

**Fatigue and Sleep in Survivors of Childhood Cancer: A Report from the Childhood Cancer Survivor Study (CCSS)** Daniel A. Mulrooney, Ann C. Mertens, Joseph P. Neglia, Daniel M. Green, Lonnie Zeltzer, Leslie L. Robison; University of Minnesota, Minneapolis, MN; Roswell Park Cancer Inst., Buffalo, NY; UCLA, Los Angeles, CA

**Background:** Fatigue has been reported as a late effect of cancer therapy. Limited data are available assessing fatigue and sleep among large populations of long-term survivors of pediatric and adolescent cancer. **Methods:** The CCSS is a cohort of 5+ yr survivors diagnosed with cancer before age 21, between 1970-1986. A selected sample of CCSS participants (lymphoblastic leukemia (ALL), brain tumors (CNS), Hodgkin’s disease (HD), soft-tissue sarcoma (STS), bone tumors) was surveyed regarding self-reported fatigue and sleep using the Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F; range 0-52; higher score=lower fatigue), the Epworth Sleepiness Scale (ESS; range 0-24; higher score=higher daytime sleepiness), and the Pittsburgh Sleep Quality Index (PSQI; range 0-21; higher score=poorer sleep quality). **Results:** Data were available from 981 participants (43% males, 57% females) whose mean age at diagnosis was 12.4 yrs and 33.9 yrs at follow-up. Survivors scored higher, compared to population norms, on the FACIT-F (40.4 vs. 36.8,  $p<0.001$ ), ESS (6.3 vs. 5.9,  $p<0.001$ ), and PSQI (6.2 vs. 2.7,  $p<0.001$ ), suggesting greater sleep disturbance without greater fatigue. While there were statistically significant differences among diagnostic groups, clinical significance is doubtful. (Table) Males and females did not demonstrate significant differences on the ESS or PSQI scores, but did differ significantly on the FACIT-F score (42.3 vs. 39.1,  $p<0.001$ ).

Diagnosis	FACIT-F		ESS		PSQI	
	N (%)	Mean (S.D.)	N (%)	Mean (S.D.)	N (%)	Mean (S.D.)
ALL	95 (10.6)	40.7* (9.6)	108 (11.0)	6.2 (3.7)	85 (10.4)	6.4* (3.6)
CNS	119 (13.3)	40.5* (9.3)	129 (13.1)	6.7* (3.8)	109 (13.4)	6.1* (3.2)
HD	525 (58.5)	40.2* (9.9)	574 (58.5)	6.3* (4.0)	471 (57.9)	6.6* (3.2)
STS	67 (7.5)	40.0* (9.4)	68 (7.0)	5.6 (3.9)	56 (6.9)	6.9* (3.6)
Bone	91 (10.1)	42.0* (8.4)	102 (10.4)	6.2 (4.0)	93 (11.4)	6.4* (3.2)

\* $p<0.05$  compared to population norms

**Conclusion:** This interim analysis showed that long-term survivors of childhood cancer did not report increases in fatigue compared to general population norms, even though 57.6% of survivors reported poor sleep quality (PSQI>5).