Are environmental noise and air pollution in middle-sized cities risk factors for preterm delivery?

Frédéric Mauny¹; Marie Barba-Vasseur¹; Sophie Pujol¹; Paul Sagot²; Didier Riethmuller¹; Gérard Thiriez¹; Hélène Houot³; Jérôme Defrance⁴; Anne-Sophie Mariet³; Vinh-Phuc Luu¹; Eric Benzenine³; Catherine Quantin³; Nadine Bernard³

¹ Centre Hospitalier Universitaire de Besançon  
² Centre Hospitalier Universitaire de Dijon  
³ Université Bourgogne Franche-Comté  
⁴ Centre Scientifique et Technique du Bâtiment

Corresponding author’s e-mail address: frедерic.mauny@univ-fcomte.fr

ABSTRACT

The aim of this study was to analyze the relationship between preterm birth and environmental multi-exposure to noise and air pollution, in middle sized cities.

A case-control study was conducted on single pregnancies without associated pathologies (303 cases and 1208 controls). The mothers lived in the urban community of Dijon or in the city of Besançon (France). The delivery occurred in one of the two university hospitals between 2005 and 2009. Four controls were matched to each case on the mother’s age and city of delivery. Different noise and nitrogen dioxide (NO2) exposure assessments were modeled at the mother’s home.

No significant differences in pollutant exposure levels were found between cases and controls. The adjusted odds ratios were very close to 1. The correlations between noise assessments and between NO2 assessments were very high. Sensitivity analysis conducted using different temporal and spatial exposure windows lead to the same results.

The results are in line with a lack of association between preterm delivery and multi exposure to noise and air pollution in moderately polluted cities, in pregnant women without underlying diseases.