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Older people's use of Accident and Emergency services

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Abstract

Introduction: it has previously been reported that patients aged over 65 years account for 15% of Accident and Emergency (A&E) attendances. Despite this, there have been few studies looking at older people's use of A&E. This study describes the A&E attendance patterns of older people, defined as those aged 65 years and over, using data from an NHS region over a number of years. Their attendances are also compared with those of the rest of the population.

Data and methods: A&E attendance data were collected for 14 Acute Trusts in the West Midlands for the period from 1 April 1999 to 31 March 2002 via the West Midlands Accident and Emergency Surveillance Centre.

Results: patients aged 65 years and over accounted for 18% of all attendances. Attendance rates were highest in those aged over 80 years. Older patients were significantly more likely to attend during the morning and early afternoon, during the winter months, arrive by ambulance and require admission to hospital. Older patients were significantly more likely to attend with non-injury, particularly cardiac-related conditions. Injuries accounted for 33.1% of attendances in the over-65s compared with 59.9% in the 0–64s.

Conclusions: this study is the first in England to look at the A&E attendance patterns of all older people in an NHS region. It has demonstrated the continued high level use of A&E by those aged over 65 years. This highlights the need for continued systemic monitoring of A&E attendance patterns to enable planners to accommodate the impact of the increasingly ageing population.

Keywords: *older people, emergency medicine, epidemiology, elderly*

Introduction

It has been reported that patients aged over 65 years account for 15% of Accident and Emergency (A&E) attendances [1], and that those aged over 70 years account for 12% of attendances [2]. In 2001, people aged over 65 years made up 15% of the total population, and 7% of these were aged over 75 years [3]. By 2021 this is estimated to have increased to 20% and 9%, respectively. This is likely to lead to increased attendance rates at A&E by older people. Despite this there have been relatively few studies looking at older people's use of A&E. Previous studies have tended to focus on attendances for injury-related conditions rather than attendances for medical conditions. Only one UK study was identified that looked at all attendances by older people [4]. However, this used data from 1983/1984, which are now 20 years old. Two more recent studies compared the use of A&E by patients aged 65 years and over with those under 65 years, but these were from outside the UK, one being from Canada [1] and one from Australia [5].

Previous studies have tended to focus on attendances for injury-related conditions. For example, falls, specifically the characteristics and outcomes [6–8], risk factors [9], prevention [10] and costs [11], and fractures [12, 13]. No studies focusing solely on A&E attendance for non-injury or medical conditions were identified. Studies of these types of conditions have used data from other sources, such as admissions data [14].

Studies have also followed up older patients after leaving A&E and have looked at missed diagnoses [15], risk of death or admission to hospital [16, 17, 18] and adequacy of home support [19].

The majority of previous studies were based in single A&E departments and covered relatively limited time periods. Therefore, they do not provide a reflection of the use of A&E by older people across a region or over a number of years. Only three of the studies used data from more than one department and these focused on injury-related conditions [6, 10, 12]. The aim of this study is to describe the A&E attendance patterns of older people, defined as those aged 65 years and over, using data from an NHS region over a number of years. Their attendances will also be compared with those of all other A&E patients (those aged 0–64 years).

Data and methods

The A&E Commissioning Data Set (CDS) is collected in computerised A&E departments and records information on every attendance made. In the West Midlands NHS region, the CDS is collected by the West Midlands Accident

and Emergency Surveillance Centre, located at the University of Birmingham. For the purposes of this study, data on all new A&E attendances were available for 14 out of the 20 Acute Trust A&E departments in the West Midlands for the period from 1 April 1999 to 31 March 2002. The departments differed in size, location (urban and rural) and type (teaching and district general hospitals). The attendances were split into two groups: patients aged 0–64 years and patients aged 65 and over. The data items available from the CDS include attendance information such as arrival time, arrival mode and disposal method, and clinical information such as diagnoses and treatments. Analyses were performed for a selection of data items considered to be of research interest and where completeness levels were high (over 95%).

Results

Across these departments there were 2,865,139 new attendances at A&E. A total of 514,420 (18.0%) were made by patients aged over 65 years, with 2,350,719 (82.0%) by patients aged between 0 and 64 years. Across the 3 years, the number of attendances by 0–64 year olds decreased from 799,253 in 1999/2000 to 770,907 in 2001/2002 (a decrease of 3.5%), whereas the number of over-65-year-olds increased from 167,161 in 1999/2000 to 178,003 in 2001/2002 (an increase of 6.5%).

Attendance by age

Figure 1 shows the age–sex specific rates of attendance per year, using a denominator population reflective of the areas covered by the 14 Trusts. Rates were highest in those aged over 80 years (463.4 per 1000 in the 80–84s and 818.5 in the over-85s).

Temporal patterns

Both age groups followed the pattern of a sharp increase in attendances between 08:00 and 10:00 hours (Figure 2). However, the proportion of attendances by the over-65 group was higher during the morning and early afternoon (between 09:00 and 16:00 hours), whereas attendances by the 0–64 group were higher during the late afternoon and evening (between 16:00 and 03:00 hours). The two groups were significantly different at all times of the day (using non-overlapping 95% confidence intervals (CIs)).

The highest proportion of attendances was made on a Monday (15.7% of attendances for both groups). The greatest difference was seen on Sundays. This was the second most attended day by the 0–64s (14.4%), but the least attended by those over 65 years (12.5%). The two groups were significantly different for all days except Monday (using non-overlapping 95% CIs).

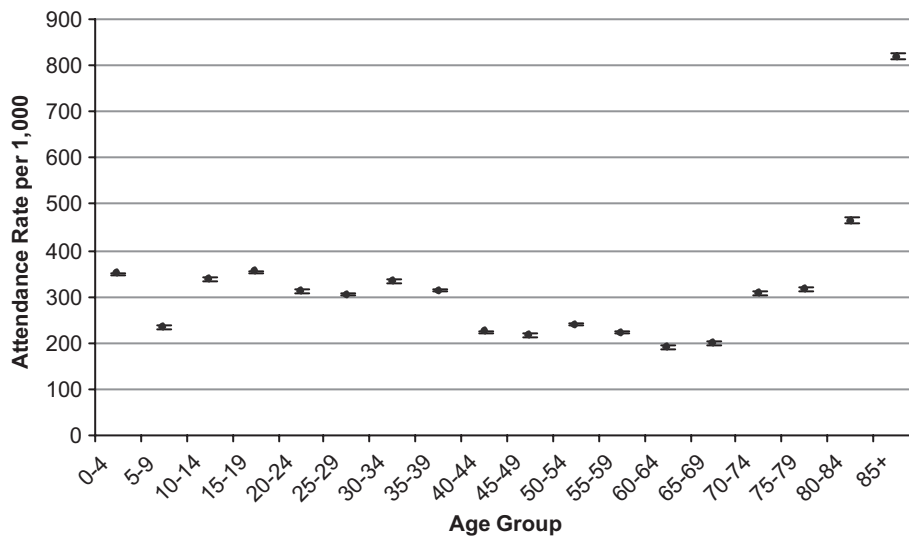


Figure 1. Age-specific rates of new A&E attendances with 95% confidence intervals.

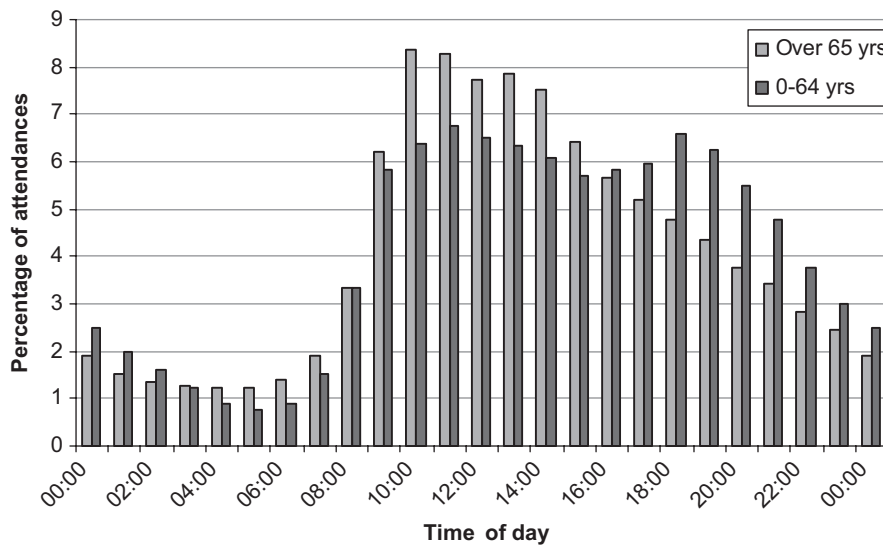


Figure 2. A&E attendances by time of day and age group.

Attendances by the 0–64 group were higher between April and October, whereas attendances by the over-65 group were higher between November and March (Figure 3). The difference was most striking in December, with 9.4% of the over-65 group attending compared with 7.7% of the 0–64 group. The two groups were significantly different for all months except November (using non-overlapping 95% CIs).

Arrival and disposal

A total of 64.7% of the over-65 group arrived at A&E by ambulance compared with 19.9% of the 0–64 group. This category is not broken down further in the CDS and so it is not possible to look at those making their own way to A&E in more detail.

Overall, 46.2% of the over-65s were admitted compared with 14.1% of the 0–64s (Table 1). Of the over-65 group arriving by ambulance 58.8% were admitted, compared with only 33.4% of the 0–64 group. Of the patients arriving by other means, 23.0% of those aged over 65 and 9.4% of those aged 0–64 years were admitted. Conversely, more of the 0–64s were discharged home (65.8% compared with 38.6% of the over-65s). There were more deaths in the over-65 group (1.1% compared with 0.1%). The two groups were significantly different for all arrival and disposal categories (using non-overlapping 95% CIs).

Diagnosis

Three of the Trusts in this study used ICD10 to code diagnosis, rather than the diagnostic codes specified in the CDS. ICD10 codes provide a more detailed level of information

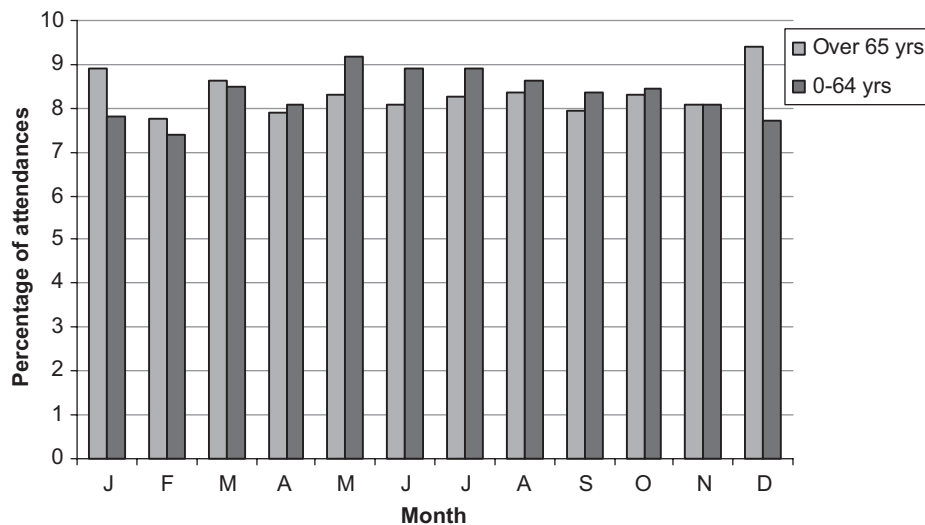


Figure 3. A&E attendances by month and age group.

Table 1. A&E attendances by arrival mode, disposal and age group

Disposal	Ambulance		Other		Total	
	Over-65s	0-64s	Over-65s	0-64s	Over-65s	0-64s
Admitted	58.8	33.4	23.0	9.4	46.2	14.1
Died	1.5	0.5	0.2	0.01	1.1	0.1
Discharged	30.4	51.3	53.6	69.3	38.6	65.8
Left/refused treatment	0.6	5.6	2.3	5.3	1.2	5.3
Other	4.8	3.4	3.3	1.9	4.3	2.2
Referred	3.8	5.9	17.7	14.1	8.8	12.6
Total	100	100	100	100	100	100

about the presenting condition and so data from these three Trusts were analysed using the primary diagnosis code (74,230 and 362,223 attendance records for the over-65s and 0-64s, respectively). The diagnoses were aggregated into condition groups in order to look at the proportion of all diagnoses each group accounts for.

Many differences can be seen between the two age groups (Table 2). In the 0-64 year age group, injury-related conditions accounted for 59.9% of all diagnoses, whereas in the over-65s they accounted for 33.1%. Cerebrovascular conditions were 26 times more common in the older age group than the younger age group: 2.6% compared with 0.1%. Cardiac conditions were seven times more common in the older age group: 9.9% compared with 1.4%. Infectious disease and respiratory conditions were also much higher in the over-65s. The two groups were significantly different for all conditions (using non-overlapping 95% CIs).

Table 3 details the 20 most common conditions diagnosed in the over-65s along with the percentage of attendances they account for in the 0-64 year age group. 'Pain in throat and chest' and 'angina pectoris' were the most common conditions in the older age group, both of which would be classified as cardiac conditions. The two groups were significantly different for all conditions (using non-overlapping 95% CIs).

Table 2. Condition groups and percentage of diagnoses in each age group

Condition group	Over-65s	0-64s
Cardiac conditions	9.9	1.4
Cerebrovascular conditions	2.6	0.1
CNS conditions	1.9	0.7
Dermatological conditions	2.1	3.2
Gastrointestinal conditions	8.0	5.2
Infectious diseases	6.9	2.6
Injuries	33.1	59.9
Musculoskeletal conditions	4.5	4.3
Ophthalmological conditions	2.6	2.2
Other circulatory conditions	1.8	0.4
Poisoning	0.3	1.6
Psychiatric conditions	1.0	1.2
Respiratory conditions	7.3	3.8
Urological conditions	4.0	2.5
Other conditions	13.9	10.8
Total	100	100

Discussion

Patients aged 65 years and over accounted for 18% of all new attendances in this study. Attendance rates were highest in those aged over 80 years (463.4 per 1000 in the 80-84s and 818.5 in the over-85s). Previous work has reported that

Table 3. Twenty most common diagnoses (percentages) in the over-65s and figures for the 0–64s

Condition	Over-65s	0–64s
Pain in throat and chest	3.8	2.0
Angina pectoris	3.8	0.6
Other injuries of head	3.1	5.7
Fracture of femur	3.1	0.1
Syncope and collapse	3.0	0.7
Injury of unspecified body region	2.7	5.8
Stroke	2.5	0.1
Abdominal and pelvic pain	2.4	2.3
Abnormalities of breathing	2.3	0.5
Heart failure	2.1	0.1
Acute lower respiratory infection	1.9	0.4
Fracture of forearm	1.9	1.4
Open wound of head	1.7	2.9
Other injuries of lower limb	1.7	2.5
Disorder of eye & adnexa	1.6	1.0
Transient cerebral ischaemic attacks	1.5	0.1
Haemorrhage from respiratory passages	1.5	0.4
Retention of urine	1.4	0.1
Other chronic obstructive pulmonary disease	1.4	0.1
Other counselling and medical advice	1.3	1.5
Percentage of all diagnoses	44.7	28.3

older people have the highest age-specific rates of A&E attendance [20]. However, this study was carried out in New Zealand and no recent UK study was found with which to compare theresults.

The proportion of older people attending A&E was significantly higher throughout the day when the population is more mobile or active (Figure 2). Attendances were highest between 10:00 and 14:00 hours and this may coincide with visitors, such as GPs, relatives or home helps, deciding that emergency treatment is required. There was little real difference between the two groups with respect to day of attendance. However, the differences were still found to be statistically significant owing to the large numbers involved. The main difference was that the proportion of attendances by the over-65s was lower at the weekends. Similar results were found by Eagle *et al.* [1]. One reason for this may be that older people are more isolated, having less contact with people and services at the weekends, and may have no personal means of transport to hospital.

Attendances by the older age group peaked during the winter months, most noticeably in December and January (Figure 3). During the winter, older people are more likely to injure themselves with falls [21]. The increased attendance may also be due to an increase in respiratory conditions and associated complications during this time. Consultation rates for influenza have been found to be highest among people over 65 years of age, and older patients often develop more severe symptoms [22]. However, the effect of influenza varies from year to year and does not always reach epidemic proportions. Other types of respiratory disease are more consistent in their impact from one winter to the next; for example, rates of acute bronchitis are consistently high in elderly people at the turn of the year [23]. Seasonal patterns have also been reported for other medical conditions. For example, Stewart *et al.* looked at

heart failure admissions and deaths, and found a substantial seasonal variation with higher rates in winter, particularly in the elderly [24].

Ambulance use was much higher in the older group than the younger group (Table 1). Overall, 64.7% of over-65s arrived at A&E by ambulance. This is much higher than the figure of 38% reported in Canada [1], but similar to that of 65% reported in Australia [25]. No UK estimate was found with which to compare the figure from this study. Over half of the injury group arrived by ambulance and this may reflect a more general lack of access to transport. Many of the disabilities of ageing affect mobility and independence and therefore will affect a person's ability to use cars and public transport. Older people are more likely to live alone, which may also place them at greater risk of needing transportation to hospital [26].

These figures may also include a small proportion of 'non-urgent' ambulance transports (those other than '999' calls), mainly GP referrals, where the patient requires admission but has no means of getting to hospital. Work carried out by Clark *et al.* found that people over 65 years of age utilised over one-third (35.6%) of all ambulance 'emergency' resources and two-thirds of 'non-urgent' resources [26].

A total of 46.2% of the over-65s attending A&E were admitted to hospital and this was over three times higher than the percentage of 0–64s admitted (Table 1). This compares well with previous estimates of the number of older people admitted, which vary from 45% of over-65s to 57% of over-75s [1, 16]. It has also been reported that older people are more likely to be triaged to a higher urgency category, and have higher admission rates and longer hospital stays even after adjusting for triage category [1, 5]. This contrast between the two age groups would be expected as older people are more susceptible to other complications and may need monitoring rather than being discharged home, or there may be inadequate home support.

Of the over-65s arriving by ambulance, 58.8% were admitted. However, 30.4% were discharged home, which may be an indication of inappropriate ambulance use. This is difficult to measure, as the patient may appear seriously ill at the time the ambulance is called. A total of 51.3% of the 0–64s arriving by ambulance were discharged, which may indicate a larger problem regarding the appropriate use of services.

Injuries accounted for a significantly higher proportion of attendances in the younger age group: 59.9% of attendances in the 0–64s compared with 33.1% in the over-65s (Table 2). In the older age group, head injury and fractured femur were most common (Table 3). It was not possible to look at the cause of the injuries sustained, as the categories available are limited and tend to relate to the younger population (for example assault and sports injury). A high proportion of these injuries are likely to be the result of a fall. However, this proportion cannot be quantified, as there is no routine recording of falls in the A&E CDS. Two previous studies reported that 17.8% [6] and 20% [10] of A&E attendees aged over 65 years presented after a fall, which would equate to over half of the injury attendances in this study.

In the older age group the most common diagnoses were cardiac-related conditions (chest pain and angina).

Overall, cardiac conditions accounted for 9.9% of all diagnoses in the over-65s compared with 1.4% in the 0–64s. Eagle *et al.* reported that the most common types of non-injury conditions diagnosed in older people in A&E were cardiovascular [1]. Respiratory conditions accounted for 7.3% of all diagnoses in the over-65s, compared with 3.8% in the 0–64s. It is likely that a high proportion of these occur during the winter, contributing to the increased attendance by older people during this time. The largest relative difference was seen in cerebrovascular conditions, which was 26 times more common in the older age group than the younger age group (2.6% compared with 0.1%). The majority of these were classified as 'stroke', which accounted for 2.5% of all diagnoses (Table 3).

This study is the first in England to look at the A&E attendance patterns of all older people in an NHS region. Previous studies have used data from single A&E departments or only included patients with specific conditions. This study has focused on the differences between patients aged over 65 years and those aged between 0 and 64 years. The results suggest that the older patients are more likely to attend during the morning and early afternoon, during the winter months, arrive by ambulance, attend with non-injury, particularly cardiac-related conditions, and require admission to hospital. This study has also demonstrated the continued high-level use of A&E by those aged over 65 years (18% of all attendances). This highlights the need for continued systemic monitoring of A&E attendance patterns to enable planners to accommodate the impact of the increasingly ageing population.

Key points

- There have been few studies looking at older people's use of A&E services.
 - This study describes the A&E attendance patterns of older people, defined as those aged 65 years and over, with those aged 0–64 years using data from an NHS region over a number of years (2,865,139 attendances).
 - Older patients are more likely to attend A&E during the morning and early afternoon, during the winter months, arrive by ambulance and require admission to hospital.
 - Older patients are more likely to attend with non-injury, particularly cardiac-related conditions.
 - There is a need for continued systemic monitoring of A&E attendance patterns to enable planners to accommodate the impact of the increasingly ageing population.
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Conflicts of interest

None.

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The effectiveness of a modified version of the Wilkinson questionnaire in screening for TIA and minor stroke in the United Kingdom

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Abstract

Background: transient ischaemic attacks (TIAs) and minor strokes are important to diagnose as there are effective secondary preventive interventions. Significant under-reporting by patients occurs, but general practitioners tend to over-diagnose the condition, contributing in part to long clinic waiting lists. An accurate screening test could address both these problems.

Methods: a modified version of a questionnaire designed to detect TIA was tested against the gold standard of specialist diagnosis in two vascular outpatient clinics in Leicester, UK.

Results: the questionnaire was sent by post with the clinic appointment and completed by 136 participants. In 99 cases the same questionnaire was administered by a clinic nurse. Overall levels of agreement (κ , 95% CI) with specialist diagnosis of TIA, stroke or neither were 0.32 (0.15, 0.48) and 0.31 (0.12, 0.50) for postal and administered questionnaires, respectively. When the diagnoses of TIA and stroke were combined, agreement rose to 0.38 (0.23, 0.53) for postal and 0.38 (0.20, 0.57) for administered versions. For this outcome, the postal version had a sensitivity of 0.56 (0.43, 0.68) and specificity of 0.81 (0.71, 0.90). Equivalent figures for administered questionnaires were 0.61 (0.46, 0.76) and 0.76 (0.63, 0.87).

Conclusion: the questionnaire has potential in prioritising outpatient referrals but is not sufficiently specific to be used for research or population screening.

Keywords: *transient ischaemic attack, questionnaire, screening, elderly*

Background

Effective interventions exist to reduce the risk of stroke in patients presenting with transient ischaemic attack (TIA)

[1, 2]. This, together with evidence that many patients with this condition do not present to health services [3], raises the question of whether there may be a case for screening for TIAs, either in the elderly or other high-risk groups.