

EMPLOYMENT STATUS OF ADULT SURVIVORS OF PEDIATRIC CANCERS: A REPORT FROM THE CHILDHOOD CANCER SURVIVOR STUDY (CCSS)

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Objectives: Survival rates among childhood cancer patients have markedly increased in the last 30 years. The quality of that survivorship which includes an assessment of the ability to transition into adulthood and to attain employment is of utmost importance. Among 10,188 adult survivors of childhood cancer, we examine the prevalence of unemployment and explore potential disease, treatment, and host-related risk factors.

Methods: The CCSS is a retrospective cohort study of children diagnosed with common cancers before age 21 and surviving over five years and treated in 25 American and Canadian institutions from 1970-1986. Using a self-administered questionnaire, employment history, cancer diagnosis and treatment and other demographic information were obtained of 10,188 adults (≥ 18 years of age) in the cohort. Using univariate and multivariate logistic regression, we assessed the influence of cancer diagnosis, treatment, treatment era, age at the time of diagnosis, gender, race, marital status and number of children on employment status. We also compared the employment status of cancer survivors with that of their siblings. All analyses were adjusted for attained age.

Results: The overall prevalence of unemployment among cancer survivors was 5.2%, compared with 1.4% in their siblings. In the univariate analysis, risk for unemployment was associated with the following: diagnosis of a brain tumor (Odds ratio [OR] 3.58, 95% confidence interval [CI] 2.92-4.35), cranial radiation at doses ≥ 3000 centigray (cGY) (OR 5.00, 95% CI 3.93-6.36), treatment from 1970 to 1973 (OR 1.42, 95% CI 1.08-1.86), female gender (OR 1.36, 95% CI 1.41-1.62), unmarried status (OR 3.08, 95% CI 2.40-3.99), and having no children (OR 2.03, 95% CI 1.48-2.84). In addition, there was a higher risk of unemployment in cancer survivors than their siblings (OR 3.32, 95% CI 2.37-4.64). In the multivariate model, the following risk factors remained significant: diagnosis of a brain tumor (OR 1.97, 95% confidence interval [CI] 2.92-4.35), cranial radiation at doses ≥ 3000 centigray (cGY) (OR 4.35, 95% CI 2.87-6.42), treatment from 1970 to 1973 (OR 1.64, 95% CI 1.07-2.45), female gender (OR 1.54, 95% CI 1.25, 1.90), age at diagnosis 0-3 years (OR 1/38, 95% CI 1.05, 1.81) and unmarried status (OR 2.44, 95% CI 1.81-3.31). In the multivariate analysis that included cancer survivors and siblings, the survivors continued to have a three-fold increase in unemployment when compared to their siblings (OR 3.07, 95% CI 2.20-4.29). Female gender (OR 5.37, 95% CI 2.12-13.56), unmarried status (OR 2.99, 95% CI 2.26-3.95) and having no children (OR 3.42, 95% CI 1.36-8.60) remained significant risk factors for unemployment in survivors and their siblings.

Conclusion: The majority of pediatric cancer survivors have been employed during their adult lives. However, compared to their siblings, they are less likely to have been employed. Cancer risk factors associated with elevated unemployment include younger age at diagnosis, diagnosis of brain tumors, and high dose of radiation to the brain. Therefore, special attention should be paid to providing educational and vocational services to this group of survivors. Host risk factors were similar among cancer survivors and their siblings (female gender, unmarried status, and lack of children), and may reflect those seen in the general population.