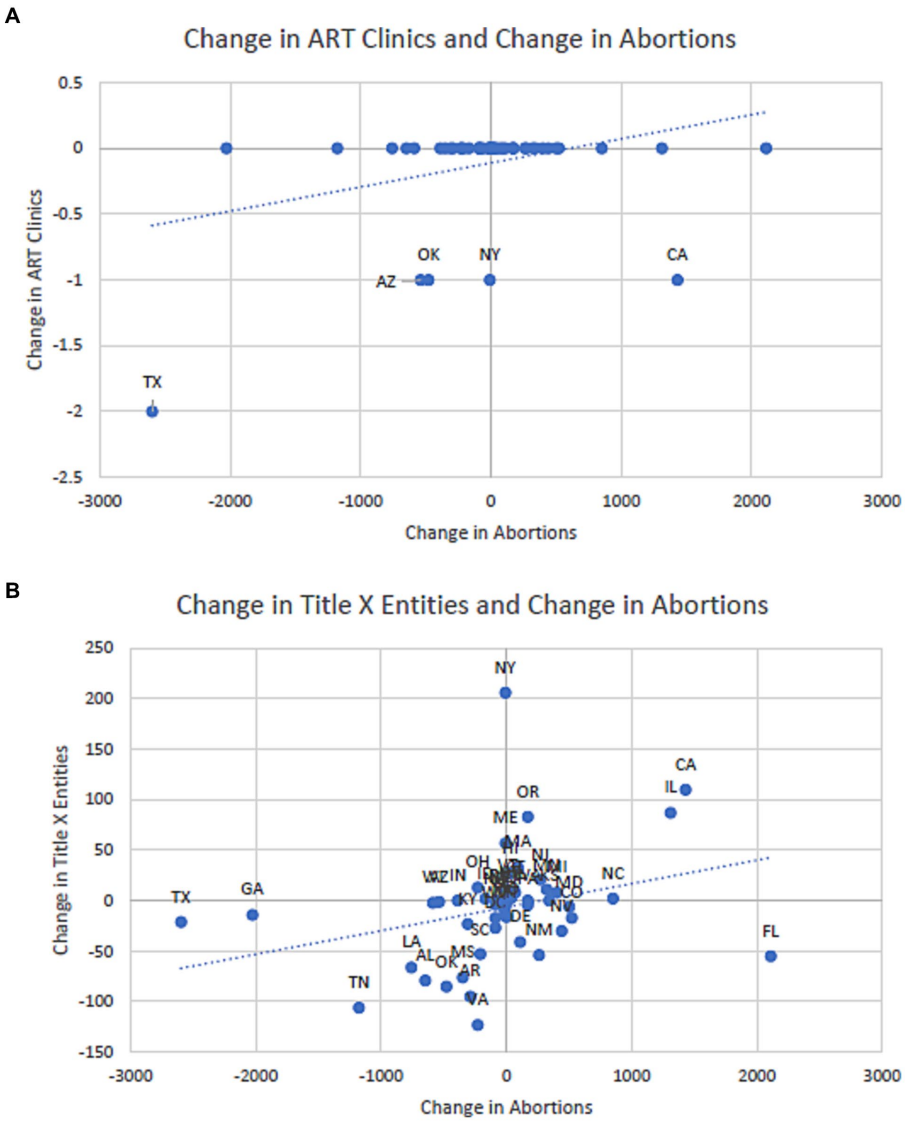

FIGURE 2
Correlation and association between pre-post *Roe* changes in ART clinics or Title X entities and changes in abortions. **(A)** Changes in ART clinics and abortions, April–December, 2022. **(B)** Changes in Title X entities and abortions, April–December, 2022. **(A)** Little correlation and association between changes in ART clinics and changes in abortions carried out in all 50 states and DC from April to December 2022, except for five outliers: Texas, Oklahoma, Arizona, and New York, with positive correlations and California with a negative correlation. Data on abortions were retrieved from the Society of Family Planning (25), which were further from the Guttmacher Institute. **(B)** The positive correlation and association between changes in Title X entities and changes in abortions carried out in all 50 states and DC from April to December 2022. The correlation [$r(49)=0.304$; $p=0.029$] and association were statistically significant ($\beta=0.023$; 95% CI, 0.003 to 0.044): 100 abortions reduced in a state were associated with approximately two Title X entities being defunded.

Republican (Figures 3A,B). Closure reasons varied, one because of practice cessation, one because of relocation, merger, or acquisition, one because of financial losses, and one with unspecified reasons. Public releases by institutions may not convey underlying reasons, such as operational risks under stricter laws. For example, the hospital system Integris Health closed the Bennett Fertility Institute in Oklahoma after 37 years of operation on December 31, 2022, citing "declining patient volumes and overall financial losses from increased expenses and contract labor costs" (27). Coincidentally, this decision was made after the Oklahoma abortion trigger law was passed in May 2022 (28). Anecdotal evidence from physicians at Bennett revealed that the sudden closure resulted in layoffs, treatment discontinuation, and patient anxiety about the safety of frozen sperms, oocytes, and embryos (27).

Title X entities before-after overturn

Title X entities fell from 5,491 before the overturn to 4,571 to date (19), a 16.75% decrease nationwide. State-level group means suggested a significant average loss of 18 Title X entities per state (95% CI, −7.4829 to −27.9020; $p < 0.001$). The largest loss and gain in Title X entities were in VA (126 lost) and OR (82 gained). Moreover, state-level changes in Title X entities and abortions performed were statistically significantly correlated [$r(49) = 0.304$; $p = 0.0298$] and associated ($\beta = 0.023$; 95% CI, 0.003 to 0.044; Figure 2B): Reducing 100 abortions was associated with defunding two Title X entities.

Characteristics of gained Title X entities after review (April 2021)

From the review of *Dobbs* to date, the US has experienced a net gain of 1,036 Title X entities, composed of a 1,956 net gain from the review to the overturn and a 920 net loss from the overturn to date. This gain from the review to the overturn was mainly attributed to the November 2021 Biden-Harris Title X rule (29), consistent with the observed increase in early 2022 (Figure 1B). The 2021 Biden-Harris rule repealed the March 2019 Trump gag rule (30). The 2019 gag rule prohibited Title X entities from abortion referrals, disqualified those that practiced abortion, and required entities to encourage family participation in

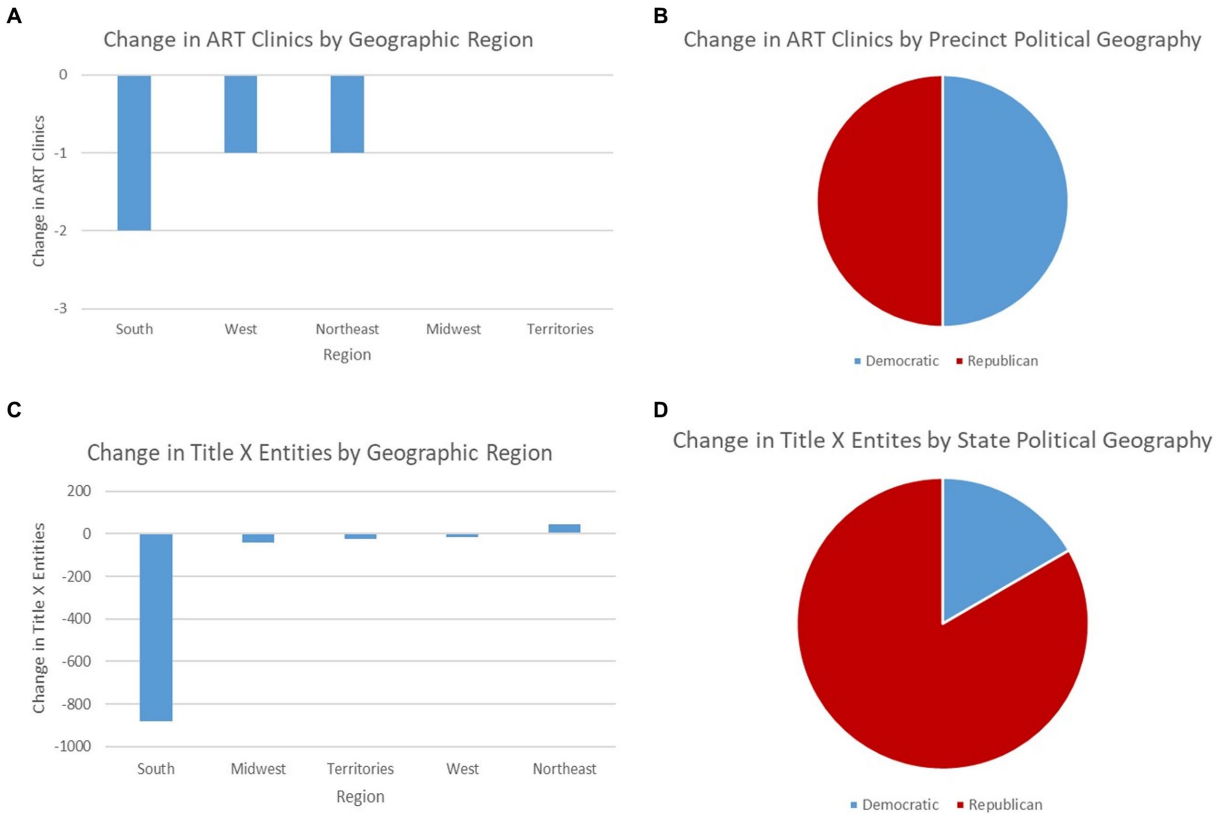

FIGURE 3
Pre-post *Roe* changes in ART clinics and Title X entities from the overturn to date (February 2023) by census region and political geography. **(A)** Change in ART clinics by census region. **(B)** Change in ART clinics by precinct political geography. **(C)** Change in Title X entities by census region. **(D)** Change in Title X entities by state political geography. **(A)** The number of closed ART clinics by census region from the overturn of *Roe* to date. All 495 ART clinics were extracted from the HHS-CDC 2020 ART annual report (20), and their operation status were manually collected for each clinic in the report. **(B)** The division of closed ART clinics by political geography. Authors located the precinct of each closed ART clinic using zip code within the Precinct-Level Returns 2020 by Individual State from the MIT Election Data and Science Lab (26) and determined which political party held the majority in the 2020 US presidential election. **(C)** The change in Title X entities by census region from the overturn of *Roe* to date. Data were extracted from the HHS-OPA Title X family planning monthly directory (19). **(D)** The division of changed Title X entities by political geography. Authors identified the state of changed Title X entities from the HHS-OPA Title X family planning monthly directory (19) and determined which political party held the majority in the 2020 US presidential election.

family planning decisions, among others (31). These requirements discouraged and disqualified entities from participating in Title X (32), consistent with the observed decrease in 2019 (Figure 1B).

Conversely, the 2021 Title X rule "remove[d] restrictions on nondirective options counseling and referrals for abortion services and eliminate[d] requirements for strict physical and financial separation between abortion-related activities and Title X project activities, thereby reversing the negative public health consequences of the 2019 regulations." It also required entities to supply comprehensive family planning options to meet patient demands. These requirements and HHS implementations, such as $256.6 million in grant funding in March 2022 (33), foster the growth of Title X entities, consistent with an observed increase from 4,258 in 2021 to 5,491 in May 2022 (Figure 1B).

Among the net gain of 1,956 entities from the review to the overturn, 875 were gained in the South (44.73%), 458 in the West (23.42%), 414 in the Northeast (21.17%), 186 in the Midwest (9.51%), and 23 in US territories (1.18%). Moreover, 1,178 entities were gained in states that voted Democratic in the 2020 presidential election (60.94%) and 755 in states that voted Republican (39.06%).

Characteristics of lost Title X entities after overturn (May 2022)

Conversely, from the overturn to date, the US has witnessed a net loss of 920 Title X entities, among which 880 were lost in the South (−95.65%), 43 in the Midwest (−4.67%), 23 in US territories (−2.50%), 16 in the West (−1.74%), and 42 were gained in the Northeast (4.57%). Moreover, 748 out of the 920 lost entities were in states that voted Republican in the 2020 presidential election (83.39%), disproportionately higher than the 49.02% of states that voted Republican and the 42.52% of US population residing in these states.

The federal judicial overturn of *Roe* resulted in the nationwide, state-level loss of Title X entities, likely through the mechanism of state abortion trigger laws taking effect immediately after the overturn as state-level barriers. Indeed, trigger laws in six states punish providers that "assist," "abet," or "employ any means to procure" abortion even out of the state; trigger laws in ten states criminalize and even felonize persons who attempt to or perform abortion (5). Such state trigger laws and their implementations did not comply with the 2021 Title X rule, resulting in the federal government discontinuing Title X funding to entities in these states (34).

Worsening challenges and future directions

Evidence uncovers four worsening challenges. Federal de-subsidization of Title X entities due to state-level barriers inevitably shifts contraceptive and preventive service costs to patients, especially low-income men and women in Southern and Western Republican-leaning states. Historically, fewer Title X entities resulted in "contraception deserts" (21), while losing Title X funding led entities to shift service costs to patients and was criticized by clinicians and administrators (35). Similarly, women's health center closures after 2011 state budget cuts increased the distance to the nearest center and decreased preventive care utilization among women of lower educational attainment (36). The post-*Roe* plunge in Title X entities can exacerbate limited contraceptive and preventive services access.

The descending trend since the mid-2010s and the recent closure of ART clinics and its positive association with the recent fall in abortions in Texas, Oklahoma, Arizona, and New York suggest decreasing patient access to fertility services in these states. Past closure of ART clinics was associated with service delays and cancelations (37). Patients with access often still need multiple ART cycles due to average low success rates. In 2020, only 79,942 births were produced out of the 326,741 total cycles performed, leaving a national success rate of 24.5% (20). Current closures can further exacerbate the overall decline in fertility (38).

Refusal of physicians to provide requested IVF treatment to socially infertile and fertile patients who prefer ART has historically been criticized. LGBTQ patients and single parents by choice have challenged ART clinics and state statutes for discrimination harmful to their reproductive health, such as in *Benitez v. North Coast Women's Care Medical Group (2008)* (39) and *Krupa v. The New Jersey State Health Benefits Commission (2018)* (40). The declining trend in and recent closure of ART clinics can aggravate longstanding income, gender, sexual orientation, and marital status inequities in accessing fertility services for diverse patient populations.

The fourth major challenge is a lack of disaggregated data to further quantify the magnitude of post-*Roe* impacts on non-abortion reproductive care demand, identify causal connections, and increase sample size at the county level, in addition to the supply trends and associations at the nationwide state level found in this article. National surveillance data on ART and abortion clinics have at least 2-year time lags (20), and the CDC only receives aggregate voluntary reports of the latter from state health agencies (23). The National Survey of Family Growth, last reported in 2019, has a small sample size of infertile individuals among married and cohabiting women only, excluding others, such as men and single and homosexual women. Administrative data limitations hinder the ability to estimate post-*Roe* impacts timely. Future efforts in data collection, causal inference, funding, and provider support are urgently needed to inform policy and protect non-abortion reproductive care access for diverse patient populations.

Conclusion

Administrative and manually-collected data have shown early national trends of decreases in ART clinics and Title X entities after the US Supreme Court accepted to review *Dobbs* and overturned *Roe*. Data, funding, and provider support should be ensured to inform policy and protect a broad spectrum of reproductive services access needed by diverse populations, including men and women, low-income individuals, single parents by choice, and biologically and socially infertile patients.

Author contributions

JZ: Conceptualization, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing, AZ: Data curation, Formal analysis, Investigation, Software, Visualization, Writing – review & editing. SP: Conceptualization,

Writing – review & editing. TQ: Conceptualization, Writing – review & editing. JC: Resources, Writing – review & editing. PH: Conceptualization, Resources, Writing – review & editing.

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Conflict of interest

SP was employed by Boston IVF, United States.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpubh.2024.1309068/full#supplementary-material

References

1. Santamaria K. *Privacy rights under the constitution: Procreation, child rearing, contraception, marriage, and sexual activity*. Washington, DC: Congressional Research Service (2022).

2. US Department of Health and Human Services (HHS). Know your rights: reproductive health are. HHS. Available at: https://reproductiverights.gov/

3. Skinner V. *State of Oklahoma, 316 U.S. 535*. Washington, D.C., USA: United States Reports (1942).

4. Dobbs V. *Jackson Women's health organization, 597 U.S.* Washington, D.C., USA: United States Reports (2022).

5. American Society for Reproductive Medicine (ASRM). (2022). State abortion rigger Laws. Washington, DC: ASRM. Available at: https://web.archive.org/web/20230209001127/https://www.asrm.org/globalassets/asrm/asrm-content/news-and-publications/dobbs/cpl-report_impact-of-state-trigger-laws-on-reproductive-medicine_final.pdf

6. McNutt M, Dzau V. (2022). Decision to overturn *Roe* v. Wade could worsen reproductive health in U.S. exacerbate health inequities. National Academy of Sciences. Available at: https://www.nationalacademies.org/news/2022/06/decision-to-overturn-roe-v-wade-could-worsen-reproductive-health-in-u-s-exacerbate-health-inequities

7. Murray P. *United States senate committee on health, education, labor, and pensions. Impacts of a post-roe America: The state of abortion policy after Dobbs*. Washington, DC: United States Senate (2022).

8. Executive Office of the President. *Executive order 14076: Executive order on protecting access to reproductive healthcare services*. Washington, DC: The White House (2022).

9. Rader B, Upadhyay UD, Sehgal NK, Reis BY, Brownstein JS, Hswen Y. Estimated travel time and spatial access to abortion facilities in the US before and after the *Dobbs v.Jackson Women's Health decision*. *JAMA*. (2022) 328:2041. doi: 10.1001/jama.2022.20424

10. Harris LH. Navigating loss of abortion services—a large academic medical center prepares for the overturn of *Roe* v. *Wade N Engl J Med*. (2022) 386:2061–4. doi: 10.1056/NEJMp2206246

11. Cohen IG, Daar J, Adashi EY. What overturning *Roe* v Wade may mean for assisted reproductive technologies in the US. *JAMA*. (2022) 328:15–6. doi: 10.1001/jama.2022.10163

12. American Society for Reproductive Medicine (ASRM). (2022). Concerned about *Roe* v Wade: take action…there is something you can do now! Right now! ASRM. Available at: https://web.archive.org/web/20230610010445/https://www.asrm.org/news-and-publications/news-and-research/announcements/concerned-about-roe-v-wade--take-actionthere-is-something-you-can-do-now-right-now/

13. Millner A, Heyen D. Prediction: the long and the short of it. *Am Econ J Microecon*. (2021) 13:374–98. doi: 10.1257/mic.20180240

14. Wilkinson B, Onwuzurike C, Bartz D. Restrictive state abortion bans — a reproductive injustice. *N Engl J Med*. (2022) 386:1197–9. doi: 10.1056/NEJMp2119364

15. U.S. Government Publishing Office. (1970) *Public Health Service Act, 42 U.S.C. 300 et seq*. Washington, D.C., USA: United States Statutes at Large.

16. Patrizio P, Albertini DF, Gleicher N, Caplan A. The changing world of IVF: the pros and cons of new business models offering assisted reproductive technologies. *J Assist Reprod Genet*. (2022) 39:305–13. doi: 10.1007/s10815-022-02399-y

17. American Society for Reproductive Medicine (ASRM). (2017). Is *in vitro* fertilization expensive? Reproductive facts. ASRM Available at: https://web.archive.org/web/20230403200052/https://www.reproductivefacts.org/faqs/frequently-asked-questions-about-infertility/q06-is-in-vitro-fertilization-expensive/

18. Weigel G, Ranji U, Long M, Salganicoff A. Coverage and use of fertility services in the U.S. Kaiser Family Foundation. Available at: https://www.kff.org/womens-health-policy/issue-brief/coverage-and-use-of-fertility-services-in-the-u-s/

19. Department of Health and Human Services. (2023). Title X directory archive. HHS Office of Population Affairs. Available at: https://opa.hhs.gov/grant-programs/archive/title-x-program-archive/title-x-directory-archive

20. Centers for Disease Control and Prevention. (2023). National ART surveillance. Centers for Disease Control and Prevention. Available at: https://www.cdc.gov/art/nass/index.html

21. Smith CW, Kreitzer RJ, Kane KA, Saunders TM. Contraception deserts: the effects of title X rule changes on access to reproductive health care resources. *Politics Gender*. (2022) 18:672–707. doi: 10.1017/S1743923X2100009X

22. Planned Parenthood. Here for a reason: 2020-2021 annual report. Planned Parenthood. Available at: https://cdn.plannedparenthood.org/uploads/filer_public/40/8f/408fc2ad-c8c2-48da-ad87-be5cc257d370/211214-ppfa-annualreport-20-21-c3-digital.pdf

23. Centers for Disease Control and Prevention (CDC). (2022). CDCs abortion surveillance system FAQs [internet]. CDC Available at: https://www.cdc.gov/reproductivehealth/data_stats/abortion.htm

24. Kirstein M, Dreweke J, Jones R, Philbin J. (2022). 100 days post-*Roe*: at least 66 clinics across 15 US states have stopped offering abortion care. Guttmacher Institute. Available at: https://www.guttmacher.org/2022/10/100-days-post-roe-least-66-clinics-across-15-us-states-have-stopped-offering-abortion-care

25. Society for Family Planning. (2023). #WeCount report [Internet]. Available at: https://doi.org/10.46621/143729dhcsyz

26. Harvard University. *Precinct-level returns 2020 by individual state (version 4) [Data Set]*. Cambrige, Massachussets, USA: MIT Election Lab. (2023).

27. Reshef E. (2023). Integris Henry G. Bennett Jr. Fertility Institute. Facebook. Available at: https://www.facebook.com/groups/127127937309524/about/

28. *An Act Relating to Abortion 2022 (OK)*. Oklahoma City, Oklahoma, USA: Oklahoma Statutes. (2022).

29. Darney BG, Biel FM, Hoopes M, Rodriguez MI, Hatch B, Marino M, et al. Title X improved access to most effective and moderately effective contraception in US safety-net clinics, 2016–18: study examines title X impact on access to contraception. *Health Aff*. (2022) 41:497–506. doi: 10.1377/hlthaff.2021.01483

30. Health and Human Services Department. (2021) *Ensuring access to equitable, affordable, client-centered, quality family planning services, 86 FR 56144 (codified at 42 CFR 59)*. Washington, D.C., USA: Office of the Federal Register.

31. Health and Human Services Department. (2019) *Compliance with statutory program integrity requirements, 84 FR 7714 (codified at 42 CFR 59)*. Washington, D.C., USA: Office of the Federal Register.

32. Kim E, Singh S, Bommaraju A, Norris AH, Bessett D. "We have to respect that option": the abortion aversion complex in safety-net healthcare organizations. *Soc Sci Med*. (2021) 291:114468. doi: 10.1016/j.socscimed.2021.114468

33. Department of Health and Human Services. (2022). *HHS awards $256.6 million to expand and restore access to equitable and affordable title X family planning services nationwide*. HHS. Available at: https://www.hhs.gov/about/news/2022/03/30/hhs-awards-256-million-to-expand-restore-access-to-equitable-affordable-title-x-family-planning-services-nationwide.html

34. Marcella J, Moore S. (2023). *DHS notice of Tennessee title X noncompliance*. Washington, DC, USA. Available at: https://www.scribd.com/document/637891144/DHS-notice-of-Tennessee-Title-X-noncompliance#

35. VandeVusse A, Mueller J, Kirstein M, Castillo PW, Kavanaugh ML. The impact of policy changes from the perspective of providers of family planning care in the US: results from a qualitative study. *Sex Reprod*. (2022) 30:2089322. doi: 10.1080/26410397.2022.2089322

36. Lu Y, Slusky DJ. The impact of women's health clinic closures on preventive care. *Am Econ J Appl Econ*. (2016) 8:100–24. doi: 10.1257/app.20140405

37. Malloy SM, Bradley DE. How much longer? Rates of ART delay or cancellation during the COVID-19 crisis. *Fertil Steril*. (2021) 116:e295. doi: 10.1016/j.fertnstert.2021.07.793

38. Centola GM, Blanchard A, Demick J, Li S, Eisenberg ML. Decline in sperm count and motility in young adult men from 2003 to 2013: observations from a US sperm bank. *J Androl*. (2016) 4:270–6. doi: 10.1111/andr.12149

39. Court of Appeal of California. (2005) *N. Coast Women's care med. Gr. v. Superior court, 134 Cal.App.4th 712, 37 Cal. Rptr. 3d 20 (Cal. Ct. App. 2005)*. Sacramento, California, USA: California Reports.

40. Krupa V. (2018) *N.J. Health benefits Comm'n, case no. 2:16-cv-4637-SDW-LDW (D.N.J. Jan. 23, 2018)*. Trenton, New Jersey, USA: New Jersey Superior Court Reports.

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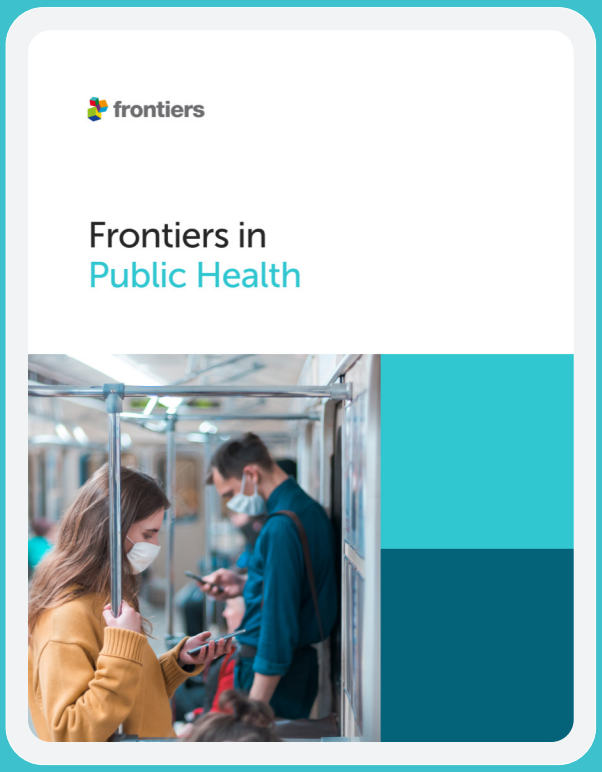

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