Sterilization Rates of Pregnancy-Capable People at a Single Institution in Wisconsin Before and After *Dobbs v Jackson Women's Health Organization*

Camille Phillips, BS; Jeannette Larson, MD; Amy Godecker, PhD, MS; Laura Jacques, MD; Laura Hanks, MD

ABSTRACT

Introduction: On June 24, 2022, the United States Supreme Court decided *Dobbs v Jackson Women's Health Organization* (*Dobbs*), overturning *Roe v Wade* and banning abortions in almost all circumstances in Wisconsin. We tested the hypothesis that the rate of interval tubal sterilizations in people capable of pregnancy increased after the *Dobbs* decision.

Methods: We conducted a retrospective cohort study of all pregnancy-capable patients ages 18 to 55 years old who underwent interval surgical sterilization at an academic hospital in Wisconsin from June 24, 2016, through June 23, 2023. We defined the annual sterilization rate by dividing the number of sterilizations by total gynecologic surgeries performed each year. We compared the annual rates of interval surgical sterilization in the 6 years prior to the *Dobbs* decision to the year following the *Dobbs decision*.

Results: There were 1088 interval tubal sterilization procedures for pregnancy-capable people during the study period. The sterilization rate increased from 4.6% to 8.1% ($P < .001$) from the year before the *Dobbs* decision to the year after. In the 6 years prior to *Dobbs*, 23.6% of patients receiving sterilizations were aged 20 – 29, compared to 35% post-*Dobbs* ($P < .001$). Patients who were nulligravid (never been pregnant) increased from 23.0% in the 6 years pre-*Dobbs* to 54.7% post-*Dobbs* ($P < .001$). Similarly, 28.0% of patients pre-*Dobbs* were nulliparous (never had a live birth) versus 60.4% post-*Dobbs* ($P < .001$).

Conclusions: There was an increase in the rate of interval sterilization procedures for pregnancy-capable people – particularly among younger and nulliparous patients – at a single academic institution in Wisconsin in the year following the *Dobbs* decision.

INTRODUCTION

Provision of contraceptive and abortion care throughout the United States has changed dramatically based on individual state legislation since June 24, 2022, when the *Dobbs v Jackson Women's Health Organization*[1] decision overruled prior Supreme Court decisions and removed federal protections for abortion care. In Wisconsin, the *Dobbs* decision reinstated the Criminal Abortion Ban – an 1849 law that states, "Any person, other than the mother, who intentionally destroys the life of an unborn child is guilty of a Class H felony" (Wis. Stat. § 940.04).

However, as of December 5, 2023, a judge in Dane County, where our hospital is located, ruled that the 1849 law did not apply to consensual abortion and, therefore, abortions were found to be legal again in Wisconsin. This date was outside of our data set but worth noting. Following the *Dobbs* decision, there were reports in the news media and preliminary research showing an increased demand for sterilization procedures.[2]

Data from the National Survey of Family Growth (NSFG) in the United States shows recent declines in reliance on tubal sterilization for reproductive-aged women and for women aged 30 and below, at least through 2019.[3,4] More recent national statistics are not available, as the NSFG did not collect data for 2020-2021, and data from January 2022 onward are not yet available for analysis. Our study sought to investigate changes in the rate of permanent sterilization procedures in pregnancy-capable people at a single institution in a state where abortion is no longer accessible. Our hypothesis was that sterilization rates

• • •

Author Affiliations: University of Wisconsin School of Medicine and Public Health (UWSMPH), Madison, Wisconsin (Phillips); Department of Obstetrics and Gynecology, UWSMPH, Madison, Wisconsin (Larson, Jacques, Hanks); Department of Obstetrics and Gynecology, Management and Statistical Core, University of Wisconsin-Madison, Madison, Wisconsin (Godecker).

Corresponding Author: Camille Phillips, email cphillips22@wisc.edu; ORCID ID 0009-0003-0314-7358

Table. Sterilization Patients' Demographic Results by Year

	Year 1[a] n (%)	Year 2[a] n (%)	Year 3[a] n (%)	Year 4[a] n (%)	Year 5[a] n (%)	Year 6[a] n (%)	Year 7[a] n (%)	Total n (%)	*P* value[b]
Total Sterilizations	105	114	123	124	126	162	334	1088	
Age									<0.001
20–24	2 (1.9)	4 (3.5)	2 (1.6)	12 (9.7)	13 (10.3)	13 (8.0)	37 (11.1)	83 (7.6)	
25–29	17 (16.2)	15 (13.2)	24 (19.5)	22 (17.7)	25 (19.8)	29 (17.9)	80 (24.0)	212 (19.5)	
30 – 39	50 (47.6)	63 (55.3)	65 (52.9)	58 (46.8)	54 (42.9)	88 (54.3)	172 (51.5)	550 (50.6)	
40 – 50	36 (34.3)	32 (28.1)	32 (26.0)	32 (25.8)	34 (27.0)	32 (19.8)	45 (13.5)	243 (22.3)	
Total	105 (100)	114 (100)	123 (100)	124 (100)	126 (100)	162 (100)	334 (100)	1088 (100)	
Race/ethnicity									0.306
Asian	1 (1.0)	1 (0.9)	2 (1.6)	6 (4.8)	0 (0)	6 (3.7)	14 (4.2)	30 (2.8)	
Black or African American	1 (1.0)	5 (4.4)	7 (5.7)	9 (7.3)	8 (6.3)	9 (5.6)	16 (4.8)	55 (5.1)	
Hispanic/Latina	9 (8.6)	9 (7.9)	7 (5.7)	11 (8.9)	10 (7.9)	13 (8.0)	20 (6.0)	79 (7.3)	
None of the above	6 (5.7)	2 (1.8)	3 (2.4)	2 (1.6)	2 (1.6)	2 (1.2)	11 (3.3)	28 (2.6)	
White	88 (83.8)	97 (85.1)	104 (84.6)	96 (77.4)	106 (84.1)	132 (81.5)	273 (81.7)	896 (82.4)	
Total	105 (100)	114 (100)	123 (100)	124 (100)	126 (100)	162 (100)	334 (100)	1088 (100)	
Gravida[c]									<0.001
Gravida 0	27 (25.7)	19 (17.1)	21 (17.4)	19 (15.6)	31 (24.8)	54 (33.5)	181 (54.7)	352 (32.7)	
Gravida 1+	78 (74.3)	92 (82.9)	100 (82.6)	103 (84.4)	94 (75.2)	107 (66.5)	150 (45.3)	724 (67.3)	
Total	105 (100)	111 (100)	121 (100)	122 (100)	125 (100)	161 (100)	331 (100)	1076 (100)	
Para[c]									<0.001
Para 0	30 (28.6)	25 (22.5)	28 (23.1)	23 (18.9)	35 (28.0)	67 (41.6)	200 (60.4)	408 (37.9)	
Para 1	18 (17.1)	18 (16.2)	22 (18.2)	16 (13.1)	27 (21.6)	14 (8.7)	39 (11.8)	154 (14.3)	
Para >1	57 (54.3)	68 (61.3)	71 (58.7)	83 (68.0)	63 (50.4)	80 (49.7)	92 (27.8)	514 (47.8)	
Total	105 (100)	111 (100)	121 (100)	122 (100)	125 (100)	161 (100)	331 (100)	1076 (100)	
Medicaid									<0.001
No	86 (81.9)	95 (83.3)	95 (77.2)	87 (70.2)	89 (70.6)	113 (69.8)	197 (59.0)	762 (70.0)	
Yes	19 (18.1)	19 (16.7)	28 (22.8)	37 (29.8)	37 (29.4)	49 (30.3)	137 (41.0)	326 (30.0)	
Total	105 (100)	114 (100)	123 (100)	124 (100)	126 (100)	162 (100)	334 (100)	1088 (100)	

[a]Year 1 = June 24, 2016 – June 23, 2017; Year 2 = June 24, 2017 – June 23, 2018; Year 3 = June 24, 2018 – June 23, 2019; Year 4 = June 24, 2019 – June 23, 2020; Year 5 = June 24, 2020 – June 23, 2021: Year 6 = June 24, 2021 – June 23, 2022; Year 7 = June 24, 2022 – June 23, 2023.

[b]Associated *P* values included, calculated by comparing differences for each category pre-*Dobbs* and post-*Dobbs*.

[c]Para was documented as number of living children. 12 patients were missing gravidity and parity.

in this population would increase following the *Dobbs v Jackson* decision.

METHODS

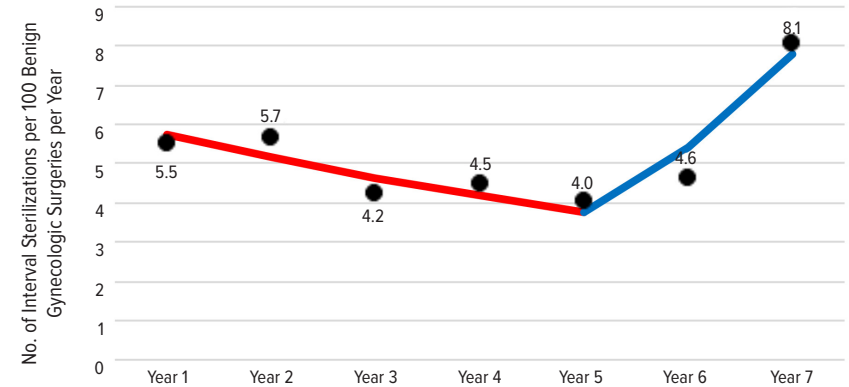
We conducted a retrospective cohort study of all pregnancy-capable patients who received interval sterilizations from June 24, 2016, through June 23, 2023, at Meriter Hospital in Madison, Wisconsin. This study was exempt from Institutional Review Board approval. Patient charts were identified by using Current Procedural Terminology (CPT) codes 58661 (laparoscopy removal of adnexal structures) or 58700 (salpingectomy, complete or partial). Once the patient population was identified, we used Epic's SlicerDicer (Epic Systems Corp) to pull in additional details about the patient or their encounter. We included patients aged 18 to 55 years. We also included all types of interval tubal sterilizations – ie, tubal ligations, tubal fulgurations, and bilateral salpingectomies, excluding procedures done postpartum or during a cesarean delivery. To verify that all correct charts were identified, we reviewed hospital operating room (OR) schedules for each day during our study period. Upon completion of this data acquisition, we verified with our Institutional Review Board that our data acquisition and methodology remained fully compliant and that the study status remained exempt.

We started the data series in 2016 to account for any trends due to tensions on reproductive autonomy during the presidential administration of Donald Trump and for any disruptions to elective surgery frequencies during the COVID-19 pandemic or other temporal trends. Study years run from June 24 of one year to June 23 of the following year, as the *Dobbs* decision was released on June 24, 2022, and abortions in Wisconsin ceased immediately afterward. To control for potential temporal changes in tubal sterilizations related to a changing patient population at our institution, COVID-19 practice patterns, or other factors, we report sterilization rates with a numerator equal to the number of sterilizations in a study year and a denominator of total gynecologic surgeries in that year at the same institution. Gynecologic surgeries include all benign surgeries performed by generalists, urogynecologists, and minimal invasive gynecologic surgeons as

well as abdominal, laparoscopic, and vaginal surgeries. We recorded demographic data including patient age, race, ethnicity, gender, gravity and parity, and payor status as documented in the medical record at the time of the tubal sterilization procedure. In Wisconsin, patients assigned female at birth with Medicaid insurance must sign a sterilization consent form between 30 and 180 days (about 6 months) before interval sterilization. There were no changes to this policy during the study period.

Annual frequencies of tubal sterilizations and total gynecologic surgeries and the calculated rates are reported, as well as the rates, incidence rate difference, incidence rate ratio, and incidence rate ratio confidence interval for the aggregate 6 years pre-*Dobbs* to the single year post-*Dobbs*. Frequencies and percentages are reported for sterilization patient characteristics, and chi-squared or Fisher exact tests were used to test for significant differences in these categorical variables pre-*Dobbs* versus post-*Dobbs*, as appropriate. The Mann-Kendall nonparametric test for trend was used for the trend in numbers of sterilizations over time, and a joinpoint analysis assessed whether there were "joinpoints" or significant changes in the annual percentage change (APC) between timepoints.[5] A 2-sided *P* value of < 0.05 was considered statistically significant. The Joinpoint Regression Program[6] 5.0.2 was used for the joinpoint trend analysis and Stata/SE 18.0[7] was used for all other analyses.

Figure 1. Rate of Interval Sterilizations Observed and Joinpoint Model by Study Year



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Interval sterilizations (N)	105	114	123	124	126	162	334
Benign gynecologic (N) surgeries	1904	2016	2912	2758	3117	3489	4139
Observed rate	5.5	5.7	4.2	4.5	4.0	4.6	8.1
Joinpoint modeled rate years 1–5 (APC = -10.01	5.7	5.2	4.7	4.3	3.8		
Joinpoint modeled rate years 5–7 (APC = -43.83					3.8	5.4	7.8

● Observed rate — Joinpoint modeled rate 1-5 APC = -10.01[a] — Joinpoint modeled rate 5-7 APC = -43.83[a]

Year 1 = June 24, 2016 – June 23, 2017; Year 2 = June 24, 2017 – June 23, 2018; Year 3 = June 24, 2018 – June 23, 2019; Year 4 = June 24, 2019 – June 23, 2020; Year 5 = June 24, 2020 – June 23, 2021: Year 6 = June 24, 2021 – June 23, 2022; Year 7 = June 24, 2022 – June 23, 2023.

[a]Indicates that the annual percent change (APC) is significantly different from zero at the alpha = 0.05 level. Final selected model: 1 Joinpoint.

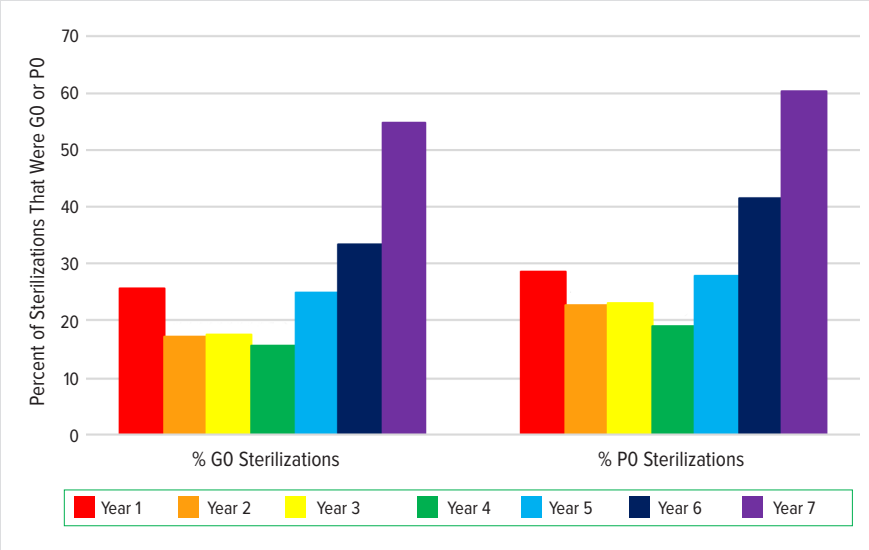
RESULTS

There were 1088 pregnancy-capable patients who underwent interval sterilization from June 24, 2016, through June 23, 2023, and were included in the study cohort. We found a significant trend in increasing annual sterilization frequencies in this population over the 7-year period ($P < 0.001$). The most substantial increase was from the year preceding the *Dobbs* decision to the year after the *Dobbs* decision, from 162 to 334 procedures – a 106.2% increase (Figure 1). Total gynecologic surgeries also increased annually from 2016 to 2023. The rate of sterilization procedures in pregnancy-capable people per 100 gynecologic surgeries in the first study year (June 24, 2016 – June 23, 2017) was 5.51, decreasing to a low of 4.04 in study year 5 (June 24, 2020 – June 23, 2021). The rate increased to 4.64 in the year preceding the *Dobbs* decision and to 8.07 in the post-*Dobbs* year. The joinpoint regression found 1 joinpoint at year 5, with significant APCs of 10.01 in years 1-5 and 43.83 in years 5-7 (Figure 1). The aggregate sterilization rate in this population for years 1-6 (and years 1-5) was 4.66. Comparing this pre-*Dobbs* period to the rate of 8.07 for the post-*Dobbs* year yields an incidence rate difference of 3.41 (95% CI, 2.49-4.34) and an incidence rate ratio of 1.73 (95% CI, 1.52-1.97).

There were significant changes to selected demographics of pregnancy-capable patients receiving sterilization procedures pre-*Dobbs* and post-*Dobbs* (Table). Patients receiving sterilizations were younger after the *Dobbs* decision, with patients receiving sterilizations aged 20 to 29 increasing from 23.6% pre-*Dobbs* to 35.0% post-*Dobbs* ($P < .001$). Additionally, post-*Dobbs* patients were more likely to be nulligravid (G0) and/or nulliparous (P0). Nulligravid patients increased from 23.0% in the 6 years pre-*Dobbs* to 54.7% post-*Dobbs* (Figure 2). Patient-reported gender and race/ethnicity did not change significantly in the years surrounding the *Dobbs* decision. A significantly higher percentage of patients were using Medicaid post-*Dobbs* (41.0%) than pre-*Dobbs* (25.1%). Results

when analyzing individual years were comparable to analysis with the aggregate of 6 years before the *Dobbs* decision.

Figure 2. Percent of Sterilizations That Were Gravida 0 (G0) or Para 0 (P0) Each Year



Year 1 = June 24, 2016 – June 23, 2017; Year 2 = June 24, 2017 – June 23, 2018; Year 3 = June 24, 2018 – June 23, 2019; Year 4 = June 24, 2019 – June 23, 2020; Year 5 = June 24, 2020 – June 23, 2021: Year 6 = June 24, 2021 – June 23, 2022; Year 7 = June 24, 2022 – June 23, 2023.

Twelve patients included in the study analysis were misssing gravidity.

DISCUSSION

Principal Findings

The number and rate of sterilization procedures increased significantly among pregnancy-capable people at a single academic institution in Wisconsin following the Supreme Court decision in *Dobbs v Jackson*. Patients undergoing surgical sterilization in the post-*Dobbs* year were younger, had less gravidity and parity, and were more likely to have Medicaid insurance than in the pre-*Dobbs* years. We believe this change is due, at least in part, to decreased accessibility to abortion care in Wisconsin.

A joinpoint analysis of annual sterilization rates found a joinpoint and significant increase in the APC at the point of the year prior to the *Dobbs* decision (June 24, 2021, to June 23, 2022). This is likely due to the increase in interval procedures following the COVID-19 pandemic, as well as the strong uncertainty of abortion rights during the year the *Dobbs* case was deliberated, with oral arguments December 1, 2021, and a historic Supreme Court opinion leak, which occurred on May 2, 2022.

Results in the Context of What We Know

A similar study conducted at the University of Michigan found tubal sterilization request rates at their institution increased in the months following the *Dobbs* decision. However, there was a decrease back to baseline after 6 months, which may have been due to the demand being met, a decreased sense of urgency after abortion access was temporarily protected, or crisis fatigue.[2]

There are numerous anecdotal reports from physicians caring for these patients that suggest the increase in sterilization procedures is due to a perceived loss of bodily autonomy; however, more qualitative research is needed to solidify this indication.

Clinical Implications

An implication of younger patients seeking tubal sterilizations is that patients under 30 years are more likely to experience sterilization regret and seek information on sterilization reversal.[8] While the American College of Obstetricians and Gynecologists states that age and parity should not be a barrier to tubal sterilization in a well-informed patient,[9] investigating sterilization regret in Wisconsin over the next 5 to 20 years will be important.

We chose to analyze insurance status and found a significant increase in Medicaid insurance among tubal sterilization patients after the *Dobbs* decision; however, Medicaid enrollment increased by 34.8% in Wisconsin from February 2020 to December 2022.[10] It is unclear from our study alone whether the increase in Medicaid status among our participants is from the general increase in enrollment or from an increased interest in sterilizations among the Medicaid patient population.

Research Implications

Looking forward, we hope to compare these data to other states where abortion access is less restricted. We also plan to expand our study into the next post-*Dobbs* year (June 24, 2023 – June 23, 2024). On July 7, 2023, Dane County Judge Diane Schlipper announced a preliminary decision that the 1849 Abortion Ban Law did not, in fact, outlaw abortions, but instead only applied to feticide. Planned Parenthood of Wisconsin deemed this sufficient to restore abortion care at its clinics on September 18, 2023. Most facilities followed suit after consensual abortions were officially deemed legal in Wisconsin on December 5, 2023; however, some institutions in Wisconsin interpreted the final decision more conservatively and have not yet resumed abortion care. We will continue to analyze if tubal sterilization frequency changes in response to the changes in accessibility of abortion care across the state. We also would like to compare these trends to vasectomy rates at the same institution before and after *Dobbs*. We predict that, as already shown in our study, when access to abortion is limited, patients will seek more permanent forms of sterilization.

Strengths and Limitations

Our study had some limitations. The first limitation was its retrospective design and reliance on CPT codes. Second, we performed our study at a single institution in Madison, Wisconsin, and our findings may not be generalizable to the entire state or national context. However, this small cohort may provide some insight into sterilization rates in pregnancy-capable people in a state where abortion restrictions are in place. Third, patients who were postpartum or received their sterilization at the time of a cesarean delivery were not included in the study. This decreases the average gravidity and parity for each year and could introduce bias into our results. However, in the interest of evaluating a similar population over time and exploring the impact of the *Dobbs* decision on this population, we decided to exclude postpartum tubal sterilizations to keep our population more homogenous. We also only reported if patients had Medicaid or not. We did not gather data about specific insurers. Lastly, our study population was predominantly White females and, therefore, may not be generalizable to the national population.

Our study had several strengths. There are few studies that describe changes to reproductive health care in abortion-restricted states in the post-*Dobbs* era, and our study is one of the first in Wisconsin. We analyzed data going back 7 years, allowing us to identify associations and trends over this extended time.

CONCLUSIONS

We found a significant increase in tubal sterilization procedures after the *Dobbs v Jackson Women's Health Organization* decision. This increase was most pronounced in younger patients who were either nulliparous or nulligravid. These findings demonstrate some of the reproductive implications of legally limiting bodily autonomy and highlight the need for larger, more comprehensive studies at the state and national levels.

Funding/Support: Funding was provided by the University of Wisconsin School of Medicine and Public Health Shapiro Summer Research Program. Funding support was provided to Dr Jacques from an anonymous family foundation to support research looking into the impact of state legislation around medication abortion

Financial Disclosures: Dr Jacques reports receiving payment/honoraria for the following: Society for Family Planning Grant reviewer, Bixby Foundation honoraria for facilitating Values Clarification workshops and Alameda Healthcare System honoraria for facilitating Values Clarification workshop.

Acknowledgements: This work was presented previously at the American College of Obstetricians and Gynecologists District VI Annual Meeting in Omaha, Nebraska, on October 1, 2023 (Junior Fellow Prize Paper) and at the 22nd Annual Medical Student Research Forum at the University of Wisconsin School of Medicine and Public Health in Madison, Wisconsin, on November 20, 2023 (Excellence in Student Research Reward).

REFERENCES

1. *Dobbs v Jackson Women's Health Organization*, 597 U.S. 215 (2022)

2. Liang AC, Gliwa C, Loder CM, Dalton VK, Smith RD. Tubal sterilization requests at a single institution following the Supreme Court decision to overturn the constitutional right to abortion. *JAMA*. 2023;330(4):374-375. doi:10.1001/jama.2023.11073

3. Kavanaugh ML, Jerman J. Contraceptive method use in the United States: trends and characteristics between 2008, 2012 and 2014. *Contraception*. 2018;97(1):14-21. doi:10.1016/j.contraception.2017.10.003

4. Daniels K, Abma JC. Current contraceptive status among women aged 15–49: United States, 2015–2017. NCHS Data Brief. 2018;(327):1-9. Accessed October 10, 2023. https://www.cdc.gov/nchs/products/databriefs/db327.htm

5. Kim HJ, Fay MP, Feuer EJ, Midthune DN. Permutation tests for joinpoint regression with applications to cancer rates. *Stat Med*. 2000;19(3):335-351. doi:10.1002/(sici)1097-0258(20000215)19:3<335::aid-sim336>3.0.co;2-z

6. *Joinpoint Regression Program.* Version 5.0.2. Statistical Methodology and Applications Branch, Surveillance Research Program, National Cancer Institute; May 2023. Accessed October 10, 2023. https://surveillance.cancer.gov/joinpoint/

7. *Stata 18.* Version 18. StataCorp; 2023. Accessed October 10, 2023. https://www.stata.com/

8. Danvers AA, Evans TA. Risk of sterilization regret and age: an analysis of the National Survey of Family Growth, 2015-2019. *Obstet Gynecol*. 2022;139(3):433-439. doi:10.1097/AOG.0000000000004692

9. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 208: benefits and risks of sterilization. *Obstet Gynecol*. 2019;133(3):e194-e207. doi:10.1097/AOG.0000000000003111

10. Corello B, Moreno S. Analysis of national trends in Medicaid and CHIP enrollment during the COVID-19 pandemic. April 4, 2023. KFF. Accessed October 16, 2023. https://www.kff.org/coronavirus-covid-19/issue-brief/analysis-of-recent-national-trends-in-medicaid-and-chip-enrollment/

advancing the art & science of medicine in the midwest

WMJ

WMJ (ISSN 1098-1861) is published through a collaboration between The Medical College of Wisconsin and The University of Wisconsin School of Medicine and Public Health. The mission of *WMJ* is to provide an opportunity to publish original research, case reports, review articles, and essays about current medical and public health issues.

Visit www.wmjonline.org to learn more.