



Risk factors associated with residential aged care, respite and transitional aged care admission for older people following an injury-related hospitalisation



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ABSTRACT

Objectives: To identify factors associated with admission to residential aged care (RAC), respite RAC and transitional care (TC) for older individuals following an injury hospitalisation.

Method: A retrospective analysis was conducted of individuals aged ≥ 65 years who had an injury hospitalisation and who were admitted to RAC during 1 July 2008 and 30 June 2013 in New South Wales, Australia. Multinomial logistic regression was used to examine the factors associated with admissions to aged care services compared to returning to the community.

Results: Of 191,301 injury hospitalisations, 41,085 (21.5%) individuals either returned or were new admissions to long-term or respite RAC and 3,218 individuals were admitted to TC. Older individuals newly admitted to long-term RAC were four times more likely (OR: 4.36; 95%CI 4.15–4.57), those admitted to respite RAC were twice as likely (OR: 2.37; 95%CI 2.21–2.54) and people admitted to TC were less likely (OR: 0.60; 95%CI 0.53–0.68) to have dementia compared to individuals who returned to the community. Overall, individuals who were admitted to long-term or respite RAC had a higher likelihood of experiencing limitations associated with their physical, cognitive or social abilities, with individuals admitted to TC having a higher likelihood of issues with hygiene and mobility, compared to individuals returning to the community.

Conclusion: Understanding the profile and predictive risk factors for injured older individuals using RAC (long-term, respite or TC services) can inform current and future aged care service resource use needs and can be used to understand factors associated with service use.

1. Introduction

As the population ages, there will be an increasing demand for both community and residential aged care services. In Australia, there are numerous aged care services and programs available, including long-term residential aged care (RAC) (known elsewhere as nursing homes), respite RAC, and transitional residential care (TC). Long-term RAC provides continuous supported care for older individuals who are no longer able to live in their own home. The services provided vary by facility but can range from assistance with daily tasks to 24-hour nursing care. In Australia, long-term RAC can be provided by either public, private or not-for-profit organisations and is regulated by the Commonwealth Government. Short-term respite RAC is available to older individuals who intend to return to their own home, yet need RAC

on a temporary basis or to provide carers with a break from caring duties (Australian Institute of Health and Welfare, 2012), and TC provides short-term restorative care to optimise functioning and independence after hospitalisation and is commonly available for up to 12 weeks either within RAC or in the community (Australian Institute of Health and Welfare, 2014). Currently, an estimated 200,000 older people live in long-term RAC in Australia (Australian Institute of Health and Welfare, 2012) and the cost of long-term RAC, respite RAC and TC can be subsidised by the Commonwealth Government.

The number of injury hospitalisations for older people is growing, with older individuals in Australia accounting for 27% of hospitalised injury (Tovell et al., 2014), particularly fall-related injuries (Harvey et al., 2016). Injury-related hospital admissions are the most common reason why older people living with dementia are hospitalised in

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Australia (Australian Institute of Health and Welfare, 2012). Following an injury hospitalisation, older individuals may require assistance to perform general activities of daily living (ADL), either temporarily, as they return to their prior functional ability, or on a more permanent basis. Information is needed on the characteristics of older individuals hospitalised with an injury and the residential aged care services that these individuals access in order to identify predictive factors of service use to assist with planning aged care service needs.

Prior research, primarily using cohort studies, has identified that age, functional ability, cognitive impairment, depression, multiple comorbidities and multiple falls are common factors associated with a move to an aged care facility (Friedman et al., 2005; Wong et al., 2010). However, factors associated with admission or return to RAC have not been examined in-depth following a hospitalised injury at a population-level, nor have factors associated with entry into supplementary care programmes, such as TC or RAC respite care, been identified. This study aims to identify factors associated with admission to RAC, respite RAC and transitional aged care for older individuals following an injury hospitalisation in New South Wales (NSW), Australia.

2. Method

A retrospective epidemiological analysis of individuals aged ≥ 65 years who had an injury hospital admission and who had a linked record in RAC or aged care service eligibility assessment data during 1 July 2008 and 30 June 2013 in NSW, the largest populated state in Australia with an estimated 1.2 million residents aged ≥ 65 years (Australian Bureau of Statistics, 2009), was conducted. Ethics approval was obtained from the NSW Population and Health Services Research Ethics Committee (2008/10/108) and the Australian Institute of Health and Welfare (AIHW) Human Research Ethics Committee (2015/1/159).

2.1. Data collections

The Admitted Patient Data Collection (APDC) includes information on all inpatient admissions from all public and private hospitals in NSW. The APDC contains information on patient demographics, source of referral, diagnoses, external cause(s), hospital discharge type and clinical procedures. Diagnoses and external cause codes were classified using the International Classification of Diseases, 10th Revision, Australian Modification (ICD-10-AM) (National Centre for Classification in Health, 2006). All injury hospitalisations were identified using a principal diagnosis of injury (ICD-10-AM: S00-T75 and T79). The first injury hospital admission during this timeframe was identified as the 'index admission'. The 4,231 (2.2%) in-hospital deaths during the index admission were excluded from the analysis. There are a number of quality control measures used for the APDC, including checking for missing or invalid data items. Following identification of any errors, hospitals are required to make corrections and resubmit their data. Hospital auditing has identified good-to-excellent classification of principal and comorbid diagnoses classifications in Australian hospital data (Henderson et al., 2006).

The RAC data collection includes information on all long-term residents, individuals admitted for respite care and individuals who are provided with transitional aged care in RAC facilities. The RAC data collection contains information on the type of admission of an individual, discharge status, and the dates of admission/discharge. For each person admitted to long-term RAC, an appraisal of their ability to perform ADLs (e.g. mobility, personal hygiene), their behavioural characteristics (e.g. cognition, wandering, depression) and their complex care needs (e.g. medication, health care procedures) is conducted using the Aged Care Funding Instrument (ACFI) (Commonwealth of Australia, 2012) usually within 2 months of admission. The RAC data is stored in a relational database and multiple data extracts from this data collection were provided.

The Aged Care Assessment Program (ACAP) data collection includes

information obtained from aged care assessment teams (ACATs). ACAT teams identify an individual's care needs and make recommendations regarding long-term living arrangements. The ACAP data collection includes information on an individual's living arrangements, their ability to perform ADLs (such as their physical capability, cognitive and social ability and ability to perform domestic tasks) and information on any carer arrangements. ACAT assessments can be conducted at any time and are valid for 12 months, but individuals can be reassessed within a 12-month period, if care needs change.

2.2. Data linkage

Extracts from the national RAC and ACAP data collections were linked to the APDC by the AIHW Data Linkage Unit, irrespective of whether NSW was an individual's state of residence. Probabilistic name-based linkage (NBL) was used to link the RAC data extract to the APDC and key-based linkage (KBL) using a statistical linkage key (SLK-581) was used to link the APDC to the ACAP. The SLK-581 contains the second, third and fifth letters of an individual's last name, the second and third letters of their first name, the day, month and year of birth, and their sex. Where available, postcode of residence, ACAT identifier and ACAT assessment date were also using in the linkage process (Australian Institute of Health and Welfare, 2014).

Samples of record pairs were clerically reviewed in batches, based on their comparison weight, and the proportions of links and non-links in each batch were examined. Match link rate (i.e. how many presumed true matches were linked by selecting a particular batch as a cut-off), link accuracy (i.e. how many accepted links are presumed to be correct links) and F-score (i.e. harmonic mean of the two ratios of match link rate and link accuracy) were assessed. For the RAC and APDC linkage, a cut-off comparison weight of 23.4707 was selected, that provided an estimated match link rate of 97.6%, a link accuracy of 99.9% and an F-score of 98.8%. For the ACAP and APDC linkage, an estimated false match rate (i.e. lower score considered better), estimated marginal trade-off (i.e. higher score considered better) and a measure of discriminating power (i.e. higher score considered better) were estimated at 1%, 5 and 90%, respectively.

As previous examinations of linked hospitalisation and RAC data identified discrepancies in separation and admission dates between these collections (Australian Institute of Health and Welfare, 2013), new RAC admissions were identified where the date of admission in RAC was either 3 days prior or up to 7 days post the date of hospital discharge. Indicator variables were created to identify existing long-term RAC, respite RAC and TC recipients based on individuals being present in RAC at the date of the injury hospital admission. The RAC data extract containing the ACFI appraisals for new long-term RAC residents were linked to the injury hospitalisations, if the appraisal was conducted within 60 days of hospital discharge. The ACAP appraisals for RAC or community-dwelling residents were linked to the injury hospitalisations, if the appraisal was conducted either 365 days preceding or post hospital discharge. The earliest appraisal closest to the date of hospitalisation was preferred, if multiple appraisals had been conducted.

2.3. Identification of comorbidities and dementia

The Charlson Comorbidity Index (CCI) was used to identify the number of comorbidities using diagnosis classifications from the hospitalisation records (Quan et al., 2011). Dementia was excluded from the count of comorbidities to avoid collinearity. The CCI was treated as an ordinal variable and categorised by number of comorbidities. Dementia was identified using the ICD-10-AM diagnosis classifications of F00-F03, F05.1, G30 and G31 recorded in any hospital episode in any diagnosis field. A 12-month look back period was used for the identification of all comorbidities (i.e. to 1 July 2007).

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