Hospital admissions by socioeconomic status: is the inverse care law operating in Wales?

The influence of social circumstances on health, wellbeing, length and quality of life has long been recognized. As Sir Michael Marmot noted in *Fair Society, Healthy Lives* (Marmot, 2010), social and economic differences in health status reflect, and are caused by, social and economic inequalities in society. Psychosocial stress is believed to be an important mechanism linking socioeconomic environment and poor health. Poor socioeconomic circumstances lead to insecurity, anxiety, low self-esteem, social isolation and lack of control over work and home life. They also increase risk-taking behaviours such as smoking, alcohol and illicit drug use.

The same environment also determines the level of exposure to physical environmental hazards, including inferior housing and busy road traffic.

If the NHS is to provide an equitable service, then the use of hospital services should be in proportion to need (McCartney et al, 2013). In the case of emergency and elective admissions, this should be displayed as a gradient across socioeconomic status as morbidity and mortality, crude indicators of health need, are known to increase from the least deprived to the most deprived communities. However, the inverse care law, coined by Julian Tudor Hart, a GP who practiced in the south Wales valleys for 30 years, states that the availability of good quality medical care tends to vary inversely with the need for it (Hart, 1971). If the inverse care law applies to hospital admissions in Wales, then we might expect to see a reversal of this picture, including admissions being highest in the least deprived and lowest in the most deprived communities.

This research examined the influence of deprivation on elective and emergency hospital admissions to help evidence whether the inverse care law applies in Wales.

The analysis

The analysis was performed by the Public Health Wales Observatory on 2014/15 financial year data using the Patient Episode Database for Wales, the 2014 Welsh Index of Multiple Deprivation and mid-year population estimates for 2014 from the Office for National Statistics. The Welsh Index of Multiple Deprivation is the official measure of relative deprivation for small areas in Wales. For the purpose of this analysis, the Welsh population was aggregated by Welsh Index of Multiple Deprivation quintile, that is the rate for the least deprived 20% lower super output areas in Wales (quintile 1), the next least deprived 20% of lower super output areas in Wales (quintile 2), and so on.

European age-standardized rates per 1000 Welsh residents with 95% confidence intervals were produced for Wales by deprivation quintile. These confidence intervals were calculated using a method proposed by Dobson et al (1991). Rate ratios and their corresponding confidence intervals were also calculated using a different method (Breslow and Day, 1987). Admissions without a valid current unitary authority code or deprivation fifth were excluded from the analyses; these accounted for 0.2% (1039/524,416) of the total admissions for Wales. In addition, 1543 admissions were excluded because the record containing an unknown admission method. Finally, the analysis excluded maternity admissions, day cases and elective and emergency transfers.

Findings

For elective admissions (Table 1), there is a clear social gradient for admissions, with the highest rate of admissions being in the most deprived fifth of the Welsh population and the lowest rate in the least deprived fifth (rate ratio 1.18, statistically significant at the 95% confidence level). For emergency admissions, Table 1 shows that the social gradient is even more marked (rate ratio 1.69, statistically significant at the 95% confidence level).

Discussion

This finding of a clear social gradient in elective admissions is somewhat at odds with an analysis using all-English data (McCormick et al, 2012); this concluded that the use of elective admissions was ‘roughly similar across the deciles’, although there was the suggestion of a dip in admissions in the least deprived decile. A cohort study in the west of Scotland (McCartney et al, 2013) concluded that there was an inverse relationship between non-emergency hospital admissions and social class. However, a later analysis of routine data across Scotland (McCartney et al, 2015) found a higher rate of elective admissions in the most deprived compared to the least deprived quintile, similar to the picture in Wales. The discovery of a social gradient in emergency admissions, albeit more marked than with elective admissions, is supported by the same analyses in England (McCormick et al, 2012) and Scotland (McCartney et al, 2013, 2015).

So what does this tell you about the inverse care law in Wales? Any interpretation of the findings needs to be in the context of existing knowledge that those in the most deprived communities are more likely to access hospital care via emergency routes.