Trends in the Use of Emergency Medical Services for Reproductive Emergencies in the United States

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Abstract

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Following the 2022 Supreme Court ruling in *Dobbs v. Jackson Women's Health Organization*, access to reproductive healthcare has become increasingly fragmented. With this decreased access comes potentially increased risk of reproductive complications requiring emergency medical treatment. This cross-sectional descriptive study used data from the National Emergency Services Information System from 2019 and 2023 to compare EMS activations for reproductive complaints before and after the *Dobbs* ruling. For both years, reproductive complaints were most common among Black/African American patients. Such complaints were also most common in the South Census Region, with the West South Central division having the largest increase in proportion of reproductive activations with abortion-related complaints, as identified using ICD-10 codes. In tandem with other research, these results point toward a greater need to prepare EMS providers to care for reproductive emergencies.

Background

The 2022 ruling in *Dobbs v. Jackson Women's Health Organization* gave states control over reproductive healthcare and has led to fragmented and unequal access to vital health services. As of May 2025, 12 states have fully outlawed abortion, and another 6 states have gestational limits between 6 and 12 weeks after the patient's last menstrual period (Figure 1).[1] Of these 18 states, 6 do not provide exemptions if a pregnancy threatens the health of the mother and 10 do not have exemptions if the fetus is found to have a fatal anomaly (Figure 1).[1] The guidelines regarding when physicians may intervene to provide an abortion are often unclear. In particular, emergency physicians must decide if the life of the birthing person is immediately threatened or permanent and irreparable harm to their patient is likely if the pregnancy is not terminated and consider potential legal consequences if their judgment is questioned.[2] Several cases have been reported where emergency physicians must "wait for [the patient's] condition to deteriorate substantially before they can legally receive a medically indicated abortion.

To understand the crucial interactions between abortion restrictions and access to reproductive healthcare and emergency medical treatment, we must consider the social determinants of health including the role that race and ethnicity, urbanicity, and socioeconomic status play in reinforcing disparities in access to reproductive health care and how they may be amplified by state-specific policies.[3] These barriers contribute to decreased engagement in prenatal and gynecologic care, increased rates of unintended pregnancy, and increased likelihood of requiring abortion care.[4] Patients experiencing human trafficking or intimate partner violence are also at increased risk of complications due to reproductive coercion, decreased freedom of movement to seek care, and violence during pregnancy.[5] Reduced access to reproductive health care has led to concerns that there will be a surge in unsupervised or self-managed abortions

where patients receive medication for early intervention from a provider (often via telehealth), that increase the risk that women face when terminating a pregnancy.[5] The uncertainty that women and their health providers now face when considering an abortion may also lead to delays in appropriately supervised procedures that increase risks to the woman's health: one study found that morbidity rates increase by 20% when an abortion is delayed from 8 to 12 weeks of gestational age, with the magnitude of risk increasing further into the gestational period.[6]

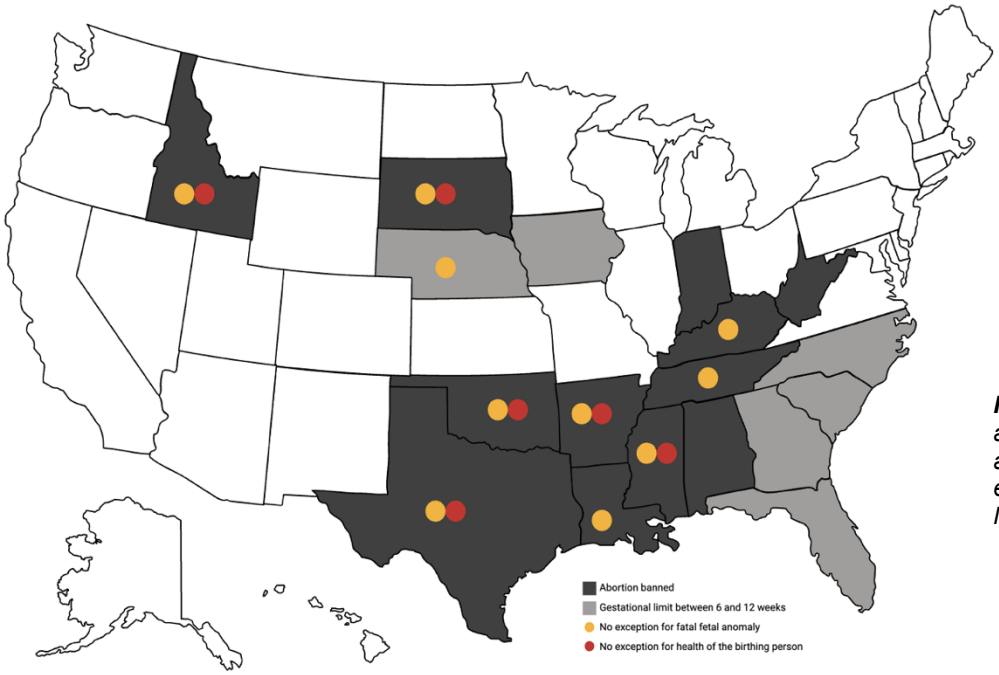

Figure 1. *States with abortion restrictions and associated exemptions as of May 2025.*

The impacts of abortion bans are not isolated to the states in which they have been enacted but also affect neighboring states that have not interfered with reproductive health rights. Following the Dobbs decision, Idaho enacted strict abortion regulations while neighboring Washington State increased its protection of reproductive freedoms. A 2024 study of reproductive health care clinics in Western Washington found that, following these legislative changes, the clinics performed 6 more procedural abortions each week on average, and these

abortions typically occurred 8 days later in gestation compared to clinic operations before Idaho's changes.[7] This delay could make patients ineligible for less invasive abortion interventions, or ineligible for any form of abortion, depending on the state.[8] It may also increase the risk of complications and negatively impact patients' psychological wellbeing.[7,9]

Taking these many factors into consideration, EMS and ED operations are likely to be impacted by state specific restrictions on reproductive health. However, as this situation is still developing, there has been little work done to quantify the issue. It is crucial to quantify the impact of these changes on EMS to prepare healthcare workers and administrators to appropriately treat patients experiencing reproductive emergencies.

Methods

Data Source

This study used the National Emergency Medical Services Information System (NEMSIS) public datasets from 2019 and 2023. NEMSIS is sponsored by the National Highway Traffic Safety Administration's Office of Emergency Medical Services (EMS), which collects standardized EMS data from participating states and territories and makes de-identified individual level data available for research purposes. The 2019 data included 47 states and territories with 34,203,087 EMS activations while the 2023 dataset had 54 jurisdictions with 54,190,579 activations.[10,11] Delaware, Hawaii, Idaho, Missouri, Nebraska, Ohio, and the Mariana Islands were included in 2023, though they were not in the 2019 dataset (Figure 2). The primary analytic variables are the incident date (eTimes.03), patient race (ePatient.14) and age (ePatient.15), insurance type (ePayment.01), primary symptom based on ICD-10-CM codes (eSituation.09). To protect patient confidentiality, the specific incident and destination state are masked in the NEMSIS data.

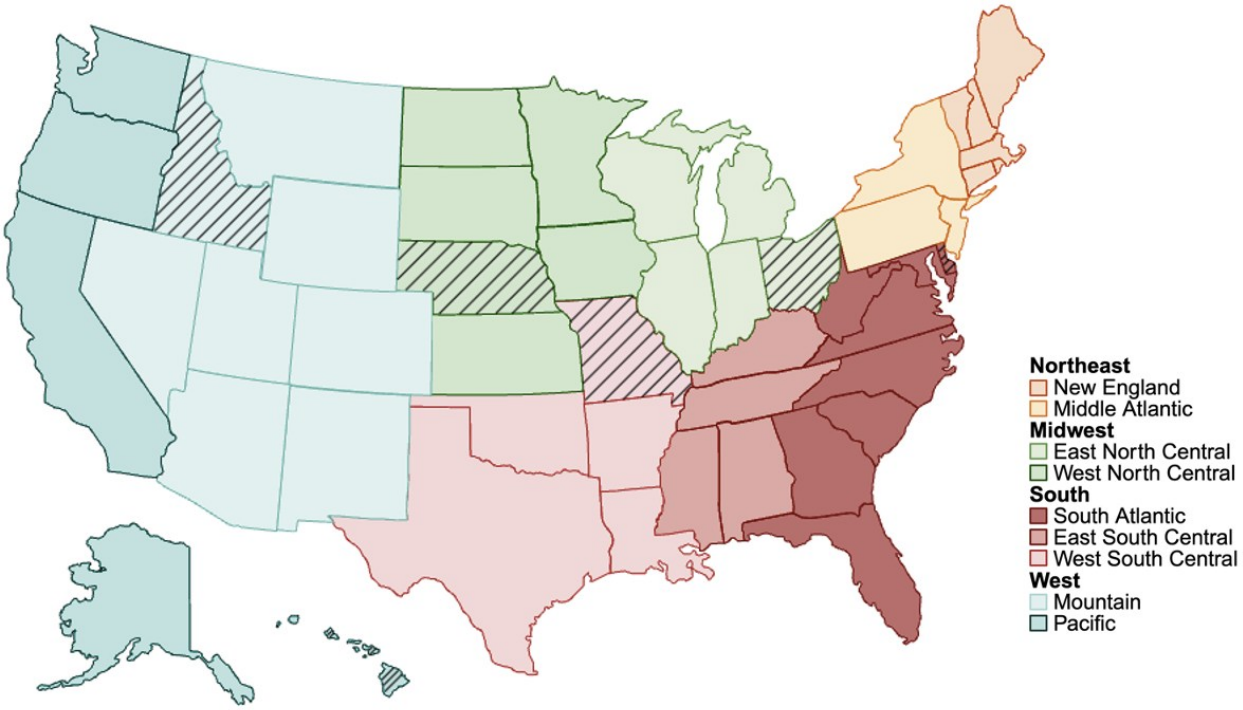

Figure 2. *Map of the United States Census Regions and Divisions. States with diagonal black lines (Delaware, Hawaii, Idaho, Missouri, Nebraska, and Ohio) were included in the 2023 NEMSIS dataset but not the 2019 dataset. The Mariana Islands were also added in 2023, but U.S. Territories are not pictured here.*

Study Design

To quantify trends in EMS usage among patients experiencing reproductive emergencies in the United States, we used both national and regional-level data to compare the proportions of EMS cases with reproductive complaints. Incidents of reproductive complaints were determined using the ICD-10-CM "O" category, which encompassed pregnancy, childbirth, and the puerperium. All cases with codes O00-O99.89 were included. Conditions covered by this range of codes include pregnancy with abortive outcome, supervision of high-risk pregnancy, complications of labor and delivery, encounter for delivery, and maternal care related to the fetus and amniotic cavity and possible delivery problems. Since the *Dobbs* decision impacts abortion access, it is reasonable to use these codes under the assumption that parties most affected would be at any stage of pregnancy.

Cases within the O9A subcategory were excluded due to the external, non-reproductive complaints captured by these codes. These complaints include maternal malignant neoplasms, injuries and abuse classified elsewhere in the ICD-10-CM but complicating pregnancy, childbirth, and the puerperium.

While all "O" codes are valuable for identifying EMS activations for reproductive complaints, we also isolated codes tied to abortion and abortion-related services, as identified in guides published by Health Net of California and the Centers for Medicare and Medicaid Services. Based on these guides, O00, O03, O04, O07, and O20 and their subcategories were extracted as potentially related to unsafe or self-managed abortion or delayed abortion.[12,13]

Results

In total, there was a 58.44% increase in all EMS activations between 2019 and 2023. There were 43,459 EMS activations for reproductive complaints in 2019 and 58,910 activations for reproductive complaints in 2023. This represents a 35.55% increase in activations for reproductive complaints. However, due to the increase in overall EMS activations being greater than the increase in reproductive-specific activations, the period prevalence of reproductive EMS activations decreased from 127.06 per 100,000 EMS activations in 2019 to 108.71 per 100,000 activations in 2023.

Demographics

Among all EMS activations, White patients made up the largest demographic served in both 2019 and 2023 (44.25% of all activations in 2019, 45.40% of all activations in 2023) (Table 1). The second most-served demographic was Black/African American patients (17.48% of all activations in 2019, 16.68% of all activations in 2023) and the third was Hispanic/Latinx patients (9.1% of all activations in 2019, 13.0% of all activations in 2023). This differs from the national

racial composition, as the 2020 US Census reported the country is 57.8% White, 18.7% Hispanic/Latinx, and 12.1% Black/African American.[14] The average age of patients increased from 56.95 years (std. deviation of 23.5 years) in 2019 to 57.82 years (std. deviation of 23.3 years) in 2023 (difference of 0.87 years).

Table 1. *EMS activations stratified by racial identity of the patient.*

	2019					2023					
	All EMS		*Reproductive Complaint*		Prevalence	*All EMS*		*Reproductive Complaint*		Prevalence	Prevalence Difference
	Total (*N=34,203,087*)	%	Total (*N=43,459*)	%	(per 100,000 activations)	Total (*N=54,190,579*)	%	Total (*N=58,910*)	%	(per 100,000 activations)	(per 100,000 activations)
RACE											
American Indian/Alaskan Native	219,844	0.6%	879	2.1%	399.83	352,236	0.6%	1,076	1.8%	305.48	-94.35
Asian	322,257	0.9%	455	1.1%	141.19	682,713	1.3%	912	1.6%	133.59	-7.60
Black/African American	5,855,433	17.1%	16,989	40.1%	290.14	9,041,151	16.7%	21,864	37.1%	241.83	-48.31
Hispanic/Latinx	2,040,163	6.0%	3,843	9.1%	188.37	3,919,334	7.2%	7,664	13.0%	195.54	7.17
Native Hawaiian/Pacific Islander	65,856	0.2%	149	0.4%	226.25	142,691	0.3%	301	0.5%	210.95	-15.30
White	14,822,633	43.3%	12,885	30.4%	86.93	24,603,115	45.4%	19,918	33.8%	80.96	-5.97
Not Reported	10,876,901	31.8%	8,259	19.0%	24.15	15,449,339	28.5%	7,175	12.2%	13.24	-10.91

For both years, activations for reproductive complaints were most common among Black/African American patients (40.09% in 2019, 37.11% in 2023), followed by White patients (30.41% in 2019, 33.81% in 2023). However, the prevalence of reproductive complaints out of all EMS activations was greatest among American Indian/Alaskan Natives (399.83 per 100,000 activations in 2019, 305.48 per 100,000 activations in 2023). While most racial categories saw a slight decrease in prevalence from 2019 to 2023, Hispanic/Latinx patients increased in prevalence by 7.18 cases per 100,000 EMS activations (Table 1). Among all reproductive-specific EMS activations, the average age increased from 26.79 (std. deviation of 8.2 years) in 2019 to 27.38 (std. deviation of 8.5 years) in 2023 (difference of 0.59 years).

Geographic Trends

When analyzing trends in EMS usage between census divisions, it is important to note that only four divisions remained the same between 2019 and 2023: East South Central, Middle Atlantic, New England, and West South Central. All other divisions were missing states in 2019.

All four divisions saw slight increases in EMS activations; however, the New England and Middle Atlantic divisions saw the most substantial ones at 171.29% and 124.83% respectively. In both 2019 and 2023, the South Census Region had the greatest number of activations out of all regions (49.73% in 2019, 42.72% in 2023). Most activations were in urban areas (82.79% in 2019, 84.72% in 2023) (Table 2).

Table 2. *Geographic distribution of EMS activations.*

	2019					2023					
	All EMS		*Reproductive Complaint*		Prevalence (per 100,000 activations)	*Reproductive Complaint*		*All EMS*		Prevalence (per 100,000 activations)	Prevalence Difference (per 100,000 activations)
	Total (*N=34,203,087*)	%	Total (*N=43,459*)	%		Total (*N=58,910*)	%	Total (*N=54,190,579*)	%		
URBANICITY											
Rural	2,300,628	6.7%	2,957	6.8%	128.53	4,030	6.8%	3,295,281	6.1%	122.30	-6.23
Suburban	1,951,080	5.7%	2,386	5.5%	122.29	3,354	5.7%	2,958,367	5.5%	113.37	-8.92
Urban	28,316,781	82.8%	35,905	82.6%	126.80	49,459	84.0%	45,911,748	84.7%	107.73	-19.07
Wilderness	592,226	1.7%	1,215	2.8%	205.16	1,239	2.1%	793,181	1.5%	156.21	-48.95
Not Reported	1,042,372	3.0%	996	2.3%	95.55	828	1.4%	1,232,002	2.3%	67.21	-28.34
CENSUS DIVISION											
New England	1,241,581	3.6%	1,189	2.7%	95.76	1,943	3.3%	3,368,244	6.2%	57.69	-38.08
Middle Atlantic	3,003,284	8.8%	3,872	8.9%	128.93	10,258	17.4%	6,752,360	12.5%	151.92	22.99
East North Central	3,316,090	9.7%	4,402	10.1%	132.75	9,754	16.6%	7,014,910	12.9%	139.05	6.30
West North Central	1,540,484	4.5%	2,524	5.8%	163.84	4,500	7.6%	2,913,363	5.4%	154.46	-9.38
South Atlantic	10,413,854	30.4%	13,661	31.4%	131.18	15,208	25.8%	14,747,954	27.2%	103.12	-28.06
East South Central	1,870,814	5.5%	2,769	6.4%	148.01	4,499	7.6%	3,053,385	5.6%	147.34	-0.67
West South Central	4,202,962	12.3%	6,949	16.0%	165.34	6652	11.3%	5,053,415	9.3%	131.63	-33.70
Mountain	2,892,622	8.5%	4,089	9.4%	141.36	3664	6.2%	3,492,196	6.4%	104.92	-36.44
Pacific	4,735,738	13.8%	3,978	9.2%	84.00	2422	4.1%	6,948,883	12.8%	34.85	-49.15

Most reproductive EMS activations occurred among urban populations (82.62% in 2019, 83.96% in 2023) and in the South Census Region (53.80% in 2019, 44.74% in 2023). The prevalence of reproductive emergencies increased most substantially in the Middle Atlantic Census Division (22.99 per 100,000). While the period prevalence for these complaints was greatest in the West South Central division in 2019 (165.34 per 100,000), the West North Central division had the greatest prevalence in 2023 (154.56 per 100,000). The Pacific division had the greatest decrease, declining by 49.15 per 100,000 activations. (See Figure 2 for map of Census Regions and Divisions.)

Of the four Census Divisions with the same state composition in both 2019 and 2023 NEMSIS datasets, all four saw increases in the percentage of abortion-related complaints within

the overall group of reproductive EMS activations, with the West South Central division having the largest increase from 10.07% to 15.32% (Table 3).

Table 3. *EMS activations for reproductive complaints divided by abortion-related ICD-10 code and Census Division.*

ICD-10-CM Code Categories	New England		Middle Atlantic		East South Central		West South Central	
	2019 *(N=1189)*	2023 *(N=1943)*	2019 *(N=3872)*	2023 *(N=10258)*	2019 *(N=2769)*	2023 *(N=4499)*	2019 *(N=6949)*	2023 *(N=6652)*
O00. Ectopic Pregnancy	64	59	0	6	0	1	0	9
O03. Spontaneous Abortion	4	61	47	139	129	256	337	541
O20. Hemorrhage in early pregnancy	12	66	56	137	172	308	363	469
All other reproductive cases	1109	1757	3769	9976	2468	3934	6249	5633
Percent of eproductive cases with high suspicion for abortion-related complaint	6.73%	9.57%	2.66%	2.75%	10.91%	12.56%	10.07%	15.32%

Service Trends

Over half of all EMS activations for both 2019 and 2023 did not report a method of payment for their patients. However, of the half that did report, the proportion of patients reporting private insurance, Medicaid, Medicare, or self-pay/no insurance remained roughly equivalent between the two years (Table 4).

Table 4. *EMS activations stratified by service level dispatched and insurance coverage of the patient.*

	2019					2023					
	All EMS		*Reproductive Complaint*		Prevalence (per 100,000 activations)	*All EMS*		*Reproductive Complaint*		Prevalence (per 100,000 activations)	Prevalence Difference (per 100,000 activations)
	Total *(N=34,203,087)*	%	Total *(N=43,459)*	%		Total *(N=54,190,579)*	%	Total *(N=58,910)*	%		
SERVICE LEVEL											
ALS	6,725,322	19.7%	13,890	32.0%	206.53	8,790,864	16.2%	10,376	17.6%	118.03	-88.50
BLS	6,740,719	19.7%	4,122	9.5%	61.15	9,908,392	18.3%	9,899	16.8%	99.91	38.75
Air Transport	128,424	0.4%	84	0.2%	65.41	217,032	0.4%	353	0.6%	162.65	97.24
Other	102,810	0.3%	696	1.6%	676.98	209,052	0.4%	885	1.5%	423.34	-253.64
Not Reported	20,505,812	60.0%	24,667	56.8%	120.29	35,065,239	64.7%	37,397	63.5%	106.65	-13.64
INSURANCE COVERAGE											
Private Insurance	3,614,567	10.6%	6,358	14.6%	175.90	6,804,291	12.6%	11,006	18.7%	161.75	-14.15
Medicaid	1,335,929	3.9%	7,435	17.1%	556.54	1,748,237	3.2%	6,288	10.7%	359.68	-196.86
Medicare	3,699,278	10.8%	468	1.1%	12.65	4,102,427	7.6%	370	0.6%	9.02	-3.63
Self Pay/No Coverage	4,336,735	12.7%	7,709	17.7%	177.76	7,248,920	13.4%	11,184	19.0%	154.29	-23.48
Other	1,933,476	5.7%	2,195	5.1%	113.53	2,474,309	4.6%	1,777	3.0%	71.82	-41.71
Not Reported	19,283,102	56.4%	19,294	44.4%	100.06	31,557,416	58.2%	28,285	48.0%	89.63	-10.43

Of all reproductive emergency activations with a recorded service payment in 2019, 17.11% relied on Medicaid to cover the costs associated with their medical care. However, in 2023, this was down to 10.67%. Meanwhile, patients reported as self-pay or no insurance coverage increased from 17.74% in 2019 to 18.98% in 2023 and those with private insurance increased from 14.63% to 18.68%. The use of air transport, for both plane and helicopter crews,

increased for reproductive emergencies by 97.24 per 100,000 EMS activations and ALS transports decreased by 88.50 per 100,000 (Table 4).

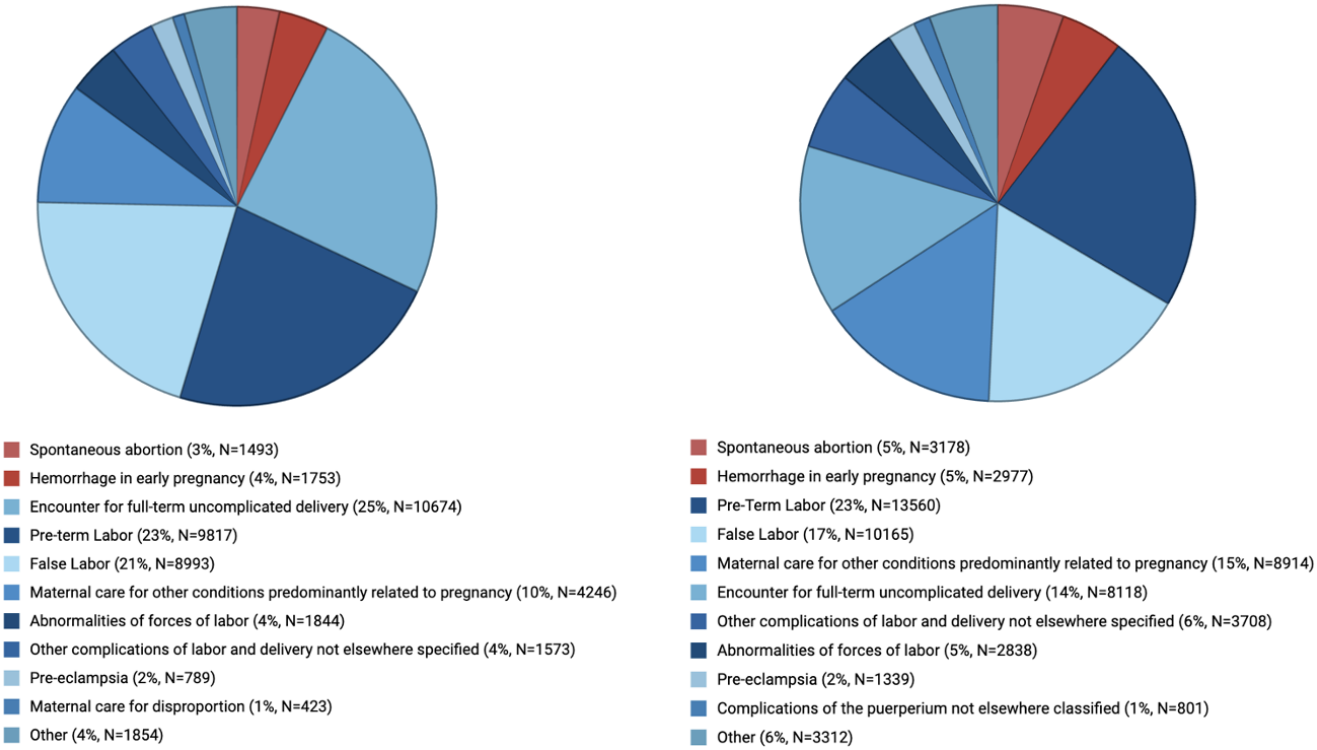

Figure 3. *Most common ICD-10-CM codes among EMS activations with reproductive complaints. Codes in red are associated with abortion-related care.*

Discussion

Following the Dobbs decision, many papers and media articles were published discussing concerns that it would exacerbate the preexisting disparities in abortion access and maternal mortality. This study quantifies the use of EMS services among patients experiencing reproductive complaints with the goal to inform prehospital care, training, and policy moving forward.

Although we were unable to analyze data on the state-level, four of the census divisions were unchanged in their composition. The New England and Middle Atlantic divisions represent groups of states which have upheld abortion protections following the *Dobbs* decision, while the

East South Central and West South Central divisions enacted strict abortion bans. Of the four, only the Middle Atlantic division had an increase in prevalence of reproductive-specific EMS activations (prevalence difference of 22.99 per 100,000 activations). However, there have been reported instances of patients traveling to neighboring states to seek abortions or healthcare providers prompting patient transfers across state lines to seek care.[7,8] Without greater patient detail, we cannot determine whether the change in EMS activations may be linked to such patient movement.

It has been well-established that disparities exist in who seeks abortion care; women of color and lower socioeconomic status are significantly more likely to seek abortions, although the mechanism of this relationship is not clear.[4] This trend is supported in this study as Black/African American patients make up the largest proportion of EMS activations for reproductive care by racial group (40.09% of reproductive-specific activations in 2019, 37.11% of reproductive-specific activations in 2023), although they made up only 16.68% of all EMS activations in 2023. Pairing this with the knowledge that maternal mortality rates in the United States have been particularly high among this population, it is reasonable to assume that the care gaps which contribute to high maternal mortality also contribute to greater reliance on EMS for reproductive care. However, this mechanism merits further investigation.

Limitations

By using data specific to prehospital care, this study fails to cover the larger population of birthing people who may arrive to hospital emergency departments without accompanying paramedics or EMTs. However, as this is a rapidly evolving issue, there was no other publicly available data with which to quantify this larger population. The change in the states and

territories included in the NEMSIS datasets from 2019 and 2023 pose a challenge to determine *where* EMS care for reproductive complaints may have had the greatest change.

The NEMSIS dataset, while extremely useful, has limitations in its collection strategy as well. The organization requests specific data points be included but those may be skewed based on data collection practices of each reporting jurisdiction. Moreover, the collection practices of individual EMS providers may shift what is reported. If one agency is trained to collect information in the descriptive section of a report rather than drop-down options, the information gathered from those reports will be different.

Future Considerations

A recent study noted that a majority of paramedics reported infrequently dealing with labor and delivery or antenatal complications such as trauma.[15] Moreover, these participants reported a lack of confidence in their ability to manage such situations.[15] Although EMS activations for reproductive complaints accounted for only 0.13% of all activations in 2019, these cases are often complex and require continued education and training for EMS providers to treat patients.[15]

The most efficient action to protect patients from reproductive complications would be to support comprehensive access to reproductive care at all stages of pregnancy. In this charged political climate, this is a matter that will require extensive time and resources to change. While such work is being done, it is crucial to prepare EMS providers to care for patients to the best of their abilities to improve patient outcomes and provider self-efficacy.

Conclusion

As the political landscape surrounding reproductive care and abortion access evolves, it is crucial to continue evaluating the prevalence of EMS cases requiring reproductive care to ensure

providers are adequately trained and prepared to respond. Patients are experiencing increased barriers to abortion care, such as the need to travel or wait for appointments, which may increase their reliance upon EMS providers. This presents the opportunity for further work to determine the burden of reproductive emergencies on EMS.

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