Emergency presentations for older persons with low back pain: An increasing clinical and economic challenge

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RESEARCH ARTICLE

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Emergency presentations for older persons with low back pain: An increasing clinical and economic challenge

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Abstract

Objective: To determine whether differences exist for older persons presenting to Emergency Departments (EDs) with lower back pain (LBP) in terms of management, health service resource use and cost when compared to younger patients with LBP.

Methods: Retrospective analysis of routinely collected electronic medical record data from January 2015 to July 2021. Data from 11,098 adults presenting with LBP to two large regional Australian EDs were analysed over a 5-year period. Rates of presentation, investigation, medication use, spinal surgery and cost were assessed for all participants with respect to age groups (over or under 65 years of age), diagnosis and time. Multivariable logistic regression analysis was employed to assess the contribution of presentation characteristics to the risk of inpatient admission and to investigate the variable effect of patient age.

Results: Older people represented 23% ($n = 2565$) of all LBP presentations, with a growing proportion of presentations over time. More than 1 in 4 patients over 65 were admitted ($n = 703$, 27%), with CT imaging being proportionately three times more prevalent (24% vs. 6%), and average cost double (AU$3973 vs. $1671) that of the younger population. Consultation by an ED physiotherapist was associated with lower admission risk across all adult presentations (OR 0.52, 95% CI [0.40 to 0.67]).

Conclusions: Older persons are over-represented amongst gradually increasing rates of LBP presentations to EDs and associated with escalating cost of care and hospital resource use. Older patients present a different clinical and economic profile to younger patients, supporting the provision of individualised management recommendations.

KEYWORDS

aged, emergency medicine, low back pain

1 | INTRODUCTION

Low back pain (LBP) presentations place a large and costly burden on health-care systems. Remaining the most frequent musculoskeletal cause for Emergency Department (ED) presentation, LBP is within the overall top 10 reasons Australians present to the ED, with 145,307 presentations nationally in the 2020–2021 reporting year.[1] It is reported as the most frequent musculoskeletal-related reason for ED presentation in older people.[2] Fortunately, the majority of LBP presentations to ED are considered non-serious and musculoskeletal-related, with most patients having a favourable and rapid improvement in pain and disability in the week following discharge from ED.[3]

In addressing the LBP issue in Australian EDs, it is essential to identify populations that require greater amounts of hospital resources, factors associated with this, and those that may be appropriate for management in the primary care setting. Researchers from the University of Sydney have been investigating these issues and factors associated with hospital admission and cost.[4–7] An important consideration for future initiatives in this space is whether specific age-related vulnerabilities exist for older persons presenting to the ED suffering from LBP and evaluating costs associated with such presentations. With a sharp increase in overall ED use seen proportionately in older adults after the age of 65 years[8] and an age-related prevalence of LBP thought to peak in the seventh decade of life,[9] it is hypothesised that a significant number of those presenting to the ED with LBP will be in this older age group. Little is presently known about the presentation and management of this specific older population when compared to a younger adult population.

Despite the very low incidence of LBP sufferers in the community requiring emergency attention, the use of costly hospital-based services, such as ambulance retrieval, remains common.[5] Previous estimates of the economic burden of LBP within the ED have varied greatly. Costs reported from Australian EDs show a mean non-admitted cost of AU$584 for non-ambulance and AU$1022 for ambulance presentations, with admission costs as high as AU$14,949.[10] Furthermore, the cost of managing patients with non-serious LBP in the ED is significantly higher compared to other health-care settings (i.e. primary care).[11] Consequently, a better understanding of the profile of people presenting to the ED with LBP and their management is needed to inform future health-care resource utilisation.

Traditional models of care emphasise the practice of reduced opiate prescription and discourage routine radiographic imaging of back pain sufferers in the ED. A significant limitation in this model is that age and age-related risks are not accounted for. Recent research suggests over 39% of older adults will receive imaging for LBP whilst in the ED, with over 67% receiving opiate medication.[12] Greater knowledge of the prevalence, profile and costs of LBP attendances at ED is needed to inform the development of new models of care, particularly around specific needs of subgroups of those presenting with LBP, such as older people. Specific objectives were to describe trends in low back pain presentations, diagnosis, management and costs, including how these differ for those over, and under, 65 years of age.

Practice Impact

Differences exist in the clinical profile of older persons presenting to the ED with LBP when compared to younger patients with LBP. This carries implications for increased health service resource use and supports the development of age-appropriate recommendations in clinical practice guidelines for LBP.

2 | METHODS

2.1 | Study design

Retrospective analysis of data obtained from Gold Coast Hospital and Health Service (GCHHS), in accordance with the REporting of studies Conducted using Observational Routinely Collected Health Data (RECORD) statement. Ethics approval was obtained from the GCHHS Ethics Committee (reference no. LNR/2021/QGC/72060).

2.2 | Setting

Gold Coast Hospital and Health Service is a public, multicampus health service located in Gold Coast, Australia, that services a city of approximately 635,000 residents.[13] GCHHS has two EDs: one at Gold Coast University Hospital, a 750-bed tertiary hospital and one at Robina Hospital, a 403-bed facility.

2.3 | Data source

A retrospective data analysis was completed using routinely collected digital health-care data provided by GCHHS Health Analytics Department for the period from January 2015 to June 2021. All data regarding ED

stay were extracted from two separate electronic medical record software programs—Wellsoft® Emergency Department Information System (EDIS; Jan 2015 to April 2019) and Cerner® FirstNet (April 2019 to June 2021).

2.4 | Study population

The study population was identified as follows: A text search of all ED presentations for the retrospective period from January 2015 until June 2021 was conducted via the GCHHS Health Data SQL server to identify patients aged 18 years or older who presented to a GCHHS ED with a complaint of back pain. Eligible patients were then identified via diagnostic codes assigned to the patient whilst in the ED, which are standardised under the International Classification of Diseases (ICD) ICD 9/10 (Jan 2015-April 2019) and Systematised Nomenclature of Medicine Clinical Terms (SNOMED-CT; April 2019–June 2021) systems being used by the Emergency Department depending on the time of presentation. Diagnoses included within the non-specific LBP (NSLBP), radicular and sinister pathology categories followed previously reported LBP ED methodology[5] and are listed in detail in Appendix 1a in Appendix S1.

2.5 | Data analysis and statistical methods

Inpatient admission was defined as admission to a medical or surgical ward outside of the ED and was not inclusive of short-stay ED units. Older persons were defined as those 65 years of age or older, in keeping with age classification described by the Australian Government's Institute of Health and Welfare.[14] Diagnoses were made at the time of discharge from the ED or inpatient admission. Pain medication administered within the ED was defined according to the Anatomical Therapeutic Chemical (ATC) Classifications and listed at Appendix 1d in Appendix S1. Medications not meeting these classifications and medication taken before or after ED attendance were excluded.

Imaging used to diagnose pathology of the lumbar spine was included for analysis within the studied population whilst in the ED. Any imaging completed before, or after the ED visit, or once admitted to hospital, was excluded. Advanced imaging is defined as magnetic resonance imaging (MRI) and computerised tomography (CT).

Variables relating to demographic information that include continuous variables (e.g. age and length of stay) were reported as mean (standard deviation) or median (IQR) as appropriate. Categorical variables were reported as frequency (%). A multivariable logistic regression analysis was performed on FirstNet data to identify significant independent variables for inclusion in a logistic regression model predicting the risk of inpatient admission. The variables included in the final logistic regression model were determined through a forward stepwise procedure, in which the candidate variables associated with the lowest Akaike Information Criterion were iteratively added to the model until additional variables were not significant at the 5% level. The initial set of candidate variables was determined through domain knowledge. The full set of candidate variables and their descriptions can be found in Appendix 1b in Appendix S1. A p-spline[15] was used to capture the non-linear effect of age on the risk of admission. Results of the multivariable logistic regression analysis were reported in terms of odd ratios (OR) with confidence intervals provided for constant effects and visually for the non-linear effect of age. All codes underlying the results are publicly available at https://github.com/James-Todd/LowBackPain_ED.

Cost data expressed in Australian dollars (AU$) were inflation-adjusted to 2021 using the quarterly Australian consumer price index for health,[16] summed per episode according to categories of ED, short-stay, inpatient and means calculated. Medians are also reported due to the highly skewed nature of ED presentation costs (Appendix 1c in Appendix S1). Cost data were able to be collected from April 2019 onwards, aligning with the changing of the electronic medical record software system used in this health service and the subsequent increased functionality. Cost categories aligned with the Australian Hospital Patient Costings Standards[17] and therefore included all service and overhead costs associated with clinical care.

3 | RESULTS

3.1 | Sample characteristics and trends

From 1 January 2015 to 30 June 2021, there were a total of 1,110,932 presentations to the Gold Coast University Hospital and Robina EDs. Of those, 26,665 patients were identified to have 'Back Pain' in their initial ED triage records with 15,551 who did not meet the eligibility criteria due to diagnosis outside of the lumbar spine (Appendix 1a in Appendix S1). In total, 11,098 patients met our eligibility criteria, the characteristics of whom are described in Table 1.

Within the included population, 9420 (85%) were classified as NSLBP 1444 (13%) as radicular pain and 234 (2%) as serious or sinister spinal pathology. Overall, the proportion of presentations for LBP within the ED service has steadily risen over the studied period from 1531

TABLE 1 ED presentation characteristics and trends January 2015–June 2021.

	2015	2016	2017	2018	2019	2020	2021[d]—to 30 June
Total ED presentations	156,507	163,294	168,421	173,545	179,388	173,786	95,991
Total ED presentations ≥65 years (%)[a]	29,296 (189)	31,301 (19)	34,329 (20)	35,937 (21)	37,276 (21)	37,016 (21)	20,343 (21)
Total LBP presentations (%)[a]	1531 (1)	1634 (1)	1537 (1)	1690 (1)	1743 (1)	1938 (1)	1025 (1)
Total LBP presentations ≥65 years (%)	323 (21)	315 (19)	345 (22)	406 (24)	443 (25)	475 (24)	258 (25)
NSLBP (%)	1264 (83)	1373 (84)	1266 (82)	1394 (82)	1480 (85)	1714 (88)	929 (91)
Radicular (%)	237 (16)	223 (14)	233 (15)	251 (15)	224 (13)	192 (10)	84 (8)
Serious spinal pathology (%)	30 (2)	38 (2)	38 (2)	45 (3)	39 (2)	32 (2)	12 (1)
Arrival: Ambulance (%)	716 (47)	715 (44)	711 (46)	757 (45)	840 (48)	1030 (53)	559 (54)
Physiotherapy review (%)[b]	—	270 (16)	190 (12)	124 (7)	358 (20)	714 (37)	391 (38)
Imaging (Any) (%)	366 (24)	331 (20)	358 (23)	441 (26)	487 (28)	579 (30)	336 (33)
Surgery (%)[c]	—	—	—	—	7 (<1)	8 (<1)	4 (<1)

Note: All percentages were computed relative to total LBP presentations unless otherwise indicated.

Abbreviations: ED, Emergency Department; LBP, lower back pain; NSLBP, non-specific lower back pain.

[a]Percentages computed relative to total ED presentations.

[b]Fields computed using only FirstNet data (2019 onwards).

[c]Data unavailable for 2015.

[d]Data from 2021-01-01 to 2021-06-30.

presentations (2015) to 1938 presentations (2020). When stratified by age, the proportion of people presenting who are over 65 and over is increasing (21% to 25%).

There was no difference between overall rates of presentations between genders, with the average age of presentation being 49.3 years (SD, 18.6 years). Almost half ($n = 5328$, 48%) of all presentations arrived via ambulance, with a trend for patients to arrive outside of the work hours of 8 am–4 pm ($n = 6283$, 57%). Most patient presentations ($n = 10{,}711$, 96%) were triaged as a category ATS 3 or 4.

3.2 | Presentation characteristics for older and younger populations

The proportion of NSLBP was similar between the older and younger age groups as demonstrated in Table 2. Older people were approximately three times more likely to have a serious or sinister cause for their LBP than the younger age group (4% vs. 1%, respectively). The proportion of admitted patients differed for older people compared to the younger group (27% vs. 8%). Ambulance use was also higher in older people (65% vs. 43%).

3.3 | Medication

Pain relief medication was prescribed for 94% ($n = 4007$) of the studied population (Appendix 1e in Appendix S1). Opiates were the most prescribed ($n = 3557$, 84%), commonly in the form of combined opiates ($n = 3349$, 79%) such as paracetamol and codeine. Non-steroidal anti-inflammatory drugs (NSAIDs) such as ketorolac and ibuprofen were also commonly prescribed ($n = 2660$, 63%), as well as steroids such as oral dexamethasone ($n = 1375$, 32%). Those aged 65 and older had a higher prevalence of opiate administration ($n = 946$, 88%) than younger adults ($n = 2611$, 82%), whilst having a lower prevalence of administered NSAIDs ($n = 460$, 43%), oral corticosteroids ($n = 258$, 24%) and benzodiazepines ($n = 240$, 22%) than the younger population using only FirstNet data.

3.4 | Imaging

Imaging was conducted in 26% ($n = 2898$) of patients (Appendix 1f in Appendix S1). Simple radiographs (X-rays) were the most utilised imaging modality for LBP in the ED ($n = 1740$, 16%). Advanced imaging, in the form of CT or MRI scan, was used in 11% ($n = 1207$) of all patients. Those aged over 65 had a higher prevalence of advanced imaging ($n = 676$, 26%) compared to those under 65 years ($n = 941$, 11%).

3.5 | Spinal surgery

Emergency spinal surgery within the same admission was a rare outcome for patients presenting to the ED for LBP ($n = 19$, <1%), over 65 years of age ($n = 2$, <1%), under 65 ($n = 17$, <1%; Appendix 1g and h in Appendix S1).

TABLE 2 Characteristics of ED presentations stratified by LBP diagnosis and age.

	Non-specific LBP ($n=9420$)		Radicular LBP ($n=1444$)		Serious spinal pathology ($n=234$)		Total LBP-related presentations ($n=11,098$)		Total
	18–64 years	≥65 years	18–64 years	≥65 years	18–64 years	≥65 years	18–64 years	≥65 years	All
Total presentations (%)[a]	7248 (85)	2172 (86)	1164 (14)	280 (11)	121 (1)	113 (4)	8533 (77)	2565 (23)	11,098
Gender, female (%)	3523 (49)	1237 (57)	588 (50)	151 (54)	54 (45)	67 (59)	4165 (49)	1455 (57)	5620 (51)
Age (years), mean (SD)	41.1 (12)	76.4 (8)	42.1 (11)	73.9 (6)	41.9 (13)	78 (9)	41.3 (12)	76.2 (8)	49.3 (19)
Mode of arrival (%)									
Private transport	4077 (56)	724 (33)	713 (61)	129 (46)	63 (52)	42 (37)	4853 (57)	895 (35)	5748 (52)
Ambulance	3152 (44)	1446 (67)	451 (39)	150 (54)	58 (48)	71 (63)	3661 (43)	1667 (65)	5328 (48)
Helicopter	2 (0)	2 (0.1)	0 (0)	0 (0)	0 (0)	0 (0)	2 (0)	2 (<1)	4 (0)
Triage category (%)									
1	0 (0)	1 (0)	0 (0)	0 (0)	2 (2)	1 (1)	2 (0)	2 (<1)	4 (0)
2	205 (3)	46 (2)	40 (3)	2 (1)	18 (15)	16 (14)	263 (3)	64 (2)	327 (3)
3	3713 (51)	1258 (58)	638 (55)	182 (65)	71 (58)	69 (61)	4422 (52)	1509 (59)	5931 (53)
4	3286 (45)	861 (40)	480 (41)	96 (34)	30 (25)	27 (24)	3796 (44)	984 (38)	4780 (43)
5	44 (1)	6 (<1)	6 (<1)	0 (0)	0 (0)	0 (0)	50 (1)	6 (<1)	56 (1)
Weekend presentation (%)	2052 (28)	606 (28)	310 (27)	69 (25)	36 (30)	34 (30)	2398 (28)	709 (28)	3107 (28)
Presentations during work hours (8 am–4 pm)	3010 (42)	1014 (47)	535 (46)	141 (50)	55 (46)	60 (53)	3600 (42)	1215 (47)	4815 (43)
ED LOS (h), median (IQR)[b]	4.4 (2.8–8.1)	6 (3.8–12.3)	4.9 (3.1–10.7)	6.3 (3.8–14.5)	6 (3.6–10.3)	6.9 (4–13.9)	4.5 (2.9–8.4)	6.1 (3.8–12.7)	4.8 (3.1–9.2)
ED representation within 48 h (%)	103 (1)	34 (2)	21 (2)	7 (2)	1 (1)	0 (0)	125 (2)	41 (2)	166 (2)
Admitted to hospital (%)	478 (7)	581 (27)	98 (8)	52 (19)	69 (57)	70 (62)	645 (8)	703 (27)	1348 (12)
Hospital LOS (days), median (IQR)[c]	0.2 (0.1–0.7)	0.7 (0.2–1.9)	0.3 (0.1–0.8)	0.5 (0.2–2)	2.2 (0.6–5.1)	2.7 (1–5.5)	0.3 (0.1–0.7)	0.7 (0.2–2)	0.3 (0.1–0.9)

Abbreviations: ED, Emergency Department; LBP, lower back pain; LOS, length of stay.

[a]The percentage component of total presentations is provided relative to the respective age group population total.

[b]ED LOS was computed based on time in ED and short-stay unit (SSU).

[c]Hospital LOS was computed using FirstNet only. The median and IQR were calculated only for patients admitted to the SSU or other hospital wards.

3.6 | Hospital admission

Admission rates across all age groups were 12%. For those over 65, this rose to 27%. Variables associated with inpatient admission included: age (Figure 1), MRI OR 4.00 (2.69 to 5.93), arriving by ambulance OR 2.43 (1.91 to 3.09), antiepileptic OR 3.13 (2.30 to 4.26) or opiate medication OR 2.44 (1.65 to 3.61) administered during admission. Physiotherapy consultation was associated with lower admission rates OR 0.52 (0.40 to 0.67).

The full set of variables found to be predictive of hospital admission, and associated odds ratios (ORs) can be found in Appendix 1i in Appendix S1.

3.7 | Costs

Mean health service costs per diagnostic category and age group are presented in Table 3. The mean health service cost per episode of LBP presenting to the ED was AU$2262 (SD $4890). Mean costs across all diagnostic categories for people over 65 were higher than in the under 65-year age group, with mean 'all presentations' cost of AU$3973 in the over-65 group compared to AU$1670 in the under-65 group. The patients who were admitted (535 out of a total of 4022) attracted much higher costs (Mean: AU$9699) than those that were managed and discharged from ED (Mean: AU$1120).

4 | DISCUSSION

This study comprehensively describes the prevalence, profile and costs of patients presenting to ED with LBP in a large regional Australian health service. The results demonstrate that older people with LBP were more likely to arrive by ambulance, receive imaging, opioids, be admitted to hospital, be diagnosed with a serious pathology and cost more than their younger counterparts. These markedly higher rates of resource use contribute to a much higher cost per visit for the over-65 age population suffering from LBP.

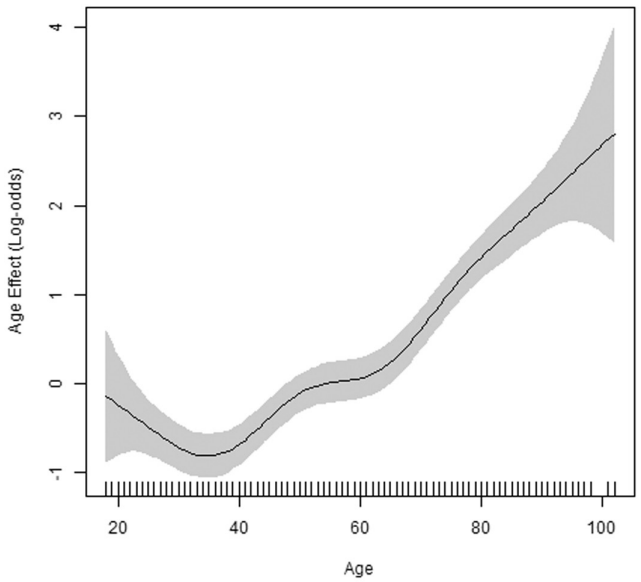

FIGURE 1 Partial effect of age on odds of inpatient admission.

The 11,098 emergency presentations of LBP included in this study represent a slowly increasing trend across all age groups over time. Numbers of older patients presenting to ED with LBP were increasing disproportionately to growing general ED use and population growth in the area.[13] Older people in this study demonstrated a threefold increase in the prevalence of serious pathology when compared to younger persons; however, the overall prevalence was similar to previous literature.[18] The likely contribution of advancing frailty and increasing rates of bony injury resulting from a single traumatic event has been well documented in older people,[19] supporting the higher prevalence of advanced imaging seen both in this study and prior research.[12] Our study found that 83% of patients received opiate medication for LBP across both age categories, significantly higher than previous research within Australian EDs, who found opiate administration prevalence between 67% and 70%.[5,12] With a global effort to reduce opiate use in LBP, this concerningly high figure within our study highlights the need for research into models of care and best practice adherence within this population of ED presenters.

Findings from our analysis show an accelerating risk of hospital admission with increasing age from 65 years and older (Figure 1), a key factor in increased hospital cost. Recent studies have suggested admission risk in older persons is strongly influenced by social determinants such as home support, isolation and lack of access to general practitioners.[6,20] Further research into the specific causes of admission in older people for LBP would be beneficial to clarify this relationship.

Our study findings carry implications for health-care policy and service provision. There is increasing recognition of the severe and incapacitating impact LBP can have on individuals, especially in those who are older than 65 years.[21] The World Health Organization (WHO) recently highlighted the need to identify specific recommendations for the management of LBP in older people.[22] Our findings support this provision of specific recommendations and identify that alternative models of care are warranted. One such example is the use of allied health, specifically physiotherapy, in the management of LBP within the ED, having demonstrated improvements in hospital and patient care-related outcomes.[23] Our results identified that consultation by an

TABLE 3 Financial impact of ED presentations stratified by LBP type and age.

	Non-specific LBP		Radicular LBP		Serious spinal pathology		Total LBP-related presentations		Total
	18–64 years	≥65 years	18–64 years	≥65 years	18–64 years	≥65 years	18–64 years	≥65 years	All
ED only with no time in short-stay unit									
Presentations	1398	255	157	29	12	4	1567	288	1855
Mean total cost (SD)	534.14 (447.59)	773.93 (609.98)	530.47 (324.41)	634.08 (354.01)	548.31 (413.32)	910.82 (346.46)	533.88 (436.35)	761.75 (587.25)	569.26 (470.13)
ED only with time in short-stay unit									
Presentations	1055	385	143	38	6	5	1204	428	1632
Mean total cost (SD)	1629.49 (1645.04)	1967.8 (1737.34)	1719.95 (1669.61)	1768.26 (2055.87)	1830.21 (1906.11)	1781.26 (2021.61)	2259.28 (3168.01)	2285.35 (2608.91)	2271.13 (2902.67)
ED attendance (with or without time in short-stay unit)									
Presentations	2453	640	300	67	18	9	2771	716	3487
Mean total cost (SD)	1016.26 (1131.8)	1494.56 (1019.23)	1120.48 (1065.68)	1312.48 (888.54)	1118.63 (1047.64)	1674.45 (1059.57)	1028.21 (1124.43)	1479.79 (1008.53)	1120.93 (1116.49)
Presentations with inpatient admission									
Presentations	175	279	29	20	14	18	218	317	535
Mean total cost (SD)	9945.53 (11807.1)	9172.72 (8590.73)	8586.42 (6791.19)	12,865.9 (21219.5)	11,088.8 (6384.11)	12,671.6 (10953.8)	9838.15 (10977.1)	9604.4 (9991.37)	9699.6 (10394.8)
All presentations									
Presentations	2628	919	329	87	32	27	2989	1033	4022
Mean total cost (SD)	1610.87 (3922.64)	3825.58 (5962.4)	1778.57 (3076.72)	3968.44 (11135.1)	5480.56 (6553.26)	9005.86 (10329.9)	1670.75 (3895.21)	3973.01 (6732.46)	2262.06 (4890.78)

Note: All figures quoted in Australian Dollars (AUD). Date range: 2019.04.04–2021.06.30.

Abbreviations: ED, Emergency Department; LBP, lower back pain.

ED physiotherapist within our studied population was associated with an overall reduction in admission risk by more than 40% across all ages (OR 0.52 [0.40 to 0.67]). Whilst this does not represent a causal relationship, it suggests that further research into the impact of multidisciplinary care within care of LBP in the ED is warranted.

Previous studies have recognised the role of arrival via ambulance and subsequent increase in hospital resource use (imaging, admission and length of stay), thought to be due to an increase in perceived, rather than true, condition acuity.[24] Overall ambulance use in our study was higher than previously reported[5,25,26] and higher again in the over-65 age group. This may simply reflect regional variation, or perhaps an emerging trend towards greater LBP acuity with the ageing population, in turn driving proportionately greater ambulance demand. The latter possibility is supported by a recent review of ambulance use for back pain, which highlighted high ambulance demand for LBP at 6% of all ambulance calls. Of note however is that the same review reported that up to one third of these ED transfers were avoidable.[27] Our findings of increasing LBP ED presentations and greater serious pathology in the older age group highlight the need for further research into changing ambulance usage and the resultant hospital sequelae of ambulance transfers for LBP to the ED.

An age-related cost differential was found for the management of LBP in the ED setting. Overall mean hospital costs for LBP presenting to the ED at AU$2262 were comparable, albeit a little lower than recently reported in an Australian metropolitan area at AU$2959.[10] Similar to previous Australian data, we found large cost increases for patients admitted to the hospital ward compared with those able to be managed in the ED (AU$9700 compared with AU$1121). It is noteworthy that mean costs were much higher in the over-65 age group (AU$3973), compared to the under-65 age group (AU$1671) and although only for a single episode of service, were greater than recently reported 12-month cumulative costs for managing LBP in a European primary care setting (€582–€825 [~AU$851–$1206]).[28]

4.1 | Limitations

This study has some limitations. First, two different databases were used due to a change in hospital software from the EDIS® system to FirstNet® in April 2019. The increased functionality of the FirstNet® system has resulted in some components of our study being limited to data available from 2019 onwards (such as opiate use and rates of subsequent spinal surgery). These more recent data are also deemed to be a more accurate reflection of clinical practice.

Second, the accuracy of diagnostic codes used to identify the study population was subject to clinical discretion at the time of presentation. Human error and diagnostic bias may have resulting over-representation of generic diagnoses such as 'Lower back pain' and the potential for new diagnoses after inpatient admission or discharge from the ED.

5 | CONCLUSIONS

Lower back pain is a common and slowly increasing reason for presentation to the Emergency Department. Its management requires much clinical and economic resource, despite a relatively low proportion of serious or surgical pathology. Older people are over-represented amongst the growing rate of presentations and have a higher proportion of serious pathology, whilst also consuming higher rates of imaging, admission, resource utilisation and costing more to manage than their younger counterparts. These findings highlight the different clinical and economic proposition posed by older persons presenting to the ED with LBP and, as such, should guide individualised recommendations for this age population. Further research is needed to better understand modifiable variables specific to older people so that their care can be optimal and cost-effective.

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CONFLICT OF INTEREST STATEMENT

No conflicts of interest declared.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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