Title: HEALTH UTILITY SCORES IN CHILDHOOD CANCER SURVIVORS: INSIGHTS FROM THE CHILDHOOD CANCER SURVIVOR STUDY

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ABSTRACT (375 word limit)

Purpose: Although improvements in childhood cancer treatments have resulted in remarkable survival rate increases, survivors of childhood cancer face very high risks for serious chronic illness and premature death from late-effects in adulthood, including secondary cancers and cardiac disease. To date, utility weights are lacking for this unique, complex population, limiting comparative effectiveness modeling. We sought to understand the impact of late-effects on quality of life in childhood cancer survivors using health utility scores.

Methods: We calculated SF-6D health utility scores for childhood cancer survivors using SF-36v1 data (n=7105) from the NCI-sponsored Childhood Cancer Survivor Study (CCSS), a multi-institutional study of 5-year survivors of childhood and adolescent cancer, and the general population using SF-12v2 data (n=12,803) from the Medical Expenditures Panel Survey (MEPS). We calculated SF-6D scores for the overall cohort (age 18-49) and for sex- and age-strata (ages 18-29, 30-39, 40-49). We also compared SF-6D scores among survivor subgroups (e.g., based upon original cancer diagnosis, cancer treatment, and number of chronic conditions). We defined a Minimally Important Difference (MID) as a 0.03 point difference in SF-6D score and statistical significance at the $P<0.05$ level.

Results: Based on CCSS SF-36 data, we found that SF-6D scores for survivors were statistically lower than MEPS general population estimates (males, 0.787 (SD, 0.118) vs. 0.827 (SD, 0.170); females, 0.751 (SD, 0.124) vs. 0.790 (SD, 0.173)). This was consistent across age-stratum, with lower SF-6D scores for older ages (e.g., males age 40-49, 0.772 (SD, 0.122) vs. 0.807 (SD, 0.152); females age 40-49, 0.735 (SD, 0.130) vs. 0.776 (SD, 0.151). Within CCSS responders, SF-6D score differences did not reach MID when comparing across original cancer diagnosis groups, age at diagnosis, and treatment subgroups. SF-6D scores were lower in survivors who reported chronic conditions; when compared to those who reported no conditions (0.81 (SD, 0.107), SF-6D scores were MID and statistically significantly lower in survivors who reported 2 (0.773 (SD, 0.118) or ≥3 conditions (0.735 (SD, 0.128), regardless of severity grade. Multivariate linear regression models found that age, sex, and most chronic conditions were associated with statistically significant SF-6D score decrements (p<0.03).

Conclusions: Health utility weights for childhood cancer survivors are consistently lower than for the general population, largely attributable to the multiple chronic conditions that develop after initial cancer cure.