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Emergency department utilisation among older people with acute and/or chronic conditions: A multi-centre retrospective study

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ABSTRACT

Introduction: Older persons aged over 65 years represent up to 41% of Australian Emergency Department (ED) presentations. Older persons present with acute and/or chronic conditions, have more Emergency Department visits, hospital admissions and readmissions than other age groups. However, little is known about the characteristics and trends of acute illness and chronic presentations and whether frailty changes these dimensions within this cohort.
Methods: A 12-month retrospective medical record audit of persons over 65 years presenting to four EDs.
Results: Data from 44,774 (26.6%) patients aged 65 years and over were analysed. Patients with acute conditions presented more frequently (n = 30,373; 67.8%), received more urgent triage categories (n = 13,471; 30.1%) and had higher admission rates (n = 18,332; 61%). Chronic conditions presented less frequently (n = 14,396; 32.1%) and had higher discharge rates (n = 9302; 65%). Patients over 80 years were allocated more urgent triage categories and commonly presented with falls (n = 3814; 8.5%). Patients between 65 and 79 years had a higher discharge rate (n = 10,397; 46.1%).
Conclusion: Older persons with acute illnesses were more likely to be admitted than those with chronic conditions and who were more likely to be discharged home. There is scope for further investigation of new models of care to better manage older persons with chronic conditions and ED discharge practices.

1. Introduction

The World Health Organization [1] predicts a 21% increase of people aged 65 years and over by 2050. The ageing demographic creates major structural challenges with service demand for Emergency Departments (EDs) that will require a new strategic approach to maintain an effective health system [2,3]. It is essential to understand the current trends and characteristics of ED use by older people for better allocation of limited health resources and workforce management [2].

Over the past decade, EDs have played an increasing role in the management of older people with chronic conditions [4–6]. In comparison to younger populations, older people require specific care needs, have decreased physical reserve and have higher rates of negative health outcomes [7]. Older people also experience specific challenges when accessing care in an ED [8]. ED clinicians are challenged when assessing and diagnosing older people who

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present with higher acuity, multiple co-morbidities and complex conditions. The challenge of providing acute hospital care to older people with chronic conditions is predicted to increase with improvement of chronic disease treatments and advanced diagnostic tools [9].

The increase in chronic and multiple co-morbidity conditions within society has resulted in an increase in ED utilisation [10–12]. ED research has largely examined diagnostic groupings of older populations and/or health predictors [7,13,14]. For example, Mallitt et al. [13] examined clinical predictors of ED presentations for chronic conditions. Older people may present to an ED because of an acute illness or injury or an acute exacerbation of chronic illness. For the ED clinician, the care of people who have an acute and/or chronic condition can create greater treatment and management complexity.

The tailoring of ED interventions and models of care may need to be different when managing acute illnesses or injuries when compared to chronic conditions [15]. Further, frailty (people greater than 80 years of age) may also complicate care needs and present different challenges for ED clinicians. However, there is limited evidence that explores the characteristics and trends of ageing and frailty or the presence of acute and chronic conditions in this population. Therefore, the aim of the study was to explore the characteristics and trends of i) people aged 65 years and over presenting to four EDs; and ii) acute and chronic conditions in people over 65 years and iii) acute and chronic conditions in those presentations 80 years and over.

2. Methods

A descriptive exploratory design was used and multisite study data were collected by retrospective medical record audit.

2.1. Site and sample

The study sites included two tertiary referral and two district hospitals within metropolitan Sydney in the state of New South Wales (NSW), Australia. Tertiary referral hospitals provide all surgical specialties and intensive care support services. District hospitals offer similar services to tertiary referral hospitals with the exception of no on-site neurology or cardiothoracic surgery [16].

All older people (aged 65 years and over) presenting to each site were included in the sample. For the purpose of this study, acute illnesses were defined as a rapid onset of a disease (including acute exacerbations of chronic illnesses) and chronic conditions were defined as a gradual onset of a disease that is often incurable [1].

2.2. Medical record audit

Electronic hospital patient data were extracted from FirstNet™ (ED computer software program) from 1st January to 31st December 2014. Electronic data variables retrieved from the medical record included patient demographics (age, gender) and ED clinical information variables. Clinical variables included date, day and time of ED patient arrival, arrival mode, triage category, treating clinician patient commencement time (doctor or nurse practitioner), diagnosis, discharge time and disposition (admitted, discharged or transferred).

2.3. Data management and analysis

Diagnostic patient conditions were identified and translated by two emergency experts from the Snowmed software ED program. Snowmed diagnostic classifications were then translated into groups using ICD-10 coding (acute or chronic). The principle ED diagnosis was used and acute injuries or conditions were defined as occurring within 72 h of presentation. Chronic conditions were defined as pre-existing medical conditions. The presenting symptoms were sorted and coded into broad clinical symptoms which is a standard Australian ED data analytical process [3].

The Australasian Triage Scale consists of five-scales: Code 1 (resuscitation) requires immediate intervention; Code 2 (emergency) requires intervention within ten minutes; Code 3 (urgent) within 30 min; Code 4 (semi-urgent) should be seen within one hour; and; Code 5 (non-urgent) should be seen within two hours [17]. For the purpose of this study, Triage Code 1, 2 and 3 are considered urgent and Triage category 4 and 5 non urgent as a binary category.

Data were stored electronically in a security password protected Excel™ database accessible only by the chief investigators. Descriptive statistics (frequency and percentages) were used to present the study data. For normally distributed data, mean and standard deviations are presented. For skewed data median and interquartile range (IQR) were used. For comparing different groups (over 80 years and below 80 years; gender, and acute versus chronic conditions) non-parametric data analysis (Pearson Chi Square and Mann Whitney-U) was performed using the IBM SPSS program (IBM SPSS v.21, Chicago IL USA). For the study, statistical significance was set at $p < 0.05$.

3. Ethical approval

Ethical approval was obtained from the Local Health District Human Research Ethics Committee (HREC 1212-430M). Access was granted to analyse ED patient records and the investigators operated in accordance with the Australian National Health and Medical Research Council [18]. Once data had been collected patients were de-identified and re-coded to maintain confidentiality and privacy. The study was conducted in accordance with the approved protocol and is reported using STROBE guidelines.

4. Results

During the study period there were in total 168,021 ED presentations across the four sites, of which 44,774 (26.6%) patients were aged 65 years or over (Table 1). The mean age of patients aged 65 years and over was 79.16 years (SD ± 8.5 years) and 53.4% were female (n = 23,930). Ambulance transport was used by 58.2% of patients (n = 26,049). Two thirds of older patients arrived with an acute condition (n = 30,373; 67.8%) (Table 1).

There was no significant difference X^2 2.77, p = 0.10 in the proportion of presentations when comparing people under 80 years (n = 22,567; 50.4%) and over 80 years (n = 22,207; 49.6%). Older patients (>80 years) were more likely to have chronic conditions X^2 5697.6, p = 0.001.

Of the 44,774 older patients, 43.7% (n = 19,507) were allocated a triage category 3 (Table 2). Acute conditions were allocated higher urgency triage categories (n = 13,471; 30.1%) compared with chronic condition presentations, but this was not statistically significant (Mann-Whitney U; $p > 0.05$). Of the triage categories, more patients over 80 years were allocated triage category 3 (Mann-Whitney U; p = 0.001).

Of the older person presentations, the most frequent triage symptom code related to pain (n = 8458; 18.9%) (Table 3). The most common triage symptom code allocated for those less than 80 years was pain (n = 4729; 10.6%) compared to over 80 years, which was falls (n = 3814; 8.5%).

For those patients with an acute presentation (n = 30,373) the most common symptom code was pain (n = 5857; 13.1%) compared with respiratory conditions (n = 2941; 6.6%) for chronic

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