

Fatigue, vitality, sleep quality, and neurocognitive functioning in adult survivors of childhood cancer: A Report from the Childhood Cancer Survivor Study

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Objectives

To examine the impact of fatigue, vitality, and sleep quality on neurocognitive outcomes among adult survivors of childhood cancer.

Participants and Methods

Participants included 1,426 adult survivors from the Childhood Cancer Survivor Study (CCSS). Neurocognitive outcome included measures of task efficiency, emotional regulation, organization, and memory using the CCSS Neurocognitive Questionnaire (CCSS-NCQ). Survivors also completed the FACIT-Fatigue Scale, the Short Form-36 Vitality Scale (SF-36-V), the Pittsburgh Sleep Quality Index (PSQI), and the Epworth Sleepiness Scale (ESS).

Results

Neurocognitive impairment was reported in over 20% of survivors, using sibling based norms for comparison. Multivariable logistic regression models revealed that decreased vitality and increased sleepiness predicted impaired task efficiency (RR=1.84, $p<.0001$; RR=1.17, $p<.0001$, respectively) and impaired organization (RR=1.68, $p=.002$; RR=1.61, $p=.002$, respectively). Impaired emotion regulation was associated with increased fatigue (RR=1.61, $p=.008$), decreased vitality (RR=2.85, $p<.0001$), and poor sleep quality (RR=1.38, $p=.02$). Likewise, impaired memory was associated with increased fatigue (RR=1.42, $p=.04$), decreased vitality (RR=1.91, $p=.0002$), and poor sleep quality (RR=1.35, $p=.05$). The impact of fatigue, vitality, daytime sleepiness, and poor sleep quality on neurocognitive outcomes was independent of the significant effects of cranial radiation therapy, antimetabolite chemotherapy, CNS tumor, leukemia, and Hodgkin's Lymphoma on neurocognitive outcomes.

Conclusions

These findings suggest a unique contribution of fatigue and sleep quality to neurocognitive outcomes in long-term cancer survivors. This knowledge stresses the importance of good sleep hygiene in cancer survivors and may provide an additional avenue for neurocognitive interventions.