Gac Sanit. 2026;40(S4):637

Gaceta Sanitaria

https://www.gacetasanitaria.org

287 - PHTHALATE EXPOSURE AND 10-YEAR CARDIOVASCULAR RISK: THE ARAGON WORKERS' HEALTH STUDY (AWHS)

D.M. Mérida, M. Laclaustra, B. Moreno-Franco, N. Calvo-Galiano, A. Muñoz Cabrejas, J. Tenas Gonzalvo, C. Torrijo-Belanche, S. Gimeno-Ruiz, P. Guallar-Castillón

Universidad Complutense de Madrid; Instituto de Investigación Sanitaria Aragón; CIBERCV; Universidad de Zaragoza; Universidad Autónoma de Madrid; IMDEA-Food Institute; New York University.

Resumen

Background/Objectives: Phthalates are ubiquitous endocrine-disrupting chemicals that have been associated with cardiometabolic disorders; however, evidence regarding their association with predicted cardiovascular disease (CVD) risk remains limited. The objective of this study was to assess the association between phthalates and 10-y CVD risk.

Methods: This cross-sectional study included 1,125 male Spanish workers from the Aragon Workers' Health Study (Spain, 2009-2010) without previous CVD. Phthalates were analyzed as natural log-transformed continuous variables and tertiles of exposure. The 10-y CVD risk was estimated using SCORE2 or SCORE2-Diabetes and categorized as moderate/high risk (> 5% for > 50 years or diabetics, and ≥ 2.5% for < 50 years). Associations were assessed using logistic regression adjusted for covariates. Variables included in SCORE2 algorithms were not adjusted for. Restricted cubic splines were used to explore non-linear associations. Sensitivity analyses were performed by excluding participants with diabetes. Stratified analyses were conducted according to BMI.

Results: The median age of the participants was 52 years, and 42% of them were classified as having moderate/high 10-year CVD risk. In fully adjusted models, mono-ethyl phthalate (MEP) was positively associated with increased 10-y CVD risk; each 1-unit increase in ln-MEP concentration was associated with 11% higher odds of

0213-9111 © 2026 SESPAS. Publicado por Elsevier España, S.L.U. Todos los derechos reservados

moderate/high risk (OR = 1.11; 95%CI: 1.00, 1.24). No statistically significant associations were observed for other metabolites overall, although most metabolites showed ORs > 1. Spline analyses suggested a positive, non-linear dose-response relationship for MEP. Results were consistent after excluding participants with diabetes. In the stratified analysis, the exposure to MEP, MiBP, MnBP and OH-MiNP were significantly associated with increased 10-y CVD risk in normal weight participants. For overweight participants, only MEP remained statistically significant. For obese participants, non-significant associations were observed, with most ORs < 1.

Conclusions/Recommendations: Higher urinary concentrations of MEP were associated with an 11% increase in predicted 10-y CVD risk. In normal weight participants, stronger associations were observed for MEP, in addition to other metabolites (MiBP, MnBP, and OH-MiNP). These findings suggest that phthalate exposure may contribute to cardiovascular risk beyond traditional risk factors.

Funding: Health Research Fund FIS PI20-144 and PI23-240 240 (State Secretary of R + D and FEDER/FSE. Instituto de Salud Carlos III. Spain).

0213-9111 © 2026 SESPAS. Publicado por Elsevier España, S.L.U. Todos los derechos reservados