

Turkish Journal of Medical Sciences

Turkish Journal

of

Medical Sciences


Determinants of Birth Weight: Does Air Pollution Have an Influential Effect?

Selda HIZEL 1

Turgay COŞKUN 2

1 Department of Paediatrics, Faculty of Medicine,
Kırıkkale University, Kırıkkale-Turkey

2 Department of Paediatric Metabolism and
Nutrition Unit, Faculty of Medicine, Hacettepe
University, Ankara-Turkey

 [Keywords](#)

 [Authors](#)



medsci@tubitak.gov.tr

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Abstract: To investigate the influence of air pollution on birth weight, information on maternal and infant characteristics was collected from 458 mothers of infants less than one year of age born in 1995 and under observation at a mother and child health center in Ankara. In addition, the obstetrical histories of 520 infants born in 1990 were collected from the delivery room records of a maternity hospital. Daily air pollution data were obtained and mean monthly values were used for statistical analysis. Among the possible risk factors, sex, maternal age, maternal employment, paternal employment and parity were found to be influential factors on low birth weight. In addition, first trimester sulphur dioxide (SO₂) and particulate matter (PM) levels were also found to be factors affecting birth weight. However, these effects were shown not to be statistically significant by logistic regression analysis. A comparison of mean birth weights according to maternal smoking and exposure to passive smoking on the basis of the third trimester SO₂ and PM levels revealed no significant difference; however, the difference in birthweight of non-smoking mothers was higher than that of smoking mothers when the third trimester SO₂ levels were above the minimum effect level (100 g and 220 g, respectively). These findings led us to propose a synergistic effect of smoking and air pollution. It was concluded that, air pollution in Ankara is not on its own a major risk factor for low birth weight.

Key Words: Birth weight, air pollution, smoking, maternal education level.

Turk J Med Sci 2000; **30**(1): 47-54.

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