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Will Decreasing ART Costs Improve Utilization and Outcomes Among Minority Women?

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Abstract

Objective—To evaluate ART utilization and outcomes in minority women seeking care at enhanced access, military ART programs.

Design—Retrospective cohort

Setting—Federal ART programs

Patients—2,050 women undergoing first cycle, fresh, non-donor ART from 2000–2005

Intervention—None

Main outcome measure(s)—: ART utilization rate, clinical pregnancy rate, live birth rate

Results—African American (AA) women had an almost fourfold increased utilization of ART and Hispanic women had decreased utilization. Clinical pregnancy rates were significantly lower for AA women compared to white women (46.1% vs. 52.6%, RR 0.88, 95% CI 0.78–0.99) as were live birth rates (33.7% vs. 45.7%, RR 0.74, 95% CI 0.63–0.91).

Conclusions—Economics appear to influence ART utilization by AA women but not Hispanic women. Despite increased utilization by African American women, outcomes in this group were worse when compared to Caucasian women. Improving access through decreased cost may

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increase utilization by some, but not all minority groups. Improved access may not translate into improved outcomes in some ethnic groups.

Keywords

infertility; ethnic disparity; ART utilization

Introduction

Infertility poses a significant public health problem for women from all ethnic and socioeconomic backgrounds and there are approximately 6 million women facing infertility in the United States. Data from the 2002 National Survey of Family Growth (NSFG) showed that 7.4% of married women in the United States were infertile with highest rates among African American women (11.5%) compared to Hispanic and white women (7.7% and 7% respectively). Despite a higher prevalence of infertility among low income and non-white groups, women from lower socioeconomic and minority groups were less likely to report ever receiving infertility treatment (1).

Specific issues of cost and access make infertility care particularly prone to inequalities. Differences in cultural beliefs and family values between ethnic groups also contribute to the disparity. In a recent review of the financial impact of assisted reproductive technology (ART), Chambers et al. estimated the average cost of a standard in vitro fertilization (IVF) cycle in the U.S. to be \$12,513 and the average cost per live birth to be \$41,132 (2). These costs are prohibitive to many couples, particularly those belonging to low income and uninsured groups (3,4). Women of higher income therefore comprise the majority of patients receiving infertility treatment. Within the U.S. federal system, infertility services are available to active duty service members and their spouses at a considerably lower cost compared to the private sector. Thus, the federal health care system provides a unique opportunity to examine ART utilization by minority populations, independent of economic factors, in an equal access to care setting.

In two prior studies performed at Walter Reed Army Medical Center (WRAMC), racial disparities were observed in utilization of ART (5,6). Feinberg et al. examined ART utilization among 1,457 women receiving ART at WRAMC from 1999 to 2003. In this enhanced access to care setting, utilization of ART increased fourfold among African American women relative to the U.S. ART population (5). In contrast, ART utilization by Hispanic women was less than half of what was expected based on demographic data (6). ART outcomes were also disparate in the military setting where African American women experienced a significantly increased miscarriage rate and decreased live birth rate compared to white women (5).

Studies by Jain et al. documented disparities in ART access, and the authors suggested that this was the result of economic factors. Massachusetts, a state where insurance coverage for ART is mandated, should show an increase in utilization by this patient group. But does decreased cost increase utilization by minority women and are their outcomes improved? Nationally the utilization rates for African American and Hispanic women are lower than their representation in the general population (7,8,9). In states with mandated ART coverage, the majority of patients receiving care were wealthy, highly educated white women. To date, there is no evidence that insurance mandates improve utilization among women from non-white ethnic groups (7,10,11). Regarding outcomes, states with insurance mandates reported lower number of fresh embryos transferred per cycle and fewer pregnancies with three or more fetuses (7,12). Henne and Bundorf found lower live births per cycle in states with comprehensive mandates (13).

There have been few studies which have examined ethnic disparities in ART outcome, and the majority of previously published reports have been limited by small study population size. Additionally, data on ethnic minorities other than African Americans has been limited as too few women of other ethnicities were present within the populations studied. In our current study, we examined ART utilization and outcomes at three centers providing enhanced access to care (WRAMC, Tripler Army Medical Center: TAMC and Wilford Hall Medical Center: WHMC) to determine if patterns of utilization and outcomes differ when IVF costs are decreased.

Materials and Methods

Approval from the institutional review boards (IRB) at Walter Reed Army Medical Center, Wilford Hall Medical Center and Tripler Army Medical Center was granted for this study. We reviewed ART cycles from the period of 1 January 2000 to 31 December 2005 in women < 42 years of age with FSH levels on day 3 or 10 < = 12 mIU/mL undergoing first cycles of fresh, non-donor ART. Racial information was obtained from the IVF clinical database for each medical center or from Department of Defense (DoD) electronic medical records, which included self-report. Racial information was collected on female active duty members or spouses of active duty members. Racial information for male partners was not obtained.

DoD demographic data was obtained from the 2005 Defense Manpower Data Center report. Information on percent of active duty minorities and non-minorities by rank and pay grade was obtained from the 2005 DoD report, but specific information for patients included in this study was not collected. U.S. ART demographic information was obtained from Society of Assisted Reproductive Technology (SART) data for 1999–2000, as reported by Seifer et al. (14). We calculated clinical pregnancy rate (CPR) and live birth rate (LBR) per cycle start and compared these outcomes between African American and white women. Clinical pregnancy rate was defined as a positive pregnancy test, confirmed by ultrasound visualization of a gestational sac ≥ 4 weeks following embryo transfer. Live birth rate was defined as the birth of at least one living infant > 24 weeks gestation. Demographics of our study population were characterized with descriptive statistics. Where appropriate, means were compared with Student's t-test and proportions were compared with chi-squared tests. Relative risk and exact Fisher 95% confidence intervals were calculated for all study variables of interest comparing African American to white women.

Results

A total of 2,916 cycles (1,947: WRAMC, 200: TAMC, and 769: WHMC) were reviewed and 2,050 cycles met inclusion criteria. Specific racial information was obtained on 94% (n=1929) of patients; 2.5% (n=52) reported their race as "other" and racial information was unknown for 3.4% (n=69). Of the 1,929 patients, 66.4% (n=1280) were white, 18.3% (n=353) were African American, 4.2% (n=81) were Hispanic, 5.7% (n=110) were Asian, 0.4% (n=8) were American Indian, 0.6% (n=12) were Pacific Islander and 4.4% (n=85) were identified as multi-racial. A comparison of our patient demographics (Federal ART) with those of the DoD and U.S ART populations are shown in the Table.

In 2005, minority service members comprised 22.4% of active duty officers and 38.5% of active duty enlisted for all service branches combined. African American members accounted for 9.1% of active duty officers and 19.5% of enlisted, Hispanic members accounted for 4.9% of active duty officers and 9.8% of enlisted and Asian members made up 4.0% of active duty officers and 4.4% of enlisted. Since we did not collect specific

information on rank or pay grade, we are unable to draw any conclusions regarding the relationship of rank/salary to utilization of ART in this study.

We found significant differences in infertility diagnoses between African American and white women in our study. Tubal factor was higher among African American women (65.4% vs. 32.9%, RR 1.99, 95% CI 1.78–2.22). The infertility diagnoses occurring less frequently among African American women compared to white women were male factor (25.8% vs. 37.6%, RR 0.69, 95% CI 0.57–0.83), endometriosis (8.8% vs. 14.2%, RR 0.62, 95% CI 0.43–0.89), anovulation (5.7% vs. 9.8%, RR 0.58, 95% CI 0.37–0.92) and unexplained (6.5% vs. 12.7%, RR 0.51, 95% CI 0.34–0.78). We found no significant differences in age at cycle start, maximum FSH level, number of embryos transferred, preterm births or birth weight. CPR was lower for African American women compared to white women (46.1% vs. 52.6%, RR 0.88, 95% CI 0.78–0.99) and LBR was significantly lower among African American women in our study population (33.7% vs. 45.7%, RR 0.74, 95% CI 0.63–0.91). CPR and LBR for Hispanic women were comparable to those of African American women (43.2% and 33.3% respectively). Differences in underlying disease between groups may partially explain our findings; however we were unable to control for these confounders. More research is needed to examine the impact of health disparities on ART outcomes.

Discussion

A prior study at our center revealed increased utilization of ART by African American women and decreased utilization by Hispanic women. Our study population of women receiving ART at one of three military treatment facilities was similar to 2005 DoD demographics for active duty African American, white and Asian women; however Hispanic women receiving ART were significantly under-represented when compared with the general DoD population (Table). We also found a larger number of women who were identified as multi-racial compared with the DoD population. Compared with U.S. ART demographic data, ART utilization was increased almost four-fold among African American women in our study population and utilization among Hispanic women was decreased. Asian women also had slightly higher utilization within the enhanced access system compared to national ART statistics. As in prior studies, we are unable to draw conclusions regarding utilization patterns for other ethnicities due to small patient numbers.

Disparities in ART outcomes have been studied in individual centers, multicenter trials, and through the SART registry, but conflicting results have been published. Sharara and McClamrock reported lower implantation and clinical pregnancy rates among African American women compared to white women (9.8 percent and 19.2 percent vs. 23.4 percent and 42.2 percent) in their study of 132 patients undergoing ART (15). In their review of 80,309 in-vitro fertilization (IVF) cycles, Seifer et al. also found poorer outcomes among African American women compared with whites. They reported that the miscarriage rate was higher among African American women and that the live birth rate for African American women was 18.7 percent versus 26.3 percent among white women. The authors controlled for high incidence infertility factors among these women, and found that African American race remained a risk factor for not having a live birth (14). Nichols et al. have published the only report describing improved outcomes for African American women undergoing ART (16) and several authors have found no differences in pregnancy outcomes between African American and white women undergoing ART (17,18). In one of the largest studies to date, Fujimoto et al. found worse outcomes among African American and Asian women and for the first time, documented worse outcomes among Hispanic women (19). Our findings of decreased CPR and LBR among African American women were consistent

with prior reports from our center (5); however our finding of decreased CPR and LBR in Hispanic women in federal ART programs was new (6).

In our previous study at Walter Reed Army Medical Center, we found that African American women had increased utilization of ART services and Hispanic women had decreased utilization compared with the U.S. ART population. In our present multi-center study we found similar utilization patterns among these ethnic groups. The military provides an enhanced access environment due to significantly reduced costs for IVF services, and our finding of increased ART utilization by African American women suggests that economics may be a factor in ART utilization by this group. In general, minorities are under-represented among active duty officers, but also comprise less than 50% of enlisted service members. Since we did not collect specific information on rank or pay grade, we are unable to draw conclusions regarding the impact of salary on ART utilization in this study. It would be important for future investigations to consider these factors which influence affordability and utilization of ART services.

It is not known if increased private insurance coverage of ART would also result in increased utilization. Data from states such as Massachusetts suggest that the increase in utilization is likely limited (7,8,9). In our population we observed that despite reduced cost, Hispanic patients did not utilize services to the extent that we would expect based on their representation in the DoD population. These findings would suggest that factors in addition to cycle cost impact utilization rates among Hispanic women. Some authors have suggested that cultural and/or religious beliefs may also impact medical care access and utilization in this group. Becker et al. evaluated the infertility experiences of low-income Latinos and found that cultural beliefs, family values and access to care all played a role in utilization of infertility services among this population (3). In an interview study of 145 low-income Latino immigrant men and women, four challenges to providing infertility care to this population emerged: (1) language/cultural barriers, (2) lack of continuity with providers, (3) difficulty with scheduling visits and procedures and (4) decreased availability and affordability of services (20). As suggested by Feinberg et al., we cannot assume that economics alone explains the under-utilization of ART by Hispanic women (6). In a multicenter study we confirmed our previous findings that in a reduced cost setting, African American women increased utilization and Hispanic women utilized ART services less. Outcomes were worse in both Hispanic and African American women. As healthcare coverage for ART services is being mandated in an increasing number of states, it will be important to continue to study the role of economics, as measured by cycle cost, in determining utilization and IVF outcomes in women of color.

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Table

Ethnicity in Federal ART, DoD and SART Populations

Ethnicity	Federal ART 2000–2005	DoD Demographics 2005	U.S. ART⁴
Caucasian	66.4%	64.1%	85.4%
Black/African American	18.3 %	17.8%	4.6%
Hispanic	4.2%	9%	5.4%
Asian	5.7%	4.3%	4.5%