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Combined effects of physical activity and sleep on fatigue in haematological cancer patients

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Reduced physical activity (PA) and increased sleep deficiency are two of the several symptoms reported by haematological cancer patients (HCP). Differently from solid cancers, in which sleep deficiency and PA's beneficial roles have been intensely studied, less attention has been paid to these topics in HCP. HCP's sleep deficiency is usually linked to higher levels of cancer-related fatigue (C-RF), preventing HCP from being physically active. By acting in a vicious circle with C-RF, the reduced PA could negatively interact with the side effect of the disease's treatment. Moreover, the frame times during or after chemotherapy are usually the most studied in HCP. The present study assesses the differences in sleep by comparing PA and fatigue among HCP at the onset of chemotherapy. Furthermore, it investigates the relationship between sleep, PA and fatigue.

Fifty-eight newly diagnosed HCP (47.1 ± 15.4 yrs; 51.7% males) were anthropometrically evaluated and filled in five questionnaires within two weeks from starting treatment to assess sleep (PSQI), PA (visual analogue scale), fatigue (MFI-20), anxiety and depression (HADS), and quality of life (EORTC QLQ-C30). SPSS software was used to analyze the comparison between good and bad sleepers (ANCOVA analysis) and describe the relation between sleep, PA and fatigue (Mediation analysis). The HCP classified as *good sleepers* were less represented than those classified as *bad sleepers* (25% and 75%, respectively). The two groups showed no differences in body mass and BMI values. *Bad sleepers* displayed less frequent PA ($p < .04$), higher fatigue ($p < .032$), anxiety ($p < .003$), depression ($p < .011$) and pain ($p < .011$). The mediation analysis disclosed PA as a mediating factor between sleep and fatigue; in other words, it revealed significant indirect effects of sleep on fatigue through PA.

Sleep deficiency characterizes haematological cancer patients even at the onset of high dose chemotherapy. Impaired sleep quality is associated with less frequent PA and higher fatigue. In addition, the results highlight the combined action of sleep and PA on fatigue: fatigue could be improved by an increment in PA frequency, which, in turn, could be enhanced by sleep. In this view, PA and sleep could represent meaningful intervention targets to improve a patient's status before and at the onset of chemotherapy.

References:

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