



Availability and Structure of Primary Medical Care and Health Outcomes in Scotland: Evidence from Routine Data Linked with the Scottish Health Survey

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There is concern that the aging of UK's population and physician shortages will strain the health care system. The objective of this study is to describe key characteristics of the population living in Scotland and the general practices serving them. We examine the association between health outcomes (hypertension, mortality, hospital admission for coronary heart disease and any cause) and practice characteristics after adjusting for differences in population characteristics and place of residence as defined by the Scottish Executive Urban Rural Classification.

The Census 2001, the Scottish Index of Multiple Deprivation (SIMD, 2004), and data on patients registered with general practices were used to describe the demographic and deprivation characteristics of the population. The General Medical Practitioners Database (GMPD 2002) was used to describe the gender, age, and contracted time commitment of all principals and non-principals. We calculated the partnership size, whole time equivalent number of GPs, whether the practice was single-handed, and the number of female principal GPs available in the practice. Finally to investigate the association between health outcomes and characteristics of the general practices, we linked the Scottish health Survey– Scottish Morbidity Recording (SHeS-SMR) data to the GMPD. The health indicators obtained from the SHeS-SMR were blood pressure levels measured at the time of the survey and subsequent (up to March 2004) all-cause mortality, hospital admissions due to coronary heart disease, and total number of days spent in hospital.

We run multivariate linear regression models to estimate the direction and magnitude of any associations. We instrument GP supply using age-related capitation payment per head of the population, because capitation predicts GP supply without affecting individual health directly. Estimation was undertaken in Stata version-9.1. Analysis was weighted by total population to account for the aggregation of data. Robust standard errors, adjusting for heteroskedasticity, were used throughout.

A substantial proportion of the population (0.6m) lived in rural areas of Scotland. They were more likely to be older (over 65 years) or younger (less than 15 years) than those in primary cities. GP principals working in rural areas were older and more likely to be male and single-handed than those in primary cities. Rural practices had significantly lower number of GPs and significantly small number of female GP principals and large number of vacated principal posts than primary cities. We did not find significant association between the availability and structure of primary medical care and health outcomes even after we allowed for the endogeneity of GP supply. Although no significant association between primary care supply and health outcomes was found, the higher percentage of older GPs who will retire soon suggest that this situation may not continue for long.

Keywords: Economics of Aging; Survey Data Analysis; Routine Data Linkage; GP Characteristics