



## 211 - PHTHALATE EXPOSURE IS ASSOCIATED WITH SHORT SLEEP DURATION: THE ARAGON WORKERS' HEALTH STUDY (AWHS)

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### Resumen

**Background/Objectives:** Phthalates are ubiquitous environmental chemicals widely used as plasticizers, known for their endocrine-disrupting properties, potentially interfering with sleep regulation. Epidemiological studies have reported associations between exposure to phthalate and impaired sleep quality, with more consistent findings observed in females. However, evidence regarding this relationship in adults remains scarce. The aim of this study was to examine the association between short sleep duration and urinary concentrations of phthalate metabolites in a sample of adult working men.

**Methods:** A cross-sectional study was conducted with 1,125 male workers from the Opel company in Figueruelas (Spain). Total sleep duration was calculated using self-reported weekday and weekend sleep time, including nap period. Average daily sleep duration was dichotomized as  $\leq 6$  hours (defining short sleep duration) versus  $> 6$  hours. Urinary concentrations of phthalate metabolites were measured, natural log-transformed, and categorized into quintiles. Logistic regression models were used to estimate odds ratios (ORs) and 95% confidence intervals (CI) for short sleep duration across quintiles of phthalate exposure, adjusting for sociodemographic characteristics, lifestyle factors, and relevant cardiovascular risk factors. *P* for trend was calculated introducing the quintiles as a continuous variable. Dose-response relationships were explored using restricted cubic spline functions.

**Results:** Among the 1,122 male participants, 202 (18.0%) reported short sleep duration ( $\leq 6$  hours). Higher exposure to several phthalate metabolites was associated with short sleep duration. Compared to individuals in the lowest quintile, those in the highest quintile of mono-n-butyl phthalate (MnBP) (OR: 1.79; 95% CI: 1.09-2.94; *p*-trend 0.023), mono-(2-ethyl-5-hydroxyhexyl) phthalate (MEHHP) (OR: 1.69; 95% CI: 1.00-2.85; *p*-trend 0.061), mono-hydroxy-iso-decyl phthalate (OHMIDP) (OR: 1.82; 95% CI: 1.06-3.12; *p*-trend 0.245), and mono-isobutyl phthalate (MiBP) (OR: 1.66; 95% CI: 0.99-2.77; *p*-trend 0.289) showed higher odds of short sleep duration.

**Conclusions/Recommendations:** Exposure to specific phthalates was associated with short sleep duration in this population of male workers. These findings support that phthalates may play a role in sleep disturbances and highlight the relevance of these environmental plasticizers as potentially modifiable determinants of sleep health.

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