

Utilization of special education services and educational attainment among long-term survivors of childhood cancer: A report from the Childhood Cancer Survivor Study (CCSS)

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Purpose: Survivors of childhood cancers are known to have varying degrees of risk for difficulties in educational performance. Within the CCSS cohort of five-year survivors of childhood cancer, we investigated the utilization of special education (SE) services and educational attainment among 12,430 survivors and a randomly selected group of 3,410 sibling controls. **Methods:** Odds Ratios (OR) and 95% CI were calculated for the utilization of SE services and educational attainment within subgroups defined by type of cancer, age at diagnosis, and type of treatment. **Results:** The study population, consisting of 53% males and 47% females, included survivors of leukemia (n=34%), Hodgkin's disease (n=13%), central nervous system (CNS) tumors (n=13%), soft tissue sarcoma (n=9%), Wilms'(n=9%), bone cancer (n=8%), non-Hodgkin's lymphoma(NHL) (n=7%), and neuroblastoma(n=7%). Use of SE services was reported in 23% of survivors and 8% of siblings, with the greatest differences observed among survivors of CNS tumors, leukemia, and Hodgkin's disease diagnosed at earlier ages (OR=18.8 95%CI=15.01-23.49, OR=4.4 95%CI=3.75-5.16, OR=4.4 95%CI=2.64-7.24 respectively). Intrathecal methotrexate (IT MTX) and cranial radiation (CRT), administered alone or in combination were found to significantly increase a survivor's risk for utilizing SE (IT MTX only OR=1.3 95%CI=1.09-1.78, CRT only OR=7.2 95%CI=6.14-8.39, IT MTX + CRT OR=2.6 95%CI=2.30-2.95). A dose response was identified between higher doses of CRT and use of SE. Survivors of leukemia (OR=1.6 95%CI=1.23-2.16), CNS tumors (OR=2.7 95%CI=1.92-3.81), NHL (OR=1.8 95%CI=1.15-2.78), and neuroblastoma (OR=1.7 95%CI=1.14-2.61) were found to be significantly less likely to finish high school than siblings, but when survivors received SE services, risk estimates approximated those of the sibling population. This research suggests that children diagnosed with cancer should be followed closely to identify early signs of learning disabilities to maximize intervention strategies for the successful completion of scholastic goals.