

TITLE:

Changes in environmental and socioeconomic determinants of child health: a descriptive analysis of spatio-temporal movement patterns of 237,316 children

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Background:

Despite degrading environmental conditions, the intersectionality between changing environmental conditions and social determinants of health remains understudied. In this work, we present a descriptive analysis of intersectional drivers of health inequity by considering changes in the environmental and socioeconomic exposures of children over time.

Methods: Movement (relocation) patterns of 237,316 children aged 2-10 years between 2006 and 2018 were studied. The SIDIAP electronic health records database in Catalonia, Spain provided age, sex, socioeconomic deprivation index IP2011, nationality, household rurality, clinical measures (including obesity), linked to environmental variables including residential green spaces within 300m (%), air pollutants (nitrogen oxide and dioxide NO_x and NO₂), particulate matter <10µm (PM₁₀) and <2.5µm (PM_{2.5}). We compared baseline characteristics of those who moved to areas with higher versus lower socioeconomic deprivation and those who moved to areas with higher versus lower levels of air pollution.

Results: In total, 237,316 (14.8%) children moved to at least one different physical environment. Children who moved to areas of greater deprivation had a slightly greater prevalence of obesity (9.4% vs. 8.7%), included more non-Spanish nationalities (19.2% vs. 17.9%), had marginally exposure to green spaces (0.2% vs. 0.3%) and moved from more deprived areas (29.1% vs. 8.9% in the most deprived areas) compared to those who moved to less deprived areas. Similarly, more children who moved to areas with higher air pollution levels were from urban areas compared to rural (96% vs. 80%), had a marginally greater proportion of non-Spanish nationalities (18% vs. 17%) and social deprivation (19.4% vs. 17.4%).

Interpretation:

In this descriptive analysis, children exposed to environments with greater socioeconomic deprivation, greater urbanisation, higher levels of air pollution and more non-Spanish nationalities moved to areas of greater or similar deprivation and air pollution levels. Further research is necessary to understand underlying intersectionality and consequent health impacts for equitable health planning against degrading environmental conditions.

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Contributors

The study was conceived and designed by SK, TDS, and MV. Data curation and analysis was performed by APM, AA and AP respectively, and interpreted by all co-authors. The abstract was written by APM and SK and revised by all co-authors. SK is responsible for the overall study.

Declaration of Interests

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