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Non-communicable diseases - fatness or fitness? Measuring the association between fitness score and the urban built and food environment in Latino children. What geographic units works best?

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Background: Obesity is become one of the main non-communicable diseases emerging worldwide as a public health problem. Physical inactivity has been globally recognized as one of the factors leading to obesity, which is the leading causes of long term chronic diseases that are alarmingly emerging in early age. In the U.S., disadvantaged populations are disproportionally affected by this phenomenon. Latino children are understudied. Epidemiological researchers have identified the presence of 'neighborhood' effect on health as a result of obesogenic environments. Fewer studies have used Level of Fitness as outcomes for physical inactivity. No prior studies have measured the association between children's Fitness Score and children's exposure to objective characteristic of the urban built environment, and fewer studies evaluated how the relationship with the built environment varies across different geographic units

Purposes: The present cross-sectional study had two aims. To evaluate the association of 19 variables of 4 components of the built environment (street connectivity, parks, and restaurants and food store) with children's Fitness Score. To explore the variability of the association across different spatial unit of analysis using three not-nested geographies.

Method: The study sample: 159 10-14 year-old Latinos living in the City of Milwaukee, and attending the same school. Fitness score, socio-demographics, nutrition behavior, and anthropometric measures were geo coded in ArcGIS. Univariate and multivariate Hierarchical Linear Regression Analysis were run for each geographic unit. Individual behavior and BMI ware included as confounders in the adjusted models, after controlling for socio-demographics.

Results: Association was overall stronger at the buffer level. Univariate analysis showed scale#2 parks, fast food density, and dollar store density significantly associated with Fitness score at the buffer level, while at the neighborhood level only Dollar store remained significant. Street connectivity showed no association with Fitness score across geographies and models. Female average fitness score across geographies was significantly lower than male, with the gender difference increasing once controlling for BMI.

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The role of ambient air pollution in sudden infant death

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Air pollution has been associated with increased mortality and morbidity in several studies and some have indicated its effect could be more severe in children. This study aimed to investigate the relationship between occurrence of sudden infant death syndrome (SIDS) and short-term variations in air pollution (based on the previous day concentrations) for particulate matter with aerodynamic diameter of $\leq$ 10 µm (PM10), Ozone (O3), sulphur dioxide (SO2), carbon monoxide (CO) and oxides of nitrogen (NOX) as well as its components NO and NO2. We investigated the association between short-term exposure to air pollution and SIDS mortality in infants less than a year old in a case-crossover design. Control days were selected based on the same day of the week, month and year of the event day and we controlled for daily birth counts, index of multiple deprivation (IMD) scores and non-linear effects of temperature using splines. We performed the analyses using conditional Poisson regression model. The results indicated ambient air pollutants, particularly PM10 and NO2, were associated with increased SIDS mortality. The two pollutants showed relatively consistent association which persisted across different lag structures and after adjusting for other co-pollutants.

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