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OBJECTIVE: There are significant Black-White racial disparities in in vitro fertilization (IVF) outcomes that are poorly explained by individual-level factors. Therefore, we sought to explore whether neighborhood characteristics may contribute to the racial disparities in IVF outcomes.

MATERIALS AND METHODS: A retrospective cohort study was performed including 1110 patients who underwent 2754 autologous IVF cycles during the years 2014-2019 at an academic fertility center in the Southeastern United States. Patients’ addresses were geocoded and then linked by census tract with the neighborhood deprivation index (NDI), a composite variable measuring community levels of material wealth based off of poverty, occupation, housing, and education domains. Using multivariable log-binomial generalized estimating equations with cluster weighting, we estimated risk ratios (RR) and 95% confidence intervals (CI) for cycle cancellation, miscarriage, and live birth according to patient NDI. Race was considered as both a potential confounder and effect modifier. Additionally, models were adjusted for age, body mass index (BMI), parity, tubal factor infertility, and uterine factor infertility.

RESULTS: Of the 1110 patients included, 48% identified as White, 27% as Black, 17% as Asian, and 7% as other race. Compared to White patients, Black patients were more likely to have insurance coverage for IVF, live further from the clinic, and live in areas with a higher NDI (indicating higher levels of deprivation). There were positive associations between increasing NDI and BMI, as well as increasing prevalence of tubal and uterine factor infertility diagnoses. The incidence of live birth was lower in Black (24%) versus White patients (32%) and the incidence of miscarriage was elevated in Black (22%) as compared to White patients (12%), without adjusting for age. After adjustment, NDI was not significantly associated with risk of cycle cancellation or live birth, but a trend was seen between increasing levels of neighborhood deprivation and increased risk of miscarriage (RR: 1.24 per interquartile range increase in NDI; 95% CI 0.97, 1.59). Of the NDI components, % of households with incomes <$35k, % of households with >1 person per room, % of females with no high school education, and % living below the poverty line had the strongest association with risk of miscarriage. Results were consistent when analyses were stratified by race.

CONCLUSIONS: Our research demonstrated racial disparities between Black and White women in the incidence of miscarriage and live birth following IVF. While level of neighborhood deprivation was closely related to race, it did not have strong associations with IVF outcomes in our population as a whole or within strata of race. There was some evidence for an association between NDI and risk of miscarriage, which should be further investigated in larger studies.

IMPACT STATEMENT: Given the documented racial disparities in IVF outcomes, future studies are needed to continue to explore other measurable, policy-modifiable neighborhood-level variables and their impact on IVF outcomes.