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Reshaping Care for Older People: Trends in emergency admissions to hospital during a period of simultaneous interventions in Glasgow City, April 2011–March 2015

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ABSTRACT

This study describes trends in emergency admissions (EAs) in Glasgow City during a period when interventions were designed and implemented, aimed at shifting the balance from institutional to community-based care. Standardised monthly rates of EAs between April 2011 and March 2015 were calculated, for residents of Glasgow City aged 65 years and over. Multilevel zero-inflated Negative Binomial models for EAs nested by datazone were created, adjusting for sex, 5-year age group, area-level deprivation (SIMD quintile), season, month and month squared. Models were also run for EAs by cause, for three causes: chronic obstructive pulmonary disease (COPD), falls and dementia. The rate of EAs first rose then fell during the study period. When modelled, RRs for month (RR for month 12 relative to month 1 and 95% CI = 1.02 (0.99, 1.06)) and month squared (RR = 0.999 (0.998, 0.999)) indicated a rise in admissions until February 2012, followed by a fall. Risk of admission was greater for males and increased with increasing age group. The risk of going into hospital for those from SIMD 5 (most affluent) was 0.58 (0.56, 0.59) relative to those from SIMD 1 (most deprived). Socioeconomic inequalities were particularly great for COPD-related admissions, where RR for SIMD 5 was 0.25 (0.23, 0.28) times that of SIMD 1. An interaction term between month and SIMD was not significant for any outcome. For dementia-related EAs there was a suggestion that inequalities may be reducing over time. EAs for those aged 65 years and more reduced during the Change Fund period, with similar relative reductions observed across all deprivation quintiles.

1. Introduction

Scotland has previously been named the 'Sick Man of Europe' on account of having the lowest life expectancy in Western Europe, with slowest improvements over time [1]. The city of Glasgow, and its conurbations, has the worst health in Scotland with life expectancy at birth more than six years below the UK average for men (71.6 years, compared with a UK average of 78.2 years), and more than four years below average for women (78.0 years, compared with a UK average of 82.3 [2]). Moreover, this excess poor health is increasing with time [3]. As well as being characterised by poor health, Scotland is home to particularly large inequalities in health when compared with other parts of West and Central Europe [4,5] and within Glasgow there are greater inequalities when compared with other cities in the UK [6]. Social patterning of emergency hospital admissions in the West of Scotland has been described previously among those of working age [7], with those from deprived backgrounds experiencing poorer outcomes. Among the elderly, however, Hart et al. [8] found no socioeconomic gradient for general admissions, but association with occupational class for cause-specific admissions, including mental health, coronary heart disease, stroke and cancer.

One third of public spending on health and social care for those aged 65+ years in Scotland is spent on emergency (i.e. unplanned) admissions [9]. Some of this is considered to be avoidable. Kendrick and Conway [10] described increasing emergency admissions rates in Scotland between 1981 and 2001 for those aged 60 years and above, with steepest increases at the oldest ages. They found that increases were due to a combination of an increase in the older population and an increase in admission per head. More recently, Harding et al. [11] found no further increases in emergency admissions, between 2001 and 2011, for those aged below 75 years, but a high and increasing rate for those aged 75 years and above. As the population of Glasgow City aged 75+ years is predicted to increase by 36% between 2010 and 2035 [11], the combination of increasing

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emergency admissions per head and increasing number of heads will result in rising healthcare costs.

1.1. Reshaping Care for Older People and the Change Fund

The Reshaping Care for Older People Programme (RCOP) was implemented to address increasing rates of health and social care use [9]. An Older People's Change Fund was made available to Health and Social Care Partnerships across Scotland in April 2011–March 2015. The purpose of the Change Fund was to enable Partnerships to test and evaluate new ways of working, which were designed to support a shift in the balance of care for older people, away from institutional services and towards supported independent living in the community.

1.2. The older people's change fund in glasgow city

Change Fund projects were designed and implemented in Glasgow City in 2011–2015, as elsewhere across Scotland. Of the 34 projects included in the Programme, 20 were designed to reduce emergency admissions to hospital in a range of contexts, reflecting points of entry to secondary care and the types of social support that create independence and promote good health in later years. The 'patient journey' has been considered previously in the literature on avoiding hospital admission [12]. Projects therefore included:

1. Community-based projects, targeting those at risk of emergency admission, their carers and their wider community, e.g. the Transformation Fund, an umbrella of third sector projects concerned with reducing isolation and increasing social connectedness, which is associated with health service use [13,14]; Supporting Older Carers which provided the type of support and respite for carers that has previously been associated with improving carers' mental health [15]; Anticipatory Care, which sought to identify individuals with long term conditions at risk of emergency admission, providing them with the care and support they need to effectively manage their condition in the community. A similar package was previously found to reduce hospital admissions [16]; Reablement Home Care Model which provided patients recently discharged from hospital with tailored care at home for up to 6 weeks, associated with reduced home care hours [17]; Early Support for Patients/Carers with Dementia, a project that provided post-diagnosis information, advice and support to recently-diagnosed patients, their carers and their families, in line with national targets [18]. Additionally three projects were designed and implemented targeting people with chronic obstructive pulmonary disease (COPD), to provide care and support at home and avoid admission to hospital.
2. Projects based in secondary care or alternative health care settings, e.g. A&E Rapid Response Service allowed a geriatrics team to assess patients entering A&E and minor injury units to assess if admission could be avoided. A similar intervention in A&E reduced emergency geriatric admissions [19]; Rapid Response & Resettlement Provision of transport home and resettlement service for older people from A&E; Day Hospitals, enabled frail older patients to be seen and assessed more quickly by a multidisciplinary team; Step up Intermediate Care, a package of care delivered in a care unit as an alternative to hospitalisation.
3. Projects based in care homes, e.g. Care Home Falls Prevention, a programme of training and education for care home staff. Falls prevention interventions are associated with a reduced rate of falls [20]; Older People's Specialist Liaison Services, a resource to support services in hospitals and care homes across the City. A similar service elsewhere in the UK was associated with length of stay and readmission rates [21].

Some projects therefore targeted individuals with specific conditions, while others were directed more generally at the elderly, and their carers and/or the wider community. Other projects were directed at services rather than people. However, the overarching aim of all was to avoid unnecessary unscheduled secondary care.

What follows is a description of the change in emergency admissions during the period, for all cause admissions, and admissions related to COPD, falls and dementia. The latter three outcomes were identified as relevant, as one or more of the projects were targeted at reducing each of these specifically. A second aim is to measure socioeconomic inequalities for each outcome, and the change in inequalities for each during the Change Fund period.

2. Methods

2.1. Population data

Scotland has a population of approximately 5.3 million. The country is split into 6505 2001 Census-based datazones (694 in Glasgow City), with a population of between 500 and 1000 household residents. These are nested within 32 Local Councils, with populations ranging between approximately 20,000 in Orkney, Shetland and the Western Isles and 600,000 in Glasgow City. Interpolation and extrapolation of annually calculated mid-year population estimates for Glasgow City's population aged 65 years+, disseminated by the National Records for Scotland (formerly known as the General Register Office for Scotland) for 2011–2014 and 2012-based estimates for 2015, yielded disaggregated population data, stratified by 5-year age-group, gender, datazone and month for April 2011–March 2015.

2.2. Hospital data

Hospital discharge data for emergency admissions, collected by the Information and Statistics Division of the National Health Service in Scotland, were analysed. Not everyone arriving at Accident & Emergency is counted as an emergency admission. Emergency admission to hospital occurs when a patient's condition is serious enough to warrant hospital care, following an unplanned attendance at A&E or a Minor Injuries Unit. Emergency admissions in this study are defined as continuous spells, so that if a patient is moved from one ward or site to another, this would be counted as one emergency admission.

Emergency admission data for residents of Glasgow City admitted to Glasgow City hospitals, between April 2011 and March 2015 were analysed. These were aggregated by sex, 5-year age group (65–69, 70–74, 75–79, 80–84, 85–89, 90+ years) datazone, month and year. The Scottish Indicator of Multiple Deprivation (SIMD) quintile [22], assigned by datazone was included in analyses.

Emergency admissions by diagnosis for the following diagnoses were additionally analysed: COPD (ICD codes J40-J44), falls (ICD codes W00-W19), dementia (ICD codes F00-F03). All 6 diagnosis fields were used to code patients' diagnosis. For the purposes of this study, therefore, an admission coded as J40-J44 in any of the diagnosis fields was therefore defined as being a COPD-related emergency admission. Emergency admission data for each of COPD, falls and dementia were aggregated as described above.

2.3. Statistical analyses

Monthly crude and standardised rates of emergency admissions to Glasgow City hospitals between April 2011 and March 2015 were calculated, for residents of Glasgow City aged 65 years+, using annual population and corresponding monthly estimates. These were standardised by age, using 5-year age groups, sex and SIMD