The influence of socioeconomic deprivation on the quality of recovery after cardiac surgery

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Introduction

The impact of socioeconomic deprivation on the outcome from surgery has been reported for well over a decade. It has been associated with a greater number of complications and worse 3-year survival after general surgery across a range of ASA grades[1]. After cardiac surgery, the impact on survival was initially linked to modifiable risk factors such as smoking, obesity or malnutrition, but later adjustment for these variables revealed a broader impact of deprivation on mortality[2]. These include biological differences induced by lifestyle or the environment (inadequate housing, poor nutrition, working conditions, environmental pollution), and differential access and use of health services. Postoperatively, social and financial constraints may affect access to post-discharge support, follow-up care, and to cardiac rehabilitation programs. Patients from disadvantaged backgrounds may have lower health literacy and education levels, leading to a reduced understanding of their condition and post-surgery management.

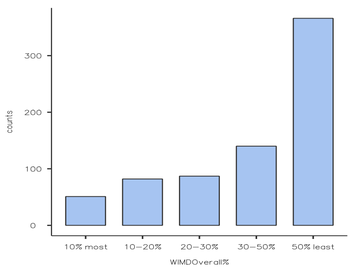

Fig 1. Decile of deprivation based on WIMD. (>50% grouped together)

Background

“Days alive and out of hospital" (DAOH) is a metric that is used to assess the post-operative outcomes and recovery of patients. It reflects the number of days a patient survives and remains out of the hospital within a specific time frame. The quality of recovery, post-operative complications, days spent in rehabilitation, adherence to post-surgery instructions, and return to previous lifestyle choices, such as smoking, may result in a longer time in hospital or re-admission, decreasing the number of days out of hospital.

We therefore aimed to investigate the impact of deprivation on the quality of recovery after cardiac surgery in a single centre in South Wales.

Methodology

We used the Welsh Index of Multiple Deprivation (WIMD), a measure of relative deprivation for small areas in Wales, to record the decile of overall deprivation for 726 patients who had cardiac surgery over a two-year period. It identifies areas with the highest concentrations of several different types of deprivation and captures both the material and social aspects of deprivation. There are eight separate ‘domains’:

Income	Health
Access to services	Housing
Community safety	Employment
Physical environment	Education

Results

In our cohort of patients, deprivation was evenly distributed across the full range, with 7% (n=51) of patients in the 10% most deprived decile Fig 1.

ANOVA and post-hoc analyses (Bonferroni) revealed a non-statistically significant effect of overall deprivation on $DAOH_{30}$ (F 1.41(df 721), p = 0.229).

Estimating fixed effects parameters show a significant decrease in $DAOH_{30}$ after cardiac surgery between the most deprived decile (10% most) and each of the other deciles, except 10-20% (p=0.051). For 50% least – 10% most (Parameter Estimate: [2.67], p < 0.05, 95% CI: [0.30] to [5.04]). Fig 2.

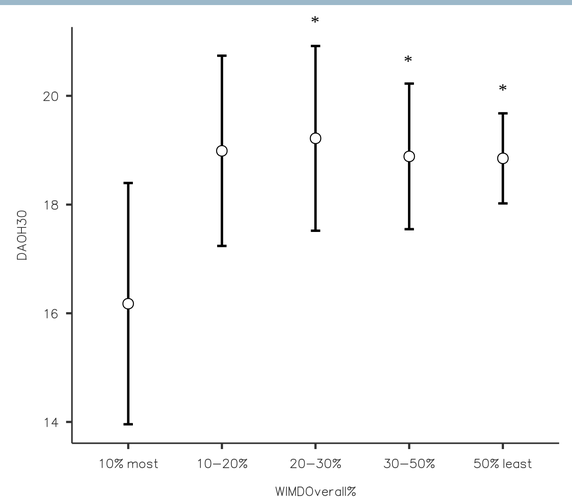

Fig 2. $DAOH_{30}$ by decile of deprivation. *p<0.05 compared with 10% most deprived.

Conclusion

The effect of deprivation in reducing the days at home after cardiac surgery reflects a very wide, and often long-term effect of population health on the outcomes after surgery.

Ways to better implement secondary prevention measures should be explored in low-income patient groups[3].

References

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2 Pagano D, Freemantle N, Bridgewater B, et al. Social deprivation and prognostic benefits of cardiac surgery: observational study of 44 902 patients from five hospitals over 10 years. *BMJ* 2009; **338**: b902

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