

Health-Related Unemployment among Survivors & Siblings in the Childhood Cancer Survivor Study (CCSS)

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Research Objective: Mortality for childhood cancer has decreased substantially due to improvements in therapy and supportive care; however, long-term effects from surgery, chemotherapy and radiation may continue throughout adulthood. Although adult survivors generally report lower levels of employment in contrast to healthy comparison populations, it is unknown whether unemployment is due to ongoing illness or disability. Female survivors, who often have poorer health-related outcomes, may be at higher risk. Therefore, we examined current employment status in a cohort of adult childhood cancer survivors compared to their age and gender matched sibling controls who were participating in the Childhood Cancer Survivor Study (CCSS).

Study Design: The CCSS represents 14,370 subjects diagnosed under the age of 21 years with cancer between 1970-1986 and randomly selected nearest age siblings (N=3,418) as comparison. Employment status was obtained via questionnaire; categories included currently employed (full-time =30 hours/week; part-time <30 hours/week), unable to work due to illness/disability, unemployed by choice (not seeking paid work, student, retired), and unemployed but seeking work. Multivariate logistic regression calculated the odds ratio (OR) and 95% confidence interval (95% CI) of being unable to work due to illness/disability for survivors compared to siblings using generalized estimating equations to account for the case-sibling pairs. Within survivors, multivariate logistic regression estimated the risk of being unemployed due to illness/disability by sex. Models were adjusted for current age, race, years of education, and marital status, and the survivor-only model also included cancer type at diagnosis.

Population Studied: To assess participants most likely to be in the labor force or wanting employment, we included the 6,373 survivors and 1,968 siblings aged =25 years as of 2002 and not unemployed by choice.

Principal Findings: Survivors' average age was 34.0 (range: 25-54) years compared to 35.9 (range: 25-57) for siblings. Survivors were less likely to be female (45% vs. 50%), college educated (48% vs. 57%) and married (48% vs. 63%) than siblings; 90% of survivors and siblings were White, non-Hispanic. Over 66% of survivors and 74% of siblings reported current full-time employment with no differences in the proportion employed part-time (7% each). For the main outcome of interest, significantly more survivors (9%) compared to siblings (1.5%) reported unemployment due to illness/disability (multivariate OR 5.25; 95% CI 3.66, 7.54). Within survivors, females reported unemployment due to illness/disability more often than males (12% vs. 8%, respectively; multivariate OR 1.84, 95% CI 1.53, 2.21), but this same effect was not apparent in siblings (1% males and 1% females). Younger age, being non-Hispanic white, higher education and being married were all significantly associated with a lower probability of health-related unemployment within survivors.

Conclusion: Childhood cancer survivors are more likely to report health-related unemployment compared to their siblings. Female survivors are at significant additional risk for unemployment.

Implications for Policy, Delivery or Practice: Health-related unemployment may disproportionately affect adult survivors of childhood cancer. As survival continues to increase for childhood cancers, efforts

to mitigate health-related work limitations are necessary, especially for female survivors, who often have poorer health outcomes.

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