

# Self-Reported Sleep Problems in Adolescent Survivors of Childhood Cancer

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**Background:** Although sleep problems are common among adult cancer survivors, little is known about sleep problems in adolescent survivors of childhood cancer (ASCC).

**Objectives:** This study sought to describe (a) the prevalence of self-reported sleep problems among ASCC before treatment, during treatment, following treatment, and in survivorship follow-up; (b) the relationship between sleep problems and self-reported adverse psychosocial outcomes; and (c) the relationship between sleep problems, treatment, and disease.

**Methods:** Baseline surveys were received from 173 ASCC aged 13–19 years. Chi-square analyses and odds ratios were used to determine associations between sleep problems and adverse psychosocial outcomes and treatment-related variables.

**Findings:** Sleep problems were reported before treatment (6%), during treatment (18%), after treatment (15%), and at present (11%). ASCC reporting sleep problems reported more adverse psychosocial outcomes than those without. Significant associations ( $p \leq 0.05$ ) between sleep problems and difficulty in school were identified at all time points. Sleep problems were associated with depressive symptoms, memory problems, and anxiety during and after treatment and at present.

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An estimated 10,380 children aged from 0–14 years will be diagnosed with cancer in 2015 (American Cancer Society, 2015). Because of recent improvements in treatment, five-year survival rates for these children now exceed 80% (American Cancer Society, 2015). An estimated 60,620 childhood cancer survivors from ages 0–14 years and 48,690 from ages 15–19 years were living in the United States as of 2012 (American Cancer Society, 2014). With an increasing number of children surviving the initial diagnosis of cancer and living into adulthood, examining how the disease and treatment affect these individuals during survivorship is important.

Childhood cancer survivors are already at risk for adverse health outcomes resulting from cancer and its treatment that may manifest months to years after treatment ends (Hewitt, Weiner, & Simone, 2003). Psychosocial outcomes include de-

pression and depressive symptoms, social withdrawal, cognitive impairment (Costa, 2010), poor academic achievement, and lower employment status (Lund, Schmiegelow, Rechner, & Johansen, 2011; Michel, Rebholz, von der Weid, Bergstraesser, & Kuehni, 2010).

Sleep problems for cancer survivors are identified as a late effect of cancer and treatment, significantly affecting health and quality of life (Bennett et al., 2010; Fleming, Gillespie, & Espie, 2010; Otte, Carpenter, Russell, Bigatti, & Champion, 2010; Rumble et al., 2010). Symptoms of sleep problems, reported by as many as 68% of adult cancer survivor diagnosed as adults, are among the most distressing late effects of cancer and treatment (Bennett et al., 2010) and are significantly associated with adverse health outcomes (Fleming et al., 2010; Kuhnt et al., 2009; Otte et al., 2010). Despite their frequency, the manner in which