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Sleep behaviors and patterns in adult survivors of childhood cancers: A report from the Childhood Cancer Survivor Study (CCSS)

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Introduction: Sleep disorders are related to emotional and physical health in the general population; research in childhood cancer survivors is limited. This study characterized sleep behaviors in survivors and examined associations among sleep, cancer diagnoses, treatment exposures, and emotional functioning.

Methods: Childhood cancer survivors (≥ 5 years from diagnosis; $n=1933$; 50.8% female; mean [SD] age=35.1 [7.6] years; years since diagnosis=23.5 [4.7]) and siblings participants in the CCSS ($n=380$; 52.4% female; age=33.4 [8.4]) completed sleep quality (Pittsburg Sleep Quality Index), fatigue (Functional Assessment of Chronic Illness Therapy-Fatigue), and sleepiness (Epworth Sleepiness Scale) measures. Emotional functioning was assessed ~5 years before (Behavior Problems Index <18 years old; Brief Symptom Inventory [BSI]>18 years old), and at time of the sleep survey (BSI only). Logistic/log binomial regression models examined relationships among diagnosis, treatment exposures, and emotional functioning on sleep variables, adjusting for age and BMI.

Results: In survivors, 35% reported <7-hr sleep duration, 29% reported sleep efficiency <85%, and 18% reported significant daytime sleepiness. Survivors were more likely to report poor sleep efficiency (prevalence ratio [PR] 1.26, 95% confidence interval 1.04-1.53), daytime sleepiness (PR 1.31, 1.01-1.71), and supplement use for sleep (PR 1.56, 1.09-3.60) than siblings. Leukemia survivors reported more delayed sleep onset latency (PR 1.36, 1.01-1.83) compared to bone cancer survivors. Exposure to ≥ 20 Gy cranial radiation was associated with sleep onset after 1am (PR 2.84, 1.75-4.59) compared to no cranial radiation. Abdominal radiation ≥ 30 Gy was associated with frequent nighttime awakenings (PR 1.37, 1.08-1.49). Relative to survivors without distress, survivors who developed emotional distress from baseline to follow-up evidenced poor sleep efficiency (PR 1.70, 1.40-2.08), restricted sleep time (PR 1.35, 1.12-1.62), fatigue (PR 2.11, 1.92-2.32), daytime sleepiness (PR 2.19, 1.71-2.82), snoring (PR 1.85, 1.08-3.16), and frequent sleep medication (PR 2.86, 2.00-4.09) and supplement use (PR 1.89, 1.33-2.69).

Conclusions: Cancer survivors are more likely to experience poor sleep efficiency, daytime sleepiness, and supplement use than siblings. For survivors who report poor sleep, there is a greater likelihood of persistent or worsened emotional distress; distress management may improve sleep.

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