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INSURANCE MANDATES AND RACIAL AND ETHNIC INEQUITIES IN ASSISTED REPRODUCTIVE TECHNOLOGY UTILIZATION.



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OBJECTIVE: To determine whether the scope of coverage afforded by state infertility mandates and the proportion of the population eligible for mandated coverage are associated with a reduction in racial/ethnic inequities in assisted reproductive technology (ART) utilization.

MATERIALS AND METHODS: Cross-sectional ecological study of reproductive-aged women (20-44 years) living in the U.S. in 2018 based on Census Bureau estimates who initiated an ART cycle reported to the Centers for Disease Control and Prevention that year. States were classified as: Comprehensive, Limited, and No ART Mandate coverage. ART utilization was defined as the number undergoing ≥ 1 ART cycles per 10,000 reproductive-aged women. Differences in ART utilization were evaluated in two ways: 1) rates within each racial/ethnic group were compared across mandate categories using the Comprehensive Mandate group as reference; and 2) rates within each mandate category were compared across racial/ethnic groups using Non-Hispanic (NH) Asian as the reference group as they had the highest Comprehensive Mandate utilization rate. Rate ratios (RR) with 95% confidence intervals (CI) were calculated. Only fully-insured private insurance plan subscribers are eligible for coverage under state infertility mandates. Race-specific estimated proportions of populations eligible for coverage were used to correct denominators in the Comprehensive Mandate group.

RESULTS: In 2018, 147,803 women underwent ≥ 1 ART cycle with an overall utilization rate of 27.5 cycles/10,000 women. Across all mandate categories (Comprehensive, Limited, No Mandate, respectively), NH Asian (78.4, 69.0, 44.3 cycles/10,000 women) and NH White (57.3, 41.9, 23.7) populations had higher ART utilization than Hispanic (18.3, 10.2, 11.1), NH Black (25.8, 16.9, 10.1), and NH Other/Multiple Races (17.4, 19.0, 5.7) populations. The NH Other/Multiple Races and NH Black populations had the largest disparities in ART utilization rates when comparing the No Mandate to Comprehensive Mandate groups (RR 0.33 95% CI 0.28-0.38 and RR 0.39 95% CI 0.37-0.41, respectively). Within the Comprehensive Mandate group, utilization RRs moved towards the null after correcting for mandated coverage eligibility in Hispanic (from RR 0.23 95% CI 0.22-0.25 to RR 0.35 95% CI 0.33-0.37) and NH Black populations (from RR 0.33 95% CI 0.31-0.35 to RR 0.45 95% CI 0.42-0.47); demonstrating an attenuation in racial/ethnic differences in ART utilization.

CONCLUSIONS: The disparity in ART utilization between Comprehensive mandate and No Mandate groups was greatest for NH Black and NH Other/multiple populations. Differences in ART utilization in Hispanic and NH Black populations compared to the NH Asian population in Comprehensive Mandate states were attenuated when considering coverage eligibility. Despite these findings, inequities in ART utilization persist even in comprehensive mandate states.

IMPACT STATEMENT: Racial/ethnic inequities in ART utilization were smaller in states with comprehensive infertility coverage mandates; inequities were further attenuated after correcting for mandate eligibility.

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Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC Foundation or the Centers for Disease Control and Prevention.

INCREASED EXPOSURE TO ENDOCRINE DISRUPTORS AMONG BLACK WOMEN MAY LEAD TO GREATER INCIDENCE OF UTERINE FIBROIDS.



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OBJECTIVE: To examine the association between exposure to known endocrine disrupting chemicals (EDCs) (triclosan (TCS), benzophenone-3 (BP-3), parabens, and phthalates), race, and risk of uterine fibroids (UF), using Centers for Disease Control and Prevention's National Health and Nutrition Examination Survey (NHANES) 1999-2006 data.

MATERIALS AND METHODS: Of 3399 participants of African and European ancestry who responded to NHANES question RHQ380 ("Has a doctor or other health professional ever told you that you had UF?"), a subset also provided urine for measurement of TCS (N=893), BP-3 (N=893), 4 parabens (each N=471), and 15 phthalates (470>N>1850). EDC levels were adjusted for urine creatinine and log-transformed. Differences in EDC-exposure by race were assessed by t-test; associations between UF and each EDC were tested using logistic regression for each race separately and for the pooled data (adjusted for race). P-values were corrected for multiple testing. The Least Square Absolute Shrinkage and Selection Operator (LASSO) was used to identify the best predictors of UF from a selection set of 17 EDCs, race, and covariates (age, BMI, and smoker status), for multiple regression.

RESULTS: Blacks had 2.28 times higher adjusted odds of UF than Whites (95%-CI: [1.90 , 2.74], N=3673. For 8 of 17 EDCs assessed (47%), mean urine concentration also varied with race: BP-3, TCS, methylparaben (MP), propylparaben (PP), mono-n-butyl phthalate (MBP), mono-ethyl phthalate (MEP), mono-(3-carboxypropyl) phthalate (MCPP), and mono-carboxynonyl phthalate (MCNP) (p<0.005 for all, except for MBP, p=0.020). In tests for association with UF, mono-(2-ethyl)-hexyl phthalate (MEHP) (p=0.008) and mono-n-methyl phthalate (MMP) (p=0.015) were most significant among Blacks and Whites, respectively. The LASSO-reduced subset of explanatory variables (age, BMI, race, mono-benzyl phthalate, MMP, MBP, and TCS) in a multiple regression model accounted for 32% of the variance in UF; MMP had the strongest effect (2.98 times higher odds, p=0.004). The above model was augmented to test for race-by-EDC interactions. Two (of the four) interactions with race (MMP and MBP) were significant at p<0.01; when added to the original model, these interaction terms increased the proportion of variance explained by 19% (R²(U)=0.38). Expanding the initial variable-selection set to include all 17 potential EDC-by-race interactions, LASSO generated an almost identical set of explanatory variables, the notable exception being ethyl paraben in place of TCS; its interaction with race was also significant (p=0.027).

CONCLUSIONS: Our large population-based study suggests that EDCs play a significant role in UF etiology. The relative strength of the multiple regression modeling, particularly with the addition of race-by-EDC interaction terms, suggests that the effect of EDCs on UF may be combinatorial, non-linear, and modified by ancestry.

IMPACT STATEMENT: Interactions between EDCs and race may factor into the disproportionate incidence of UF among Blacks, as well as the disparity in EDC-exposure by race.

COVID-19 VACCINATION STATUS AND MENSTRUAL CYCLE LENGTH IN THE APPLE WOMEN'S HEALTH STUDY.



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OBJECTIVE: To prospectively determine whether COVID-19 vaccination is associated with change in menstrual cycle length following vaccination.

MATERIALS AND METHODS: We conducted a longitudinal analysis within a subgroup of 13,018 participants in the Apple Women's Health Study (AWHS) who enrolled between November 2019 and December 2021, having met the following eligibility criteria: were living in the U.S., met minimum age requirements for consent, were English speaking, actively tracked their menstrual cycles, and responded to the COVID-19 vaccination update survey. Cycles tracked when participants were not pregnant, lactating, or using hormonal contraceptives were included. We used conditional linear regression and multi-variable linear mixed-effects models with random intercepts to estimate the covariate-adjusted difference in mean cycle length, measured in days, between pre-vaccination cycles and post-vaccination cycles within vaccinated participants, and between vaccinated and unvaccinated participants. We present Bonferroni-adjusted confidence intervals to account for multiple comparisons.

RESULTS: A total of 120,815 cycles (median = 10 cycles per participant; interquartile range: 4-21) from 9,295 women (8,129 vaccinated; 1,160 unvaccinated) were included. Forty-eight percent of participants received the Pfizer-BioNTech vaccine, 32% received Moderna, and 7% received Johnson & Johnson/Janssen. We found no evidence of a difference between mean menstrual cycle length in the unvaccinated and vaccinated participants prior to vaccination (0.16 days, 95% CI: -0.44, 0.75). Among vaccinated women, COVID-19 vaccination was associated with a small increase in cycle length for cycles containing the first dose (0.47, 95% CI: 0.17, 0.76) and cycles containing the second dose (0.36, 95% CI: 0.06, 0.65) of Pfizer-BioNTech or Moderna vaccines compared with pre-vaccination cycles. Cycles containing the single dose of Johnson & Johnson/Janssen were, on average, 1.22 days longer (95% CI: 0.41, 2.03) than pre-vaccination cycles. Post-vaccination cycles returned to average pre-vaccination length, with a 0.11 (95% CI: -0.17, 0.38) day increase in mean cycle length in the first cycle following vaccination, 0.12 (95% CI: -0.15, 0.40) in the second, -0.22 (95% CI: -0.50, 0.05) in the third, and -0.25 (95% CI: -0.52, 0.02) in the fourth cycle post-vaccination.

CONCLUSIONS: COVID-19 vaccination was associated with an immediate short-term increase in menstrual cycle length. However, the magnitude of this increase diminished in cycles following vaccination, and no association with cycle length persisted over time.

IMPACT STATEMENT: Menstrual cycle change following COVID-19 vaccination appears temporary and should not discourage women from becoming vaccinated.

ORAL ABSTRACT SESSION: ACCESS TO CARE

O-97 10:45 AM Tuesday, October 25, 2022

WHEN STATES REQUIRE FULLY-INSURED EMPLOYERS TO PROVIDE INSURANCE COVERAGE FOR IN-VITRO FERTILIZATION (IVF), DO SELF-INSURED EMPLOYERS FOLLOW SUIT?

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OBJECTIVE: In the United States, access to fertility care is mediated by health insurance coverage, and most reproductive-age adults receive insurance from their employers. Employers can be “fully-insured” and beholden to state insurance mandates or can be “self-insured” and exempt from state insurance mandates. Thirteen states mandate that fully-insured employers provide insurance coverage for IVF(1). However, 65% of adults with employer-sponsored insurance work for self-insured employers(2). Our objective was to evaluate the fertility coverage offered by self-insured employers in those 13 states, even though they are exempt from the state mandates.

MATERIALS AND METHODS: We obtained access to Leverage Global Consulting’s repository of employer-sponsored health insurance benefits documents, which is the largest known such repository. We identified benefits documents from self-insured employers operating in the 13 states with insurance mandates for IVF coverage. Then, we performed a content analysis of the benefits documents to systematically extract features of fertility coverage. All documents were independently coded by two trained reviewers using a coding protocol; conflicts were adjudicated by a third reviewer. We used Cohen’s Kappa to measure inter-reviewer agreement. Finally, we produced descriptive statistics detailing how many self-insured employers offer coverage for fertility care, including diagnostic testing, treatment for underlying conditions causing infertility, fertility preservation before cancer treatments, fertility medications, intrauterine insemination (IUI), and IVF.

RESULTS: We analyzed 189 health insurance benefits documents from self-insured employers in nine states (AR, CO, CT, IL, MA, MD, NJ, NY, UT) from 2019-2021. The Cohen’s Kappa was 85%, which is a very high level of coding agreement.

Overall, 59.0% of employers offer coverage for fertility care. However, the spectrum of coverage varies widely, with some employers only covering diagnostic testing and excluding all treatments. Specifically, 29.1% of employers cover treatments for underlying conditions. 32.1% of employers cover fertility preservation. 46.8% of employers cover fertility medications. 57.9% of employers cover IUI and 42.1% cover IVF. Employees’ lifetime fertility spending limits range from \$5,000 to \$100,000.

CONCLUSIONS: 42% of self-insured employers operating in states with insurance mandates for IVF provide IVF coverage for their employees. In addition, there is significant variation in what types of other fertility treatments are covered, with most employers covering IUI but few covering fertility preservation.

IMPACT STATEMENT: For most Americans, limitations in their health insurance benefits remain significant barriers for accessing fertility care. State mandates are important targets for improving access to advanced fertility treatments like IVF. However, since 65% of adults with employer-sponsored health insurance work for self-insurance employers, which are exempt from state mandates, our data highlights a need for increased advocacy to self-insured employers.

SUPPORT: The University of Michigan Institute for Research on Women & Gender and Institute for Healthcare Policy and Innovation.

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O-98 11:00 AM Tuesday, October 25, 2022

FERTILITY PRESERVATION IN AN INSURANCE MANDATED STATE: OUTCOMES FROM THE RHODE ISLAND FERTILITY PRESERVATION

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OBJECTIVE: It is well established that cryopreservation of embryos/ooocytes is a feasible option for patients facing gonadotoxic treatments. The costs of these services are not often covered by insurance posing a significant barrier to patients pursuing these therapies. In July 2017, Rhode Island became the first state to mandate that private insurance companies offer coverage for fertility preservation for patients undergoing medical therapies deemed gonadotoxic. The objective of this study is to present observational data before and after implementation of the mandate to evaluate how cost reduction of FP services by this legislation impacts utilization by those desiring medically indicated FP.

MATERIALS AND METHODS: This is a retrospective observational cohort study utilizing data from the Women and Infants Hospital Fertility Preservation Database and includes all patients who presented for a medically indicated FP consultation between January 2016 and February 2022. Variables collected included patient demographics, insurance status, FP cycle data, and pregnancy outcomes.

RESULTS: In the year preceding the mandate, only 2 patients were seen for medically indicated FP consultation prior to treatment for breast and cervical cancer. Both patients had FP coverage through commercial plans, identified as Caucasian, were partnered, and proceeded to FP cycle. One opted to freeze oocytes and the other embryos. After the mandate, an average of 15 patients per year were seen for medically indicated FP consult (n=69). Of those who presented, 28 (40.6%) patients proceeded with FP cycle. Fifty-four (78.3%) patients had commercial insurance coverage and 26 (48.2%) proceeded with FP cycle. Of those with public insurance (n=15, 21.1%), only 2 (13.3%) proceeded with FP cycle. Patients identified as White (n=46, 68.7%), Black/African American (n=6, 9.0%), Hispanic/Latina (n=8, 11.9%), Asian (n=1, 1.5%), or other ethnicities (n=6, 9.0%). The most common indications included breast cancer (n=20), lymphoma (n=9), brain cancer (n=6), BRCA carrier (n=6), and FP prior to gender affirmation (n=12). Most patients were partnered (n=40, 58.0%) and nulliparous (n=56, 81.2%). Thirty FP cycles resulted in cryopreservation of oocytes only (n=24), embryos only (n=3), or a combination (n=3) of both with an average of 11 oocytes and/or 3 embryos frozen. One cycle was cancelled prior to retrieval. One patient returned after treatment for brain cancer and is currently pregnant after frozen embryo transfer.

CONCLUSIONS: The RI insurance mandate for medically indicated FP improves overall access to care for patients by reducing out of pocket costs. Despite the mandate, a gap remains for patients who have publicly funded insurance. Continuing to advocate for coverage regardless of insurance payor will expand access and provide survivors with more opportunities to build their families after completion of treatment.

IMPACT STATEMENT: Implementation of the Rhode Island insurance mandate for medically indicated fertility preservation resulted in a dramatic increase in patients who presented for consultation and ultimately pursued treatment.