

Jordi Julvez
Centre for Research in Environmental
Institut Municipal d'Investigació Mèdica Doctor Aiguader 88
08003 Barcelona
Spain
Email: jjulvez@imim.es

Exposure to hexachlorobenzene during pregnancy and social behaviour at 4 years of age

Núria Ribas-Fitó, Jordi Júlvez*, and Jordi Sunyer (Center for Research in Environmental Epidemiology, Institut Municipal Investigació Mèdica, Barcelona, Spain), Maties Torrent (Àrea de Salut de Menorca, IB-SALUT, Menorca, Spain), Daniel Carrizo and Joan O. Grimalt (Department of Environmental Chemistry; IIQAB-CSIC, Barcelona, Spain)

Background: Active maternal smoking during pregnancy has been associated with a higher risk of behavioural disorders in children, but a few cohort studies measuring smoking data prospectively have studied its specific effects on the cognitive abilities of preschoolers.

Method: A birth cohort was set up in Menorca Island in 1997 within the Asthma Multicentre Infants Cohort Study. 405 (84% of those eligible) children had complete data for final analyses at age 4 years. Interviewer-administered questionnaires were completed by mothers during the third trimester of pregnancy and then every year up to age 4 years of their child. A standardized version of the McCarthy Scales of Children's Abilities (MCSA) was used to evaluate the child's motor and cognitive capabilities. Multivariable regressions were used with MCSA's assessed outcomes adjusting for: home location, maternal alcohol consumption, mother's social class and level of education during pregnancy, parity, marital status, father's education level, child's gender, birth weight and height, breastfeeding duration, passive smoking, school season, age during test administration and evaluator (psychologist).

Results: A high global consistency in maternal smoking habits was found (total agreement=88.7%). Maternal social class and education level were inversely associated with maternal smoking behaviour. Maternal smoking during pregnancy (in cig./day) was associated with a decrease (in points) of children's global cognitive score ($\beta=-0.56$ (-1.06; -0.06)); as well as global cognitive sub-areas like verbal score ($\beta=-0.59$ (-1.11; -0.07)); quantitative score ($\beta=-0.57$ (-1.08; -0.06)); executive function score ($\beta=-0.71$ (-1.23; -0.20)); and working memory score ($\beta=-0.46$ (-0.92; -0.01)).

Conclusion: Our findings suggest an association with maternal smoking during pregnancy and lowered cognitive development in children at age 4 years.