

# Racial and ethnic disparities in assisted reproductive technology access and outcomes

Molly Quinn, M.D. and Victor Fujimoto, M.D.

Department of Obstetrics, Gynecology and Reproductive Sciences, University of California San Francisco School of Medicine, San Francisco, California

Infertility is a global problem affecting all ethnic, racial, and religious groups. Nevertheless, only a minority of the U.S. population has access to treatment. Additionally, for those who do engage in treatment, outcomes are disparate among various ethnic and racial groups. This article addresses racial and ethnic disparities regarding rates of fecundity and infertility, access to care, and assisted reproductive technology outcomes. (Fertil Steril® 2016; ■: ■-■. ©2016 by American Society for Reproductive Medicine.)

**Key Words:** Ethnic disparities, access to care, ART outcomes

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Infertility is a global problem affecting all ethnic, racial, and religious groups. The precision of assisted reproductive technology (ART) has improved dramatically over the past few decades, affording many infertile couples the opportunity to fulfill their dream of having a family. Nevertheless, evidence suggests that only a minority of the U.S. population has access to treatment (1). Furthermore, among those who are able to receive treatment, duration of infertility, underlying diagnosis, and treatment outcomes differ (2-5). As a result, infertility and treatment with ART has been identified as a field with a significant health disparity.

A health disparity exists when a treatment gap disproportionately affects a disadvantaged subgroup of the population (6). The American College of Obstetricians and Gynecologists cites the National Institutes of Health

in defining health disparities more broadly as differences in "incidence, prevalence, mortality and burden of disease ... among specific population groups" (7). However, it is important to acknowledge the distinction between differences observed in racially diverse populations as a result of biologic variances versus differences resulting from variation in environmental exposures, lifestyle factors, access to care, and treatment once care is accessed (8).

This article addresses racial and ethnic disparities regarding rates of fecundity and infertility, access to care, and ART outcomes in black, Asian, Hispanic, and non-Hispanic white infertile populations.

## DISPARITIES IN INFERTILITY

In contrast to popular opinion, infertility rates in the United States appear to have been declining in recent years.

In the National Survey of Family Growth (NSFG), a multistage probability sample conducted by the National Center for Health Statistics of married women in the United States aged 15-44 years, the general population experienced a decline in 12-month infertility from 8.5% in 1982 to 7.4% in 2002 (n = 15,303 for pooled data across four survey years). In that study, infertility was defined as failure to achieve pregnancy after 12 months of unprotected intercourse with a husband or cohabiting partner. A multivariate analysis demonstrated that infertility was most common among older, nulliparous, non-Hispanic black or Hispanic women who did not have a college degree.

In fact, although non-Hispanic white women experienced a decrease in self-reported 12-month infertility from 11.6% to 7.1% during those years, non-Hispanic black women had an increase in infertility from 7.8% to 11.6% despite a stable ethnic cohort (9). Clearly, those data are limited because factors such as marital status, contraceptive practices, risk of sexually transmitted disease, and aggressiveness of pursuit of infertility treatment may vary by

Received January 5, 2016; revised March 3, 2016; accepted March 4, 2016.

M.Q. has nothing to disclose. V.F. has nothing to disclose.

Reprint requests: Molly Quinn, M.D., Division of Reproductive Endocrinology and Infertility, Department of Obstetrics, Gynecology, and Reproductive Sciences, University of California San Francisco School of Medicine, 550 16th Street, 7th Floor, San Francisco, California 94158-2519 (E-mail: [molly.quinn@ucsf.edu](mailto:molly.quinn@ucsf.edu)).

Fertility and Sterility® Vol. ■, No. ■, ■ 2016 0015-0282/\$36.00

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population subgroups and dramatically affect self-reported rates of infertility (10).

For example, during the 5 years before the NSFG survey, 35.6% of births were to unmarried women. Seventy percent of non-Hispanic black women, 44.7% of Hispanic women, and 21.4% of non-Hispanic white women who delivered were not married (10). Thus, estimates of infertility limited to self-report of married women may not reflect the population as a whole given overall prevalence of nonmarital birth (10). Given ethnic variances in prevalence of nonmarital birth, the NSFG study introduces ethnic bias, and the validity of its conclusions is called into question.

## DISPARITIES IN MISCARRIAGE

Miscarriage rates are challenging to study given the dependency of estimates of risk on gestational age. However, given the association of non-white race with adverse obstetrical outcomes, including preterm delivery and fetal growth restriction, it is reasonable to hypothesize that race may be associated with early adverse pregnancy outcomes such as miscarriage. In one analysis of spontaneous abortion risk, race was treated as a confounder in assessing miscarriage risk. Black (or other) race was associated with an increased relative risk of miscarriage of 2.57 (95% confidence interval [CI] 1.54–4.30) among 2,848 total pregnancies (including only 164 black women) in southern Connecticut during 1998–1991 (11).

In a community-based prospective pregnancy cohort of 4,070 women in whom 537 subsequently underwent miscarriage, women who self-reported black race (23%;  $n = 932$ ) had increased risk of miscarriage compared with whites (hazard ratio [HR] 1.57; 95% CI 1.27–1.93). When risk of loss before 10 weeks' gestational age was dichotomized, there was no difference between the groups, but black women had a greater risk of pregnancy loss between the 10th through 20th weeks of gestation (HR 1.93, 95% CI 1.48–2.51) (12). Interval to follow-up was not reported, but loss to follow-up might introduce bias toward later diagnosis of miscarriage and needs to be explored. Biologic mechanisms behind miscarriage differ in early compared with later losses, and it is noted that later losses may derive from pathophysiology similar to that of early preterm birth or stillbirth. Further research should investigate potential shared causes of preterm birth and late miscarriage within the black population.

Studies looking specifically at miscarriage rates in Hispanic and Asian women are lacking. High-quality prospective studies are needed to analyze miscarriage risk in various racial and ethnic groups to further understand not only differences in outcomes, but also potential shared causes, as well as to provide individualized patient counseling.

## ACCESS TO CARE

The American Society for Reproductive Medicine (ASRM) has declared that creation of a family is a basic human right. As such, the ASRM has proposed that “all ART stakeholders, including physicians, policy makers, and insurance providers, should address and lessen existing barriers to infertility care

(13).” Although a goal for equal access to infertility care has been proposed, that goal has yet to be realized.

In fact, data from the NSFG would suggest that access to infertility services may have actually declined in recent years. Among 22,682 women aged 25–44 surveyed by the NSFG during 2006–2010, 17% had ever used infertility services compared with 20% of 10,845 women surveyed in 1995. In nulliparous women aged 25–44 years who reported “fertility problems” during 2006–2010, only 38% had ever used infertility services. This compares unfavorably to the 56% of women who reported accessing fertility care in the setting of fertility challenges in 1982. Among all survey years, those who did report using fertility services to achieve pregnancy were disproportionately non-Hispanic white women with higher levels of education and household income. For example, during 2006–2010 ever using medical help to achieve pregnancy was significantly more common among non-Hispanic white women (15%) than among Hispanic (7.6%) or non-Hispanic black (8.0%) women. In a multivariate analysis of infertility service use including all survey years, ever using infertility services was significantly less likely among Hispanic women (adjusted odds ratio [AOR] 0.7) and non-Hispanic black women (AOR 0.77) (1). Although understanding of challenges to access to infertility care is complex, involving the consideration of many sociodemographic factors, ethnic and racial disparities are clearly implicated in differential access both independently and in the relationship of these factors with others, including education level and income.

The cost of care has been identified as the greatest barrier to access to infertility care in the U.S. and likely explains a significant amount of the shared contribution of ethnicity/race, education level, and income toward disparities in access. In the U.S., the majority of patients undergoing specialized infertility treatment, such as in vitro fertilization (IVF), pay out of pocket for their treatment owing to a lack of—or limited—insurance coverage of therapy. It has been suggested that the cost of a single IVF cycle in the U.S. may exceed 50% of the average individual's annual disposable income (14). In one study, median per-person costs for 18 months of infertility treatment ranged from \$1,182 (medications alone) to \$38,015 (IVF–donor eggs) (15). In 2014, the U.S. Census Bureau reported median household income to be \$53,657. Mean income was \$60,256 among non-Hispanic whites, \$42,491 among Hispanics, and \$35,398 among blacks (16). Therefore, while non-IVF infertility treatment may be less expensive, it may also be above the reach of those in lower income categories which tend to disproportionately include ethnic and racial minorities.

Although several states (Connecticut, Illinois, Maryland, Massachusetts, New Jersey, and Rhode Island) provide coverage for infertility treatment through state law mandates, these mandates have failed to achieve equal access for all. Mandates do not apply to those who obtain health coverage through government programs (such as Medicaid), are uninsured, or obtain their insurance from self-insured employers (13). As a result, even in mandated states, infertility care has been accessed disproportionately by non-Hispanic white women with higher educational training and socioeconomic

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