



ORIGINAL ARTICLE

# Influence of postcode on paediatric admissions in Seville<sup>☆</sup>



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## KEYWORDS

Hospitalised child;  
Socioeconomic factors;  
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Poverty areas;  
Healthcare disparities;  
Health resources;  
Length of stay;  
Hospital mortality

## Abstract

**Introduction:** The postcode (where the home is situated) is an indicator of socioeconomic status and is associated with morbidity, mortality, and the use of health services. The aim of this study was to analyze its effects on paediatric admissions and to determine the rates of the most common causes of paediatric admissions in Seville.

**Materials and methods:** Observational cross-sectional study with two analysis units: under 15 year-old "admissions" in public hospitals in Seville ( $n=2660$ ) and "city districts" of Seville ( $n=11$ ). The independent variable analyzed was whether the postcode of the admitted patients was within a Regional Government designated "area with social transformation needs". The analysis of the admissions was performed using  $X^2$ -test, Fisher test and Student- $t$  test, with the description of rates using the calculation of crude and specific rates, and by rate ratio.

**Results:** Children living in districts with a lower socioeconomic status were on average 7 months younger ( $p<0.001$ ), and they were significantly more likely to be admitted via the emergency department ( $p<0.001$ ). There was no statistical difference detected in either the length of hospital stay or mortality. The crude admission rate ratio was higher in districts with a lower socioeconomic status (1.8), with a higher specific rate ratio detected in admissions due to asthma, respiratory infections, inguinal hernia, and epilepsy/convulsions.

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**PALABRAS CLAVE**

Ingresos pediátricos;  
Factores socioeconómicos;  
Determinantes sociales de la salud;  
Áreas de pobreza;  
Desigualdades en salud;  
Recursos sanitarios;  
Estancia hospitalaria;  
Mortalidad hospitalaria

**Conclusiones:** Paediatric hospital admission rates of the main diagnoses were higher in districts with a lower socioeconomic status. Children living in these districts were more likely to be admitted younger and via the emergency department.

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**Influencia del código postal en las hospitalizaciones pediátricas en Sevilla****Resumen**

**Introducción:** El lugar de vivienda es un indicador del nivel socioeconómico que influye en la morbimortalidad y utilización de recursos sanitarios. Los objetivos de este estudio fueron analizar este efecto en las hospitalizaciones pediátricas y describir las tasas de hospitalización de los diagnósticos principales más frecuentes en la ciudad de Sevilla.

**Material y métodos:** Estudio observacional y transversal con 2 unidades de análisis: «ingresos hospitalarios» en los hospitales públicos de Sevilla de menores de 15 años (n = 2.660) y «distritos de Sevilla» (n = 11). La variable independiente de estudio fue la residencia en distritos con o sin «zonas de necesidad de transformación social», obtenida del código postal. El análisis de las características hospitalarias se realizó mediante los test de la  $\chi^2$ , Fisher y t de Student, y la descripción de tasas mediante el cálculo de tasas cruda y específica, y del índice de tasas.

**Resultados:** Los ingresos pediátricos procedentes de distritos con menor nivel socioeconómico se produjeron a una edad media 7 meses menor (p < 0,001) y con carácter urgente en mayor proporción (p < 0,001). No se detectaron diferencias en la estancia media ni en la mortalidad intrahospitalaria. El índice de la tasa bruta de hospitalización fue superior en los distritos con menor nivel socioeconómico (1,8), con una mayor diferencia en las tasas específicas de hospitalización por asma, infecciones respiratorias, hernia inguinal y epilepsia/convulsiones.

**Conclusiones:** Las tasas de hospitalización de los diagnósticos principales más frecuentes fueron mayores en distritos con menor nivel socioeconómico. Sus ingresos se produjeron a edades más tempranas y con mayor carácter urgente.

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**Introduction**

Health is largely conditioned by social determinants.<sup>1</sup> The circumstances under which a person is born, grows, works and ages determines not only the 3 dimensions of health—physical, psychological and social<sup>2</sup>—but also life expectancy.<sup>3</sup> Inequalities in health can be explained by the different living conditions of individuals, which depend on the political and socioeconomic context (structural determinants) and the opportunities in education and employment that will determine their work, housing, place of residence etc. (intermediary determinants).<sup>4</sup> Inequalities in health are unfair and preventable, and their consequences have been amply proven. Exposure to unfavourable living conditions during childhood has a great impact on long-term health and development during adult life,<sup>5</sup> and therefore interventions implemented in the early stages of life are the most cost-effective.<sup>6</sup>

Numerous studies use the place of residence as a socioeconomic determinant, using indicators such as educational attainment, unemployment, type of occupation or average income of the population of an area.<sup>7</sup> There is evidence of an inverse correlation between mortality and socioeconomic level in the comparison between cities and between

districts or neighbourhoods within a city.<sup>8,9</sup> There is evidence that the postcode can be useful in representing a geographical area and as an indicator of socioeconomic level<sup>10</sup>; on the other hand, the studies conducted by the MEDEA group in Spain have been using census divisions to demonstrate the aforementioned correlation for different causes of death.<sup>11,12</sup> Other studies have found evidence of a higher frequency of hospital visits in members of socially-disadvantaged groups,<sup>13,14</sup> as well as an unequal use of different health care resources.<sup>15,16</sup> But there are not many studies that assess the impact of the place of residence—used as an indicator of socioeconomic level—on the health of children in Spain.

A systematic review of studies on the impact of social inequalities in child and adolescent health in Spain<sup>17</sup> revealed a broad variability in the indicators used as social determinants and a scarcity of studies in preschool-aged children. The paediatric health issues studied most frequently were obesity,<sup>18</sup> mental health<sup>19</sup> and dental health,<sup>20</sup> and the data demonstrated the negative impact of a low socioeconomic status. Studies conducted in the United States<sup>21,22</sup> have also demonstrated this correlation with the same health problems as well as others, such as preterm birth, faltering weight, behavioural and learning

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