ORIGINAL RESEARCH

Distance Traveled for Abortion at a North Carolina Tertiary Care Center Following Restrictive Legislation

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BACKGROUND North Carolina enacted 5 statutes restricting abortion between 2011 and 2016. Our objective was to compare the proportion of women who traveled more than 25 miles to a Southern tertiary care center during 2 distinct time periods (2011 and 2017).

METHODS We conducted a time-series retrospective cohort study of women who obtained an abortion at University of North Carolina hospitals in 2011 and 2017. We collected data regarding residence, demographics, gestational age, indication, parity, and referral source. Our primary outcome was distance traveled from a person's residence to the study center.

RESULTS We enrolled 399 women, 139 in 2011 and 260 in 2017. In 2011, 72% (100 of 139) traveled more than 25 miles, compared with 75% (195 of 260) in 2017. Fewer women traveled greater than 100 miles from their residence to our clinic in 2011 (20%) compared to 2017 (26%). Fewer women from neighboring states were seen in 2011 than 2017 (p = .04). Women seeking abortion in 2011 were 4 times less likely to have been referred from a freestanding abortion clinic compared with women in 2017 (9% [13 of 139] versus 37% [96 of 260]).

LIMITATIONS The tertiary referral nature of our study limits generalizability. With 2 time-distinct cohorts, there may be factors that changed over the study period that remain unaccounted for.

CONCLUSIONS A similar proportion of women traveled more than 25 miles for abortion before and after the legislative changes. Our finding that more women traveled greater than 100 miles to obtain an abortion in 2017 compared to 2011 highlights a key burden to abortion access in North Carolina. The increased number of women seen from freestanding abortion centers and from neighboring states following the legislative changes highlights an important geographical burden potentially associated with strict abortion restrictions.

Between 2011 and 2016, North Carolina passed legislative restrictions that significantly increased barriers to abortion [1–8]. Five new laws established abortion waiting periods, initially set at 24 hours then increased to 72 hours [2]; restricted public insurance coverage [3]; increased physician paperwork burden [4]; and mandated counseling [9]. As the number of legal statutes restricting abortion increased in North Carolina and in surrounding states, the number of abortion clinics simultaneously decreased. From 2011 to 2017, the number of clinics declined in North Carolina from 21 to 14; a similar decline occurred in neighboring Virginia over the same period (21 to 16) [10, 11]. The impact of these clinic closures may play a significant role in increasing burden for women seeking abortion services [12], especially when considering travel burden.

Travel is one of several well-described barriers to obtaining needed abortion services [12–15]. Prior to a nationwide surge in legislation restricting abortion access, women traveled a mean distance of 30 miles to obtain an abortion [16]. Women living in rural areas, Southern or Midwestern states, and states with waiting periods are more likely to travel significantly further, often over 100 miles, to access abortion care [16, 17]. Limited studies highlight an increasing travel burden over the last decade in states that passed restrictive laws similar to those in North Carolina [18–21]. We hypothesized that, as restrictions increase, women seeking services at our tertiary care clinic must travel further to reach the clinic and receive abortion care. We sought to evaluate the proportion of women who traveled more than 25 miles to our tertiary level clinic during 2 distinct time periods: 2011 and 2017. Our evaluation during these 2 distinct time periods intends to account for access prior to the major legislative sessions in 2011 and 2015 that enforced many of the restrictive laws in North Carolina and access afterward.

Methods

We conducted a time-series retrospective cohort study of women who obtained an abortion at a tertiary referral center in North Carolina. The University of North Carolina Institutional Review Board approved this study.

We included all women who had an induced abortion at University of North Carolina hospitals. Women needing an abortion for all reasons and indications obtain care at the hospital clinic. All women completed their procedure in the clinic located within the hospital or in the hospital operating room. Labor induction terminations are rarely performed at this site and were not included. In-clinic procedures are

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performed using standard technique with suction curettage, typically with physician-administered moderate sedation and local anesthesia via paracervical block. Surgeons perform procedures in the operating room under monitored anesthesia care for patient preference reasons, significant comorbidities, or for second trimester gestation. All women complete a pre-procedure visit in the outpatient clinic.

We abstracted data from electronic health records and identified women using CPT codes, day of service, and treating attending physician. We extracted data regarding county of residence, demographics, gestational age, indication for procedure, number of prior live births (parity), and referral source through chart review. We calculated distance in miles from self-reported residence to the clinic at the time of the procedure. We used Geographic Information Systems (GIS) to obtain the one-way distance traveled from the reported residence to the study center. We divided one-way distance traveled into categorical variables (0–25, 26–50, 51–75, 76–100, and > 100 miles) to match previously published literature on distance traveled for abortion [14, 16, 18, 19, 22, 23].

We defined our primary outcome as distance traveled, which we described by distance in miles between reported residence and clinic location and reported as a dichotomous variable of more than, less than, or equal to 25 miles. We defined the 2 time periods as October 1, 2010, to September 30, 2011, and October 1, 2016, to September 30, 2017, to measure characteristics before and after the enactment of several aforementioned policy changes. We selected these 2 12-month time periods for evaluation in order to exclude the period of rapid policy changes within the intervening time gap. Our convenience sample included all women who had abortions at our facility in the 2 time frames of interest. We compared women in the 2 time-distinct cohorts using the Pearson's chi-squared test for categorical variables, the Student's t-test, and the Mann-Whitney U test for continuous variables.

Results

We identified 139 women in 2011 and 260 women in 2017 who underwent abortions at our facility. Demographic characteristics, including race/ethnicity, gestational age and parity were similar between the 2 cohorts (Table 1). Our primary outcome—the proportion of women traveling greater than 25 miles—was similar between the 2 groups (p = .47). While this proportion was similar, among those traveling over 25 miles, women in 2017 traveled a significantly greater number of miles compared to 2011 (p = .01). Notably, 65 women (26%) traveled more than 100 miles in 2017 compared to 28 women (20%) in 2011. Maximum miles traveled differed between the study years, reported as 290 miles in 2011 and 420 miles in 2017. Our clinic saw more women from neighboring states in 2017 than 2011 (p = .04). We did not note a difference in gestational age by distance traveled.

An unexpected finding in our study was that more women were referred to our clinic in 2017 from freestanding health centers that provide abortion. In 2011, 9% of women (13 of 139) were referred from a freestanding health center that provides abortion to our clinic, compared to 37% (96 of 260) in 2017.

Discussion

We found a similar proportion of women traveled more than 25 miles to our clinic in 2011 and in 2017. However, a greater number of women traveled over 100 miles to our clinic in 2017 compared to 2011. More women seeking care in 2017 traveled from out of state to obtain an abortion at our study center compared to 2011. A significantly greater proportion of our population came from a freestanding health center referral in 2017 as compared to 2011.

The change in the referral pattern noted between 2011 and 2017 may reflect a strain on freestanding abortion clinics in light of stricter abortion laws as well as the landscape of abortion availability in nearby states. The number of abortion clinics in the state dropped over this time period while the abortion rate remained stable [10, 11]. Possibly, the clinics that did remain open were unable to absorb an influx of patients and referred more women to our tertiary care facility. Additionally, the increased paperwork and legal reporting requirements instituted during this time period may have encouraged freestanding abortion clinics to lower their tertiary care clinic referral threshold for complex patients, such as young adolescent patients or those with comorbidities [9, 24]. Virginia and South Carolina enacted several new restrictions on abortion over this same time period, perhaps accounting for the increased number of out-of-state patients accessing abortion care in North Carolina in 2017 [25]. Our finding that more women traveled greater than 100 miles to obtain an abortion in 2017 compared to 2011 highlights a key burden to abortion access in North Carolina. Previous studies demonstrated that a notable travel burden may compound the effects of other access barriers, resulting in care delays, detrimental mental health impacts, and consideration of self-induced abortion [12, 13]. Women traveling greater distances to obtain an abortion are more likely to seek subsequent care at an emergency department, resulting in significant costs and time burdens [14]. Following the implementation of new abortion care restrictions in Texas, the resultant travel burden was associated with greater out-of-pocket costs, increased perceived hardship, and an increased demand for medication abortion that clinics were unable to meet [26]. Women traveling over 100 miles to obtain an abortion in North Carolina may experience similar barriers to care given a similar large rural population, hostile abortion regulations, and geographic disparities in abortion access [1, 27]. Abortion-related stigmas may have also increased in North Carolina as restrictive legislation increased statewide from 2011 to 2016. In Alabama, another Southern state with strict abortion laws, women describe bypassing their closest clinic due to fear of recognition

TABLE 1.
Demographic Characteristics of Women Receiving Abortion Services at a Southern Tertiary Hospital

	2011 (N = 139)			2017 (N = 260)			
	N	(%)	Q [1st, 3rd]	N	(%)	Q [1st, 3rd]	*P*-value
Age	26		[21, 33]	28		[23, 34]	.20
Race / Ethnicity		–			–		.92
Non – Hispanic White	49	(35)		97	(37)		–
Hispanic	10	(7)		15	(6)		–
Non – Hispanic Black	63	(45)		114	(44)		–
Other race, including multiracial	17	(12)		34	(13)		–
Gestational Age (Weeks)	16		[10, 19]	15		[10.5,19]	.35
Gravidity	2		[1, 4]	3		[1, 4]	.26
Parity	1		[0, 2]	1		[0, 2]	.13
Indication for Abortion		–			–		.01[a]
Fetal Anomaly	39	(28)		39	(15)		–
Maternal Health	8	(6)		25	(10)		–
Legal Abortion	84	(60)		186	(72)		–
Rape	7	(5)		10	(4)		–
Incest	1	(1)		0	(0)		–
Type of Abortion Procedure		–			–		.44
Medication Abortion	0	(0)		4	(2)		–
Vacuum Aspiration	64	(46)		112	(43)		–
Dilation and Evacuation	76	(54)		144	(55)		–
Referral Source		–			–		.00[a]
Specialist OB-GYN Practice	24	(17)		28	(11)		–
Sub-Specialty Maternal Fetal Medicine	27	(19)		43	(16)		–
Family Medicine Practice	4	(3)		7	(3)		–
Freestanding Health Center	13	(9)		96	(37)		–
Other MD Referral	63	(45)		72	(28)		–
Self	6	(4)		5	(2)		–
Other	4	(3)		10	(4)		–
State of Residence		–			–		.04[a]
North Carolina	136	(98)		237	(91)		–
Virginia	0	(0)		8	(3)		–
South Carolina	2	(1)		12	(5)		–
Other	2	(1)		3	(1)		–
Number of Miles Between Residence to Clinic		–			–		.01[a]
0 – 25	39	(28)		65	(25)		–
26 – 50	32	(23)		67	(26)		–
51 – 75	35	(25)		36	(14)		–
76 – 100	5	(4)		25	(10)		–
> 100	28	(20)		67	(26)		–

Note. Data represented as the number N, the percentage (%), and the median [1st, 3rd quartiles] where applicable.
[a]The Mann-Whitney U-test was used for nonparametric variables.

within their community [18]. Thus, concerns about abortion stigmas may have led North Carolinians to seek services far away from their home community [28, 29].

A key strength of our study is that it describes abortion services at 1 academic center in a Southern state with a political climate hostile to abortion. Our study has several limitations. We are unable to detect the reasons for the observed findings given the descriptive nature of the study. With 2 time-distinct cohorts, there may be other factors that changed over the study period that impacted the observed differences between the cohorts for which we were unable to account. Our data only capture women who obtained abortions and do not include those who were unable to present for care due to travel burden or other barriers. Our study does not capture women who may have traveled out of state to obtain care. The tertiary referral nature of our study population limits generalizability to rural and community clinics. This tertiary referral center provides few medication abortions, likely due to the cost differential with the nearby freestanding clinic, and few induction terminations, further limiting generalizability of this study. Additionally, our data is limited to a single facility. We hypothesized that women who

traveled further, particularly from South Carolina, would be at later gestational ages given the existing limited availability of second-trimester procedures in South Carolina [30]. However, our study was underpowered to detect a difference in gestational age by distance traveled.

Conclusion

Our study is the first study to specifically evaluate the travel burden in the state of North Carolina in light of recent legislative changes. While evidence describing abortion access in other restrictive states may highlight certain commonalities, the results from studies in different states are not truly generalizable state to state. Population distribution, demographics, and legislative restrictions vary widely between states and must be examined separately to truly understand the barriers to abortion access. This study helps to build a framework for local legislative advocacy by demonstrating that stricter barriers to abortion are associated with greater geographical burdens. With vulnerable populations disproportionately affected by travel for care, policy changes that decrease travel burden represent an important part of the fight for reproductive justice [12]. NCMJ

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