

Demographic Disparities Related to Fertility Preservation Counseling in Patients Undergoing Bone Marrow Transplantation

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Infertility is a well-documented adverse effect associated with certain chemotherapeutic agents and radiation therapy (Rodriguez-Wallberg 2012). High-dose chemotherapy and/or total body irradiation (TBI) are utilized in preparation for bone marrow transplant (BMT), with the intent of achieving complete myeloablation prior to transplant (Gyurkocza 2014). BMT is commonly used as a curative treatment modality for both malignant and benign hematologic conditions, as well as a rescue therapy for non-hematologic malignancies that require intense, myeloablative chemotherapy. Given this necessary exposure to high-dose chemotherapy and TBI, both male and female patients undergoing BMT are therefore at extremely high risk of impaired fertility later in life.

Discussions concerning fertility preservation are often psychologically challenging for patients preparing to undergo BMT. To address these concerns, many institutions have developed fertility preservation counseling programs that aim to provide patients and caregivers with the necessary information to make informed decisions regarding fertility preservation. As is the case with many resources in healthcare, certain populations have more access to these resources than others. The goal of this study was to gain insight into if demographic features such as age, race, socioeconomic status, and underlying diagnosis/indication for BMT impacted the likelihood that a patient received fertility preservation counseling prior to transplant. It was hypothesized that there would be statistically significant differences in the rates of fertility preservation counseling when patients are compared by age, gender, race, socioeconomic status, and underlying diagnosis.

A pre-existing database of BMT patients treated at the University of Rochester Medical Center was used to generate a study population of 244 patients between the ages of 0-39 years old who underwent BMT between 2012-2020. Demographic features including age, gender, race, insurance type, zip code, and indication for transplant were extracted from the database. A retrospective chart review was then conducted to identify if patients had a visit with a reproductive endocrinology and infertility (REI) specialist or if any documented fertility preservation counseling occurred prior to transplant. Odds ratios were then calculated for each of the aforementioned independent demographic variables.

The overall prevalence of documented fertility preservation counseling was low. There were differences in the prevalence of fertility preservation counseling related to patient age at transplant and median county income. Adult patients (age >18) were more likely than pediatric patients (age <18) to have a documented visit with an REI specialist (OR 2.99, 95% CI 1.37-6.51, $p=0.0059$) and more likely to have any documented fertility preservation counseling (OR 3.49, 95% CI 1.97-6.16, $p<0.0001$). Patients living in counties where the median income was >\$60,000/year were more likely than patients living in counties with a median income of <\$60,000/year to have a visit with an REI specialist (OR 4.25, 95% CI 1.89-9.54, $p=0.0005$) or any documented fertility preservation counseling (OR 2.72, 95% CI 1.59-4.64, $p=0.0002$). There were no statistically significant disparities in the prevalence of fertility preservation counseling based on patient gender, insurance type, or indication for transplant.

These findings demonstrates that there are statistically significant differences in the prevalence of documented fertility preservation counseling based on demographic features, specifically on the basis of age and socioeconomic status. It is unclear if these findings represent the true prevalence of fertility preservation counseling, as some counseling is likely not adequately documented in the electronic medical record. Future studies are needed to design and implement improved fertility preservation counseling mechanisms, and to ensure adequate documentation of this counseling.

