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Association of Proximity to Pollution Industries Facilities, Deprivation and Infant Mortality - A spatial analysis using census data – Lille metropolitan Area – France

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Introduction: Evidence of social health inequalities is well established: socioeconomically disadvantaged populations are more strongly affected by health problems. In spite of numerous risk factors already identified, a part of these inequalities remain unexplained. Environmental nuisances are suspected to play a role in this disparity. Recent literature data suggest that perinatal health might be affected by air pollution and industrial emissions. To investigate the association between infant mortality and proximity to polluting industries and to explore the role of socio-economic characteristics in this relation. in Lille, between 2000 and 2009.

Methods: An ecological study was conducted in Lille (226,000 inhabitants) located in North France. The geographical unit used is the French census block (IRIS, 2,000 inhabitant on average). Infant mortality data were collected from local councils and geocoded at the French census block level using the address of residence.. Polluting industries have been identified from the European database of polluting industries. A neighbourhood deprivation index was estimated from the INSEE census data of 1999.

Results: In total, in Lille between 2000 and 2009, on the 705 infant mortality cases listed according to data CépiDc, 668 cases were collected from local councils, a rate of completeness of 94.75%. The average death rate was 4.6 per 1000 live births. The results show that the risk of infant mortality is multiplied by 1.53 (95% CI [1.33 to 1.76]) for a unit increase of deprivation. Besides, no significant association with proximity to polluting industries has been revealed.

Conclusion: Our results confirm the existence of social health inequalities related to infant mortality at a fine geographical scale, but not with proximity to polluting industries probably due to an inadequate index of proximity regarding the fine spatial level. More refined analyses are underway to improve the proximity index.

Keywords : *Health Inequalities- Infant mortality- Deprivation index – Small areas – Census tract – Pollution*