Patient Decision-Making Process for Disposition of Cryopreserved Embryos

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Objective: At our institution, cryopreserved embryos remain in onsite storage for up to three years, after which point patients are given the option to transfer embryos to an offsite storage facility, donate them to research, or discard them. This study aimed to assess factors influencing patient decision-making regarding embryo disposition, primarily the use of preimplantation genetic testing (PGT) and donor gametes, and secondarily household income. It was hypothesized that patients using PGT or donor gametes will be more likely to maintain embryos in storage.

Materials and Methods: A cross-sectional survey was sent to patients who had undergone an in vitro fertilization (IVF) cycle in the preceding three years (1/2018 - 3/2021) with cryopreserved embryos in onsite storage. Untested embryos of sufficient quality from non-PGT cycles were considered usable and cryopreserved. Embryos from PGT-A, PGT-M and PGT-SR cycles were considered usable and cryopreserved only if eligible for transfer (euploid, unaffected or balanced, respectively). Logistic regression was used to model associations between disposition plan and use of PGT, donor gametes and household income.

Results: Of the 1496 eligible patients, 646 completed the survey for a 43% response rate. Median age was 35.0 years. 80% identified as White, 4% as Black/African American and 10% as Asian. Only 5% identified as Hispanic. Most subjects (88%) reported a household income >$100,000 per year. Donor gametes were used by 11% and 32% used PGT. Of those with usable embryos (n=584), 63% planned to keep embryos in storage, 7% planned to donate them to research, 2% planned to discard and 20% were unsure. Use of PGT was not associated with the decision to keep embryos in storage [63.6% vs 64.6%; RR 1.02 (0.89-1.16)], nor was the use of donor gametes [65.4% vs 52.2%; RR 0.80 (0.63 – 1.01)]. However, use of donor gametes was significantly associated with being unsure of disposition plan [RR 1.53 (1.02 - 2.31)]. Conversely, of those with unusable embryos identified via PGT (n=131), only 6% planned to keep embryos in storage, while 44% planned to donate them to research, 21% planned to discard and 28% were unsure. Household income <$100,000 vs ≥ $100,000 was not associated with the decision to keep embryos in storage [65.7% vs 63.5%; RR 0.97 (0.80-1.16)]. Of all respondents who plan to keep embryos in storage, 36% reported they will store them “for the foreseeable future”.

Conclusions: Most patients plan to keep usable embryos in storage, regardless of use of PGT or donor gametes. However, uncertainty towards embryo disposition is commonly reported, particularly among patients using donor gametes. Patients with unusable embryos identified via PGT were less likely to keep those embryos in storage.

Impact Statement: Embryo disposition can be challenging for patients and there is a high level of ambivalence. Existing data suggest these decisions are influenced by ethical concerns, but it is yet unknown how other factors influence decision-making. Patients with unusable embryos identified via PGT were less likely to store those embryos, suggesting a role for PGT in the decision-making process.