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EP1241 - ECE_1679 - Association of iodine status and sex with sleep duration in adults: an analysis of NHANES 2005-2020

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Introduction: Sleep duration changes with age and differs by sex, impacting metabolic and cognitive health. Iodine, essential for thyroid hormone synthesis, may influence sleep regulation, but its interaction with age in relation to sleep duration is not well studied.

Aim: To examine whether iodine status modifies the relationship between age and sleep duration in adults, and to assess the roles of sex and iodine status.

Materials and Methods: Data from adults (≥18 years) with urinary iodine concentration (UIC) and self-reported sleep duration from NHANES 2005-2020 were analyzed. UIC was categorized as ≤150 µg/L or >150 µg/L. ANCOVA was conducted with sleep duration (hours) as the dependent variable, iodine status and sex as fixed factors, age as a covariate, and interaction terms for iodine status × age and iodine status × sex included to evaluate moderation effects.

Results: Data from 17 564 adults (mean age 47.5 ± 17.3 years, 51.3% female) were analyzed. Females reported longer sleep duration than males ($P < .001$). Iodine status alone was not associated with differences in mean sleep duration ($P = .922$). Critically, a significant interaction was found between iodine status and age ($P < .001$), indicating that the relationship between age and sleep duration differed between iodine status categories: Among individuals with UIC ≤150 µg/L, sleep duration showed a different trajectory across age compared to those with UIC >150 µg/L ($P < .001$). No significant interaction between iodine status and sex was observed ($P = .290$).

Discussion: While iodine status does not affect overall sleep duration, it significantly alters how sleep duration changes with age. This may reflect the role of iodine-dependent thyroid function in age-related sleep regulation, with iodine sufficiency potentially buffering or modifying age-associated sleep changes.

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