

Socioeconomic deprivation is associated with increased hospital admissions in children and young people with Type 1 Diabetes Mellitus

Louise J Apperley¹, Sze M Ng¹

¹ Department of Paediatrics, Southport and Ormskirk NHS Trust, United Kingdom

Authors declare no conflict of interest

Southport & Ormskirk Hospital **NHS**
NHS Trust

Background

Approximately 35,000 children and young people aged below 19 years old have diabetes. 96% of these suffer from Type 1 Diabetes Mellitus (T1DM)¹. The estimated prevalence of T1DM within this population in the UK is 1 per 430-530 and the incidence for children aged below 14 years is 24.5/100,000¹. The peak age of T1DM diagnosis is 10-14 years¹.

A Cochrane review showed evidence that T1DM patients were at a higher risk of hospital admission, especially if their HbA1c was elevated². Varied results associated hospital admission with other categories, such as age, gender and deprivation. Overall the review found it difficult to conclude due to the small amount of literature available focusing on hospital admission and T1DM cases².

Aim

This study examined the relationship between incidence of hospital admissions for children and young people with T1DM and their socioeconomic deprivation.

Method

All hospital admissions of patients with T1DM from 0-18 years were identified during a 5-year period between 2007 and 2012 using the hospital episodes statistics database (HES). Each hospital admission was classified as either an accident and emergency (A&E) admission or inpatient ward admission. Causes of admissions were evaluated from individual hospital medical records. Socioeconomic status of individual patients with T1DM was measured using the deprivation data obtained by cross-referencing postcodes with Indices of Multiple Deprivation (IMD) 2010 for overall deprivation scores during the time of admission. The IMD for 32,482 small geographic areas (Lower Super Output Areas) in England are ranked from 1 (most deprived) to 32,482 (least deprived). The Spearman rank correlation coefficient looked at associations between IMD indices and admission rate.

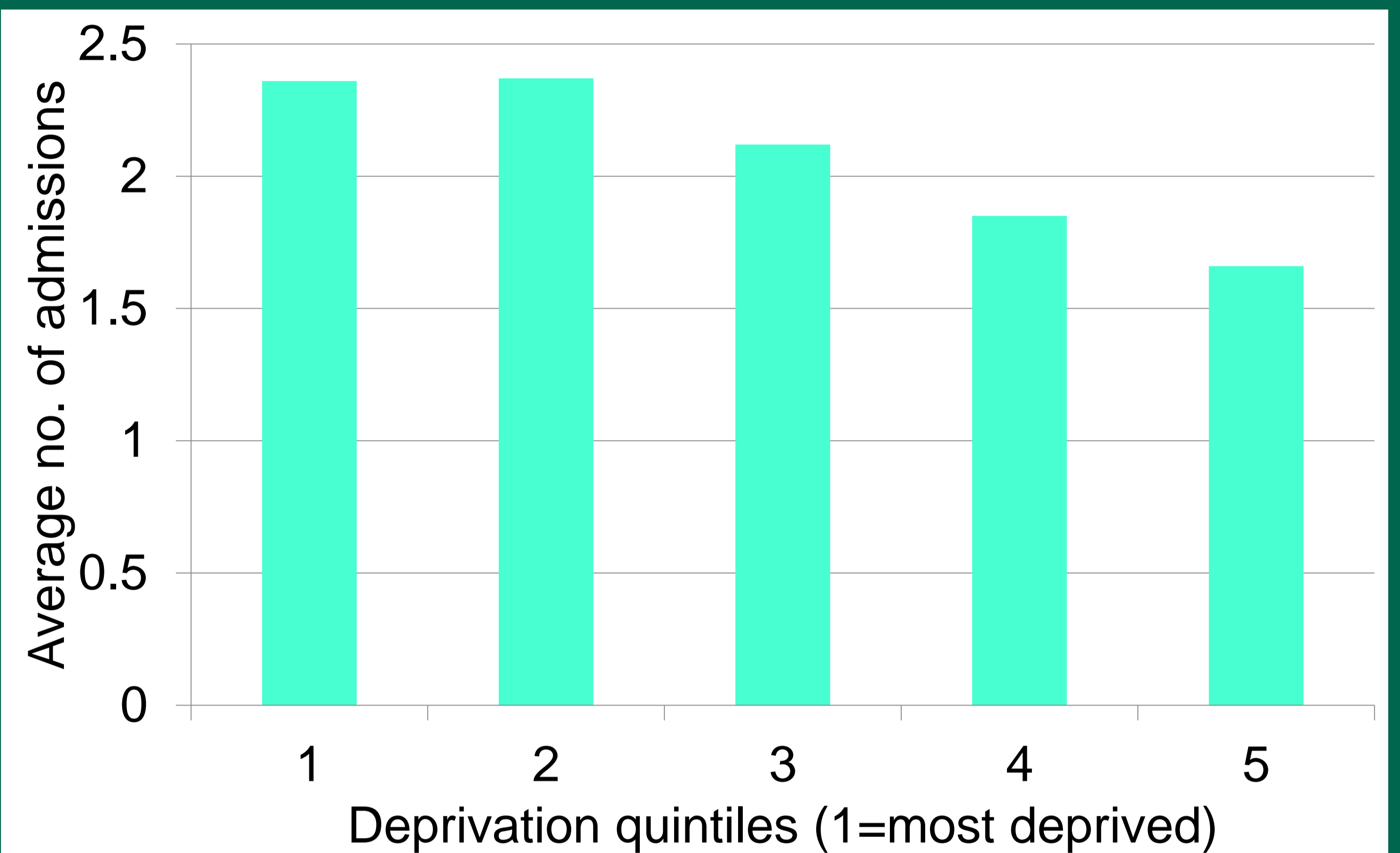


Figure 2: This graph shows the average number of admissions per deprivation quintile. Quintile 1 = most deprived.

Results

Records from the 135 (66 F: 69 M) patients showed that significant correlation was found between hospital admission rates and overall deprivation score ($r = -0.18$, $p = 0.04$ Figure 1). Patients living in deprived areas were more likely to self-present to A&E ($r = -0.24$, $p = 0.02$), however there were no significant associations between inpatient ward admissions and overall deprivation scores ($r = -0.14$, $p = 0.17$). Analysis of individual medical records showed that patients with T1DM living in deprived areas were more likely to have a hospital admission for diabetes related problems ($r = -0.50$, $p = 0.003$). There was no association between non-diabetes related hospital admissions with overall deprivation scores ($r = -0.01$, $p = 0.27$).

Conclusions

Early intervention from primary care and specialist diabetes nurses within the community in deprived areas may be effective in reducing hospital admissions for diabetes-related problems. Further information within this area would provide evidence for treatment programmes to identify high risk groups and co-morbidities. Reduction in hospital admissions would significantly reduce healthcare costs, plus improve the quality of life of those affected². We believe this has significance for planning health care resources for children and young people with T1DM in the future.

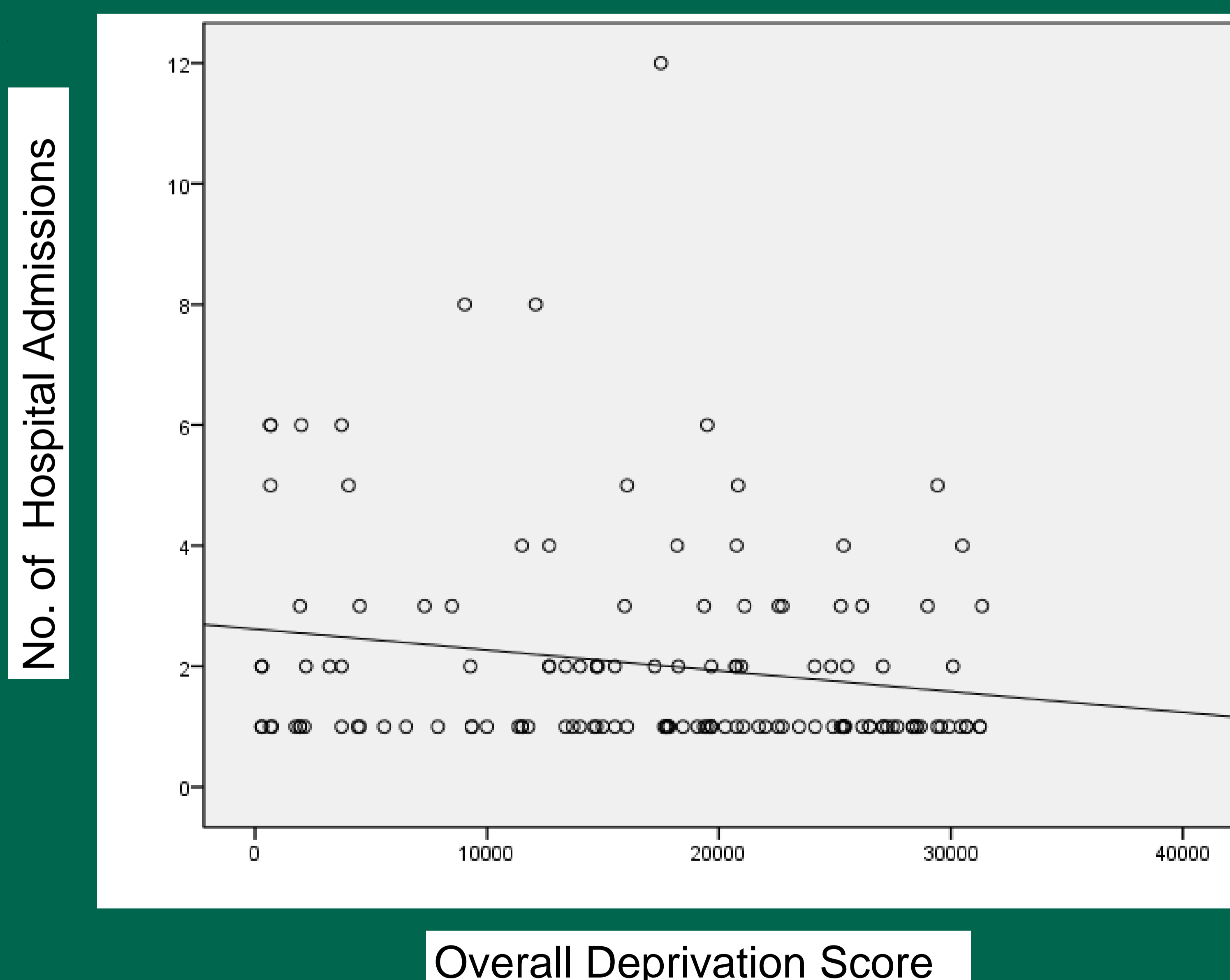


Figure 1: A correlation chart showing the significant association between number of hospital admissions and overall deprivation. Spearman correlation $r = -0.18$, $p = 0.04$

References

1. Diabetes UK. Diabetes: Facts and Stats. Version 3. March 2014.
2. Angus VC, Waugh N. Hospital admission patterns subsequent to diagnosis of T1DM in children: a systematic review. BMC Health Services Research 2007, 7:199.