

## **Dental Health of Long-term Survivors of Childhood Cancer: The Childhood Cancer Survivor Study (CCSS)**

**Background:** This study describes the frequencies of and risk factors for altered oral health and dental development in pediatric patients who have survived childhood cancer.

**Methods:** We identified 8522 participants and 2831 siblings in the CCSS with information on dental health. Dental outcomes of treatment and socioeconomic-demographic (SED) data, were analyzed using univariate and multivariate logistic regression models to estimate odds ratios (OR).

**Results:** Survivors included 4249 females (49.9%), 7367 white non-Hispanic (86.5%). Median age at cancer diagnosis, 6.8y (range, 0-20 y); time from diagnosis to interview, 31.4 y (range, 17-54 y).

Overall, survivors self-reported 30% of any oral-dental abnormality: microdontia (10%), hypodontia (8%), > 5 caries (55%), root stunting (6%), enamel hypoplasia (13%), gingivitis (7%). Compared to siblings, survivors were at increased risk of  $\geq 1$  oral-dental abnormalities when adjusted for SED (OR = 2.0,  $p < 0.001$ ).

Increased risk of abnormalities was associated with female ( $p < 0.001$ ), white non-Hispanic ( $p = 0.001$ ), income  $< \$20K$  ( $p = 0.001$ ), lower education ( $p = 0.004$ ) and lack of health insurance ( $p = 0.02$ ). Patients with central nervous system tumors, neuroblastoma and soft tissue sarcoma had highest risk of abnormality (all  $P$ -values  $< 0.001$ ). In multivariate models adjusted for SED, radiation dose to jaw, and increased exposure to alkylating agents increased risk of oral-dental abnormalities (radiation dose  $\geq 20$  Gy OR = 5.6,  $p < 0.001$ ; alkylating agent score OR=1.6,  $p < 0.0001$ ).

**Conclusions:** Childhood cancer therapy leads to adverse long-term oral-dental sequelae and were associated with specific treatment factors of exposure to radiation and increased alkylating agents.

Characters without spaces: 1637

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Words: 268