NATIONAL DONOR SPERM ART TRENDS AND OUTCOMES: 2014-2022

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Background: Use of third party reproduction, specifically the use of donor sperm, has increased over the last three decades. There was a 122% increase in in vitro fertilization (IVF) cycles using donor sperm between 1996 and 2014 [1]. Furthermore, more people are utilizing assisted reproductive technology (ART) to build their families with 368,502 cycles completed in 2021 compared to 154,412 cycles completed in 2011 [2]. This is due to a variety of factors, including broadened insurance coverage for ART [3] and increased access and knowledge for single women and the lesbian, gay, bisexual, transgender (LGBT) population [4]. There have only been a few studies analyzing donor sperm cycle outcomes using national assisted reproductive technology surveillance registries [1, 5]. The last study evaluating United States data is almost ten years old, including cycles up to the year 2014 [1].

Objective: We aim to describe the trends and outcomes in donor sperm use in the United States from 2014-2022.

Materials and Methods: This is a retrospective cohort study using data from the Society of Assisted Reproductive Technology (SART). The total number of and proportion of autologous oocyte cycles using donor sperm were calculated. The primary outcome of live birth was assessed in fresh autologous oocyte cycles. Live birth rates for donor sperm and non-donor sperm cycles were assessed. Cycles canceled prior to retrieval, donor oocyte cycles, and frozen embryo transfer cycles were excluded from the analysis. Descriptive statistics were used to analyze national trends in donor sperm use and to assess the primary outcome of measure. Linear regression was utilized to control for potential confounders, including oocyte age.

Results: Between 2014 and 2022, a total of 79,298 (7.2%) autologous ART cycles utilized donor sperm. The proportion of donor sperm cycles steadily increased over time with 5.6% of cycles using donor sperm in 2014 compared to 8.8% of cycles using donor sperm in 2022 (Figure 1). On average, the age of patients using donor sperm was 37.2 years (SD 4.79), and the age of patients using non-donor sperm was 35.79 (SD 4.67). Among the 1,095,543 fresh autologous cycles, 332,807 (30.4%) attempted a fresh embryo transfer. The live birth rate among donor sperm and non-donor sperm cycles was 34.0% and 35.3%, respectively. However, live birth rates were higher among donor sperm cycles compared to non-donor sperm cycles after adjusting for patient age at time of oocyte retrieval (Figure 2).

Conclusions: The use of donor sperm in the United States continues to increase over time with 8.8% of all ART cycles using donor sperm in 2022. Although patients using donor sperm are, on average, slightly older than those who do not use donor sperm, live birth rates among donor sperm users are higher. Perhaps an explanation for this finding is that many patients who use donor sperm are single women or women in a same-sex partnership, and thus, they don't have underlying infertility.

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Figure 1. Percent of fresh autologous cycles using donor sperm, United States, 2014-2022

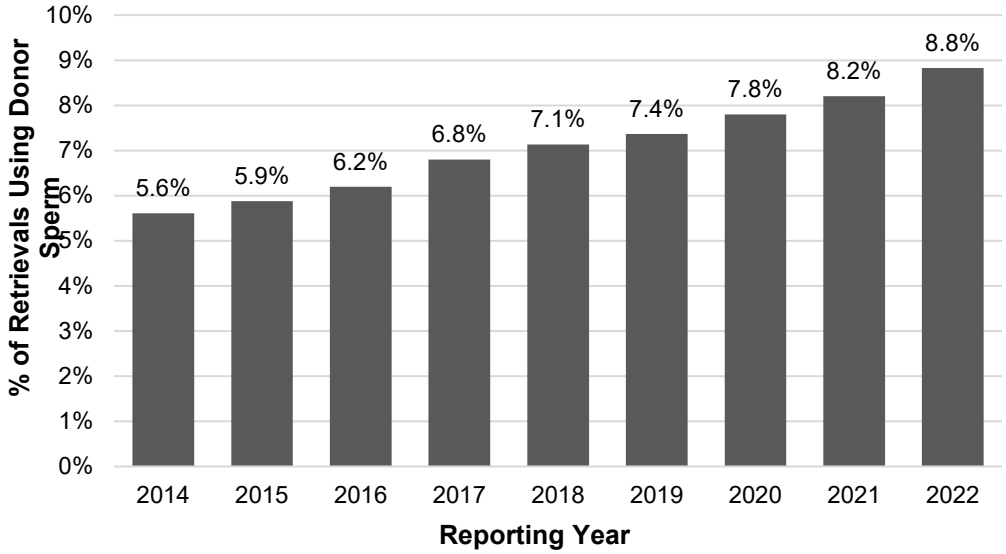

Figure 2. Live birth rates among donor sperm and non-donor sperm fresh autologous cycles, United States, 2014-2022