

# Association of transfer of frozen embryos in the programmed cycle with hypertensive disorders of pregnancy



**OBJECTIVE:** Ovulatory women with cryopreserved embryos have the option to conceive via a programmed cycle, in which the menstrual cycle is artificially created through medications, or via a natural cycle, in which the physiological menstrual cycle is simply monitored to appropriately time the transfer of an embryo in relationship to ovulation. Thus, the hallmark of a natural cycle is the presence of a corpus luteum.<sup>1</sup> The contribution of the corpus luteum to early placental development, a critical component to optimizing many pregnancy outcomes, has been increasingly recognized.<sup>2</sup> As patients conceiving via assisted reproductive technology are at higher risk of adverse pregnancy outcomes, risk reduction strategies that do not compromise live birth rates are crucial.<sup>3</sup> We sought to determine whether frozen embryo transfer (FET) in the programmed cycle vs natural cycle was associated with increased risks of hypertensive disorders of pregnancy (HDP) in ovulatory women.

**STUDY DESIGN:** We conducted a secondary analysis of a retrospective cohort study on the association of fetal fraction with HDP in in vitro fertilization–conceived singleton pregnancies.<sup>4</sup> Here, we restricted the analysis to ovulatory women who underwent FET in the natural or programmed cycle and had a live birth at >20 weeks of gestation at a single academic center from 2013 to 2019. The primary outcome was a diagnosis of HDP during the delivery hospitalization. HDP was defined as worsening chronic hypertension, a new diagnosis of gestational hypertension,

superimposed preeclampsia, or preeclampsia with or without severe features. The secondary outcome was small for gestational age (SGA), defined as a birthweight of <10th percentile by fetal sex and gestational age. We performed multivariable logistic regression analyses to determine whether frozen transfer cycle type was associated with (1) HDP and (2) SGA, controlling for maternal age at time of transfer, prepregnancy body mass index, maternal comorbidities (diabetes mellitus, hypertension, antiphospholipid antibody syndrome, or lupus), and antenatal aspirin use in both regression models.

**RESULTS:** We included 299 women (78.3%) who underwent natural FET and 109 women (26.7%) who underwent programmed FET. Demographic characteristics were similar between groups. The adjusted prevalence rates of HDP were 22.1% in natural FET and 32.4% in programmed FET. The most common type of HDP diagnosed was gestational hypertension (74.7%), followed by preeclampsia with severe features (10.5%) and without severe features (8.4%). Transfer in the programmed cycles was associated with higher odds of HDP than transfer in the natural cycles (adjusted odds ratio [aOR], 1.65; 95% confidence interval [CI], 1.01–2.72;  $P=.048$ ). The adjusted prevalence rates of SGA were 10.4% in natural FET and 7.4% in programmed FET. Transfer cycle type was not associated with a diagnosis of SGA (aOR, 0.72; 95% CI, 0.32–1.65;  $P=.443$ ) (Table).

**TABLE**

## Multivariable regression for hypertensive disorder of pregnancy and small for gestational age outcomes

Variable	HDP			SGA		
	aOR	95% CI	P value	aOR	95% CI	P value
Transfer cycle type						
Natural	Ref	Ref	Ref	Ref	Ref	Ref
Programmed	1.65	1.01–2.72	.048	0.72	0.32–1.65	.443
BMI	1.07	1.00–1.13	.045	0.90	0.80–1.01	.074
Maternal age	1.01	0.95–1.08	.711	1.05	0.95–1.16	.307
Maternal comorbidities	1.51	0.62–3.66	.366	1.95	0.51–7.52	.333
Aspirin use in pregnancy	1.71	0.78–3.73	.179	0.77	0.21–2.88	.703

aOR, adjusted odds ratio; BMI, body mass index; CI, confidence interval; HDP, hypertensive disorders of pregnancy; Ref, referent; SGA, small for gestational age.

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**CONCLUSION:** In ovulatory women conceiving via FET, transfer in the programmed cycles, where a corpus luteum is not present, was associated with higher odds of HDP than transfer in the natural FET cycles. Prioritizing the use of natural FET cycles may represent an opportunity for risk reduction for ovulatory women undergoing FET cycles who would otherwise be counseled toward programmed FET. ■

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## Racial-ethnic diversity of obstetrics and gynecology faculty at medical schools in the United States



**OBJECTIVE:** The nation's population is diversifying at a faster pace. Recruiting practitioners who better represent the patient population has become a public health strategy.<sup>1</sup> Furthermore, racial-ethnic diversity of medical school faculty has been linked to medical student diversity, cultural and structural competencies of graduates, and cultural climate of healthcare and research that contribute to institutional excellence.<sup>2</sup> This study aimed to report the racial-ethnic diversity of obstetrics and gynecology faculty at US medical schools concerning the US adult female population.

**STUDY DESIGN:** This cross-sectional, observational study included individuals who self-reported to belong to any one of the following racial-ethnic groups: Hispanic (of any race), non-Hispanic White, Black or African American, Asian, Native American (American Indian, Alaska Native, Native Hawaiian, or Pacific Islander), or others or unknown. As defined by the Association of American Medical Colleges (AAMC), the underrepresented minority (URM) in medicine is any racial or ethnic population that is underrepresented in the medical profession relative to the numbers of the general population (eg, Black, Hispanic,

and Native Americans). The most recent nationwide data were gathered about full-time obstetrics and gynecology faculty from the 2021 AAMC Faculty Roster, obstetrics and gynecology residents from the 2021 Accreditation Council for Graduate Medical Education Data Resource Book, and US adult females (aged  $\geq 15$  years) from the 2019 American Community Survey.<sup>3–5</sup> Female and male faculty were subdivided into junior (instructor or assistant professor) and senior (associate professor or professor) levels. We used the *t* test to measure group differences. A *P* value of  $<.05$  was considered statistically significant.

**RESULTS:** Females constituted two-thirds (4487 [66.6%]) of the 6738 faculty and were more likely to be junior faculty than senior faculty (75.6% vs 50.5%;  $P<.001$ ). The percentages of the junior and senior faculty in each major racial-ethnic group were compared with the US adult female population in the Figure. Junior faculty were less likely to be White than senior faculty (62.9% vs 72.9%;  $P<.001$ ) and the same as the US female population (62.3%). Junior faculty were more likely to be Black or Hispanic than senior faculty, although these proportions