

# Management of low back pain in Australian emergency departments for culturally and linguistically diverse populations from 2016 to 2021

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## ABSTRACT

**Background** Disparate care in the ED for minority populations with low back pain is a long-standing issue reported in the USA. Our objective was to compare care delivery for low back pain in Australian EDs between culturally and linguistically diverse (CALD) and non-CALD patients.

**Methods** This is a retrospective review of medical records of the ED of three public hospitals in Sydney, New South Wales, Australia from January 2016 to October 2021. We included adult patients diagnosed with non-serious low back pain at ED discharge. CALD status was defined by country of birth, preferred language and use of interpreter service. The main outcome measures were ambulance transport, lumbar imaging, opioid administration and hospital admission.

**Results** Of the 14 642 included presentations, 7656 patients (52.7%) were born overseas, 3695 (25.2%) preferred communicating in a non-English language and 1224 (8.4%) required an interpreter. Patients born overseas were less likely to arrive by ambulance (adjusted OR (aOR) 0.68, 95% CI 0.63 to 0.73) than Australian-born patients. Patients who preferred a non-English language were also less likely to arrive by ambulance (aOR 0.82, 95% CI 0.75 to 0.90), yet more likely to be imaged (aOR 1.12, 95% CI 1.01 to 1.23) or be admitted to hospital (aOR 1.16, 95% CI 1.04 to 1.29) than Native-English-speaking patients. Patients who required an interpreter were more likely to receive imaging (aOR 1.43, 95% CI 1.25 to 1.64) or be admitted (aOR 1.49, 95% CI 1.29 to 1.73) compared with those who communicated independently. CALD patients were generally less likely to receive weak opioids than non-CALD patients (aOR range 0.76–0.87), yet no difference was found in the use of any opioid or strong opioids.

**Conclusion** Patients with low back pain from a CALD background, especially those lacking English proficiency, are significantly more likely to be imaged and admitted in Australian EDs. Future interventions improving the quality of ED care for low back pain should give special consideration to CALD patients.

## INTRODUCTION

Many countries, especially high-income countries, have become increasingly multicultural after years of global migration. In Australia, 26% of residents were born overseas, of whom 80% preferred to speak a language other than English at home.<sup>1</sup> These percentages are predicted to continue growing driven by the arrival of over 200 000 immigrants annually.<sup>2</sup> The term culturally and

## WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Previous studies reported relatively high imaging rate and high rate of opioid use and hospital admission in patients with low back pain presenting to Australian EDs.
- ⇒ Racial and ethnic disparities in the management of low back pain in the ED have been reported in the USA, whereas no study investigated this potential disparity in Australian EDs which also provide care to highly culturally and linguistically diverse populations.

## WHAT THIS STUDY ADDS

- ⇒ Patients with low back pain from a culturally and linguistically diverse background were more likely to be imaged in Australian EDs and admitted to inpatient wards than their majority counterparts, but less likely to receive weak opioid or arrive via ambulance.
- ⇒ Patients with low back pain who required an interpreter for the ED visit had the highest rate of receiving lumbar imaging (especially simple radiograph) and hospital admission.

## HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ Future research evaluating interventions and services to mitigate stereotypes, compensate for language barriers and encourage equity and high quality of ED care for culturally and linguistically diverse people with low back pain in multicultural communities are warranted.

linguistically diverse (CALD) is commonly used in research in Australia.<sup>3</sup> The Australian Bureau of Statistics defined this term by four core variables: country of birth, main language other than English spoken at home, proficiency in spoken English and indigenous status.<sup>4</sup>

Low back pain (LBP) was the fifth ranked reason for visiting Australian EDs in 2020–21.<sup>5</sup> For treatment of LBP, guidelines recommend self-management, physical and psychological therapies and complementary medicine, whereas opioid analgesics should be used with caution in selected patients and lumbar imaging is only indicated when a serious condition is suspected.<sup>6</sup> However, a study of LBP management in Australian EDs found that 24% of patients were imaged, 70% received an opioid and 18% were admitted to hospital,<sup>7</sup>



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indicating a high likelihood of guideline-discordant ED care for patients with LBP.

Differences in ED care between minority populations with LBP and their counterparts is a long-standing issue in the USA. For example, a review of nearly 13 000 ED presentations from 1997 to 2009 showed that the odds of receiving an opioid prescription among Hispanic and African-American patients with LBP were 24% and 49% less, respectively, than in white patients.<sup>8</sup> However, there has been no similar evaluation conducted in Australian EDs to date; and therefore whether Australian CALD patients with LBP are managed differently in the ED to those from a non-CALD background remains unknown.

The primary aims of this study were to describe the CALD status of patients with LBP presenting to Australian EDs and to compare care delivery (ie, provision of opioids, lumbar imaging and hospital admission) for LBP between patients from CALD and non-CALD backgrounds. We also examined the influence of COVID-19-related lockdowns in 2020–21 on care delivery to patients from different backgrounds.

## METHODS

### Study design and setting

We performed a retrospective analysis of data from electronic medical records of EDs of three major public hospitals, that is, Royal Prince Alfred Hospital, Concord Repatriation General Hospital and Canterbury Hospital within Sydney Local Health District, New South Wales (NSW), Australia from January 2016 to October 2021. Data of electronic medical records from EDs were obtained from the Sydney Local Health District Targeted Activity and Reporting System (STARS).<sup>9</sup> The STARS back pain App is a data analytics program that collects patients' personal information, tracks real-time hospital service use from medical records and identifies any clinical variation on the management of LBP.

The study period included two COVID-19-related lockdowns, that is, 18 March to 15 May 2020 and 27 June to 11 October 2021. To examine their impacts on care delivery for LBP, we paired the two lockdowns with two equivalent non-lockdown periods. To control for the effect of time, we adapted the study periods to start on the closest Monday and end on a Sunday. Therefore, the first lockdown was adjusted to 16 March to 17 May 2020 and its equivalent non-lockdown period was set from 15 March to 16 May 2021, and the second lockdown from 28 June to 10 October 2021 was paired with 29 June to 11 October 2020.

### Patients and characteristics

We included adult patients aged  $\geq 18$  years who presented to the ED of any of the three hospitals in Sydney Local Health District from 1 January 2016 to 31 October 2021 and were diagnosed with non-serious LBP (non-specific LBP or radicular LBP) at discharge. Presentations with a discharge diagnosis of LBP due to serious pathology or patients aged  $< 18$  years were excluded.

All patients born in a country other than Australia were designated as born overseas (ie, immigrants). Preferred language referred to the language most preferred by the person for communication and was coded as English or other languages. Patients who required an interpreter were considered as lacking English proficiency.

Patients aged  $\geq 65$  years were classified as the older age group. Socioeconomic status was derived from residential postcodes using Index of Relative Socioeconomic Advantage and Disadvantage (IRSAD) for Areas 2016,<sup>10</sup> with first to fifth deciles

indicating relatively disadvantaged suburbs. Presentations on Monday to Friday 08:00 to 17:00 hours were set as presenting within working hours. Categories 1–3 in the Australasian Triage Scale (ATS)<sup>11</sup> represented relatively urgent cases. Length of stay was timed from triaging to ED discharge or hospital admission. Representation was defined as a presentation to the ED within 48 hours after the index ED discharge.

### Outcomes

We evaluated four aspects of care for LBP related to ED presentations: ambulance transport, lumbar imaging, opioid administration and hospital admission. All modes of arrival other than ambulance transport (eg, private car, walked-in) were designated as self-presented. We divided lumbar imaging into simple radiograph (ie, X-ray) and advanced imaging (ie, CT scan or MRI). Imaging applied to any other body part or received during the inpatient stay was not included. Two of the three hospitals began to use electronic records for medication administration during the study period, commencing 1 November 2017 and 1 April 2019, respectively. Therefore, presentations to those two EDs before these start dates had no electronic record of opioid administration. Opioid analgesics were classified into weak opioids (eg, codeine, methadone) and strong opioids (eg, fentanyl, morphine).

### Statistical analysis

Multiple ED presentations for LBP of the same patient were independently analysed by presentation. Continuous variables were presented as mean (SD) or median (IQR), and categorical variables were presented as frequency (%). We computed the annual number of ED presentations for LBP from 2016 to 2021 and compared the proportion of CALD patients across 6 years using one-way analysis of variance.

We calculated the number and percentage of patients receiving each aspect of ED care in three CALD and non-CALD patient groups. Multivariable logistic regression was applied to examine the association between CALD status and care delivery for LBP in the ED, adjusting for sex, age group, socioeconomic status and triage category, and reported as adjusted OR (aOR) and 95% CIs. To identify the potential differences in care received in the index ED visits and during representations, we also conducted post hoc analysis using the same logistical regression models but with data from representations excluded.

We calculated the number of ED presentations of patients from CALD and non-CALD backgrounds during the two lockdowns and the two equivalent non-lockdown periods. To evaluate the effect of COVID-related lockdowns on care delivery, we compared the number and percentage of all patients, CALD patients and non-CALD patients receiving each aspect of care during two lockdowns and two non-lockdown periods and reported the differences as relative risk (RR) and 95% CI. All analyses were carried out in RStudio (V.1.4).

## RESULTS

### Patient characteristics

This study included 14 642 ED presentations from January 2016 to October 2021. In total, 12 322 individual patients with LBP presented to any of the three EDs; 1349 patients (10.9%) visited more than once over a 6-year period, including 218 patients (1.8%) who represented to the ED within 48 hours after the index visit.

**Table 1** Characteristics and care delivery of patients and ED presentations for low back pain

	Overall	Country of birth*		Preferred language*		Required an interpreter	
	N=14 642	Australia n=6878 (%)	Overseas n=7656 (%)	English n=10 945 (%)	Other n=3695 (%)	No n=13 418 (%)	Yes n=1224 (%)
<b>Characteristics</b>							
Age (years), mean (SD)	52.6 (20.1)	48.8 (19.2)	56.1 (20.2)	49.8 (19.1)	61.0 (20.6)	51.3 (19.6)	67.8 (18.9)
Older adults (≥65 years), n (%)	4540 (31.0)	1557 (22.6)	2964 (38.7)	2659 (24.3)	1881 (50.9)	3762 (28.0)	778 (63.6)
Female, n (%)	7501 (51.2)	3503 (50.9)	3954 (51.7)	5409 (49.4)	2091 (56.6)	6713 (50.0)	788 (64.4)
<b>IRSAD†</b>							
Disadvantaged (1–5), n (%)	3080 (22.2)	1151 (16.8)	1919 (27.7)	2021 (19.2)	1059 (31.8)	2688 (21.1)	392 (34.8)
Advantaged (6–10), n (%)	10 766 (77.8)	5683 (83.2)	5008 (72.3)	8493 (80.8)	2271 (68.2)	10 033 (78.9)	733 (65.2)
Presenting in working hours, n (%)	5988 (40.9)	2684 (39.0)	3274 (42.8)	4394 (40.1)	1594 (43.1)	5247 (40.4)	561 (45.8)
Representations, n (%)	301 (2.1)	186 (2.7)	114 (1.5)	246 (2.2)	55 (1.5)	285 (2.1)	16 (1.3)
<b>Triage</b>							
Urgent (1–3), n (%)	6107 (41.7)	3050 (44.4)	3009 (39.3)	4657 (42.6)	1449 (39.2)	5591 (41.7)	516 (42.2)
Less urgent (4–5), n (%)	8534 (58.3)	3827 (55.6)	4647 (60.7)	6287 (57.4)	2246 (60.8)	7826 (58.3)	708 (57.8)
<b>Low back pain diagnosis</b>							
Non-specific low back pain, n (%)	13 083 (89.4)	6249 (90.9)	6736 (88.0)	9845 (90.0)	3236 (87.6)	12 010 (89.5)	1073 (87.7)
Radiculopathy, n (%)	1559 (10.7)	629 (9.1)	920 (12.0)	1100 (10.0)	459 (12.4)	1408 (10.5)	151 (12.3)
Length of stay (hours), mean (SD)	4.1 (2.8)	4.1 (2.8)	4.1 (2.8)	4.0 (2.8)	4.3 (3.0)	4.1 (2.8)	4.7 (3.4)
<b>Care delivery</b>							
<b>Mode of arrival</b>							
Ambulance	4848 (33.1)	2486 (36.1)	2321 (30.3)	3600 (32.9)	1248 (33.8)	4362 (32.5)	486 (39.7)
Self-present	9790 (66.9)	4390 (63.8)	5334 (69.7)	7342 (67.1)	2446 (66.2)	9052 (67.5)	738 (60.3)
<b>Opioid administration</b>							
Valid data	10 537	5070	5371	7983	2552	9695	842
Any opioid	6189 (58.7)	3000 (59.2)	3135 (58.4)	4670 (58.5)	1517 (59.4)	5657 (58.3)	532 (63.2)
Strong opioids	5448 (51.7)	2607 (51.4)	2792 (52)	4069 (51.0)	1377 (54.0)	4948 (51)	500 (59.4)
Weak opioids	1226 (11.6)	641 (12.6)	577 (10.7)	978 (12.3)	248 (9.7)	1159 (12)	67 (8.0)
No opioid	4348 (41.3)	2070 (40.8)	2236 (41.6)	3313 (41.5)	1035 (40.6)	4038 (41.7)	310 (36.8)
<b>Lumbar imaging</b>							
Any imaging	3491 (23.8)	1560 (22.7)	1912 (25.0)	2409 (22.0)	1081 (29.3)	3034 (22.6)	457 (37.3)
Simple radiograph	2588 (17.7)	1136 (16.5)	1435 (18.7)	1741 (15.9)	846 (22.9)	2220 (16.5)	368 (30.1)
Advanced imaging	1233 (8.4)	578 (8.4)	653 (8.5)	889 (8.1)	344 (9.3)	1093 (10.5)	140 (11.4)
No imaging	11 151 (76.2)	5318 (77.3)	5744 (75)	8536 (78%)	2614 (70.7)	10 384 (77.4)	767 (62.7)
<b>Hospital admission</b>							
Yes	2339 (16.0)	1021 (14.8)	1310 (17.1)	1545 (14.1)	794 (21.5)	1982 (14.8)	357 (29.2)
No	12 303 (84.0)	5857 (85.2)	6346 (82.9)	9400 (85.9)	2901 (78.5)	11 436 (85.2)	867 (70.8)

\*Missing data: country of birth n=108; preferred language n=2; triage category n=1.

†Unable to assess IRSAD due to missing postcode, unspecified address, no fixed abode or residing overseas: n=796. IRSAD, Index of Relative Socioeconomic Advantage and Disadvantage.

The characteristics of patients with LBP and their ED presentations are summarised in [table 1](#). There were 7656 patients (52.7%) born overseas, 3695 patients (25.2%) preferred communicating in a language other than English and 1224 patients (8.4%) required an interpreter. No difference was found in CALD status between patients who presented to the ED once only and those who presented multiple times for LBP.

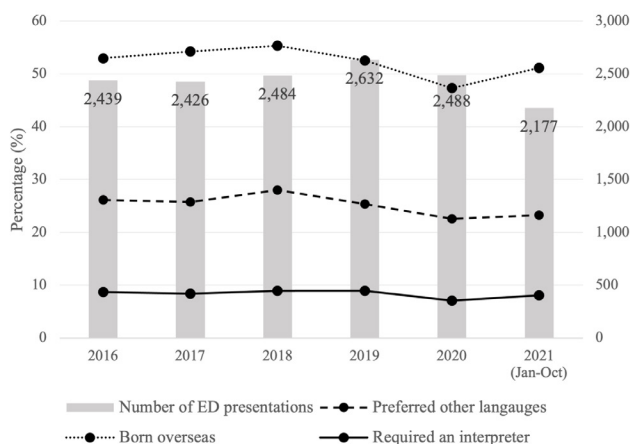
CALD patients were typically older, lived in more disadvantaged suburbs, were less likely to represent within 48 hours and stayed longer in the ED than non-CALD patients ([table 1](#)). These features were especially evident in patients who lacked English proficiency and required an interpreter.

The annual number of presentations between 2016 and 2021 and the proportion of CALD patients are presented in [figure 1](#). The proportions of patients born overseas (47.3%) and those who required an interpreter (7.0%) in 2020 were significantly lower than in the other 5 years.

### Care delivery

Overall, 33.1% of patients (n=4848) arrived by ambulance, 23.8% (n=3491) received lumbar imaging in the ED, 58.7% (n=6189 of 10,537) were administered opioids and 16.0% (n=2339) were admitted to hospital.

Care delivery in CALD and non-CALD patients with LBP are described in [table 1](#). Among patients who were born overseas, 30.3% arrived at ED by ambulance, whereas among those who required an interpreter, 39.7% arrived by ambulance. Patients with LBP who required an interpreter also had the highest likelihood of receiving any opioid (63.2%) or strong opioids (59.4%) in the ED, but weak opioids were the least commonly provided to this patient group (8.0%) compared with other CALD or non-CALD groups. More than one-third (37.3%) of patients who required an interpreter received lumbar imaging in the ED, compared with 22.6% of those that did not require an interpreter. Lumbar imaging performed for patients requiring



**Figure 1** The annual number of ED presentations for low back pain and the percentage of patients from a culturally and linguistically diverse background from 2016 to 2021.

an interpreter was predominantly simple radiographs (80.5%), whereas 73.2% of those who did not require an interpreter had simple radiographs and 36.0% had advanced imaging. The hospital admission rate was 17.1% in patients born overseas, 21.5% in patients who preferred communicating in a language other than English and 29.2% in those requiring an interpreter, all of which were higher than the overall admission rate (16.0%).

Differences in care delivery between CALD and non-CALD patients with LBP were found after adjusting for age, gender, socioeconomic status and triage category (table 2). The odds of ambulance transport were 0.68 and 0.82 times lower in overseas-born patients and patients who preferred a non-English language, respectively. Although no significant difference was found in administration of any opioid or strong opioids in the ED, the odds of receiving weak opioids were 0.76–0.87 times lower in CALD patients than non-CALD patients. The odds of receiving lumbar imaging in the ED and being admitted to hospital were 1.12 and 1.16 times higher in patients who preferred a non-English language and 1.43 and 1.49 times higher in patients who required an interpreter. When data from representations were excluded, the point estimates for all aORs remained essentially the same; but with the resulting loss of precision, the aORs of administration of strong opioids and weak opioids in patients who required an interpreter compared with those who did not become just not statistically significant.

## COVID-19-related lockdowns

There were fewer presentations to the three EDs for LBP during the COVID-related lockdowns ( $n=850$ ) than during the equivalent non-lockdown periods ( $n=1252$ ), but there was no significant difference in the proportion of patients who were from a CALD background in the lockdowns compared with the equivalent non-lockdown periods (table 3). Care delivery for LBP was also consistent among all patients as were the differences between patients from a CALD and non-CALD background between two lockdowns and two equivalent non-lockdown periods (table 3).

## DISCUSSION

We found differences in care delivery in Australian EDs between CALD and non-CALD patients with LBP in the period 2016–21. Differences remained after adjusting for age, gender, socioeconomic status and triage category: CALD patients were more likely to be imaged, especially receiving simple radiograph, and admitted to the hospital, yet less likely to receive a weak opioid or arrive by ambulance. Although fewer patients with LBP presented to EDs during COVID-related lockdowns, the proportion of patients from a CALD background and the use of ambulance, opioids, imaging and admission remained unchanged.

A previous systematic review<sup>12</sup> found that 9 out of 13 included studies reported a lower rate of diagnostic imaging in the ED for pain conditions in adult patients from minority populations. In the USA, a lower rate of opioid administration in the ED was identified in African-American patients with LBP than in white patients.<sup>13</sup> African-American patients with chest pain were also found to have a lower likelihood of hospital admission,<sup>14</sup> whereas a higher rate of admission was reported in patients who required an interpreter relative to English-proficient patients.<sup>15</sup> In Australia, no difference was found in use of ambulance transport between immigrants and Australian-born patients with cardiovascular disease.<sup>16</sup> However, in that study, immigrants were stratified into nine groups based on country of origin,<sup>16</sup> whereas we integrated all immigrants into one group. Unlike in the USA, English proficiency and country of birth are as important, if not more so, than race and ethnicity when defining minority populations in Australia.

Characteristics of patients from minority populations can influence both what services are provided by healthcare providers in the ED and which type of care is preferred by patients. ED physicians may experience difficulty in effectively communicating with their patients who lack English proficiency, despite assistance of an interpreter. Due to racial stereotypes and discordance, physicians might also make deviated judgement on pain

**Table 2** The association between care delivery related to ED presentations for low back pain and CALD status

aOR (95% CI)†	Born overseas	Preferred other languages	Required an interpreter
Ambulance transport	0.68 (0.63 to 0.73)***	0.82 (0.75 to 0.90)***	0.98 (0.86 to 1.12)
Opioid administration	0.97 (0.90 to 1.06)	0.95 (0.85 to 1.05)	1.06 (0.91 to 1.25)
Strong opioids	1.02 (0.94 to 1.11)	1.02 (0.92 to 1.13)	1.18 (1.00 to 1.38)*
Weak opioids	0.87 (0.76 to 0.99)*	0.82 (0.70 to 0.97)*	0.76 (0.58 to 0.99)*
Lumbar imaging	0.96 (0.88 to 1.04)	1.12 (1.01 to 1.23)*	1.43 (1.25 to 1.64)***
Simple radiograph	0.97 (0.88 to 1.06)	1.19 (1.07 to 1.32)**	1.52 (1.31 to 1.75)***
Advanced imaging	0.93 (0.82 to 1.05)	0.95 (0.82 to 1.10)	1.11 (0.91 to 1.36)
Hospital admission	0.96 (0.87 to 1.07)	1.16 (1.04 to 1.29)**	1.49 (1.29 to 1.73)***

\* $P<0.05$ ; \*\* $p<0.01$ ; \*\*\* $p<0.001$ .

†Multivariable logistic regression model adjusted for age, gender, socioeconomic status and triage category and used non-CALD patient groups as the reference. aOR, adjusted OR; CALD, culturally and linguistically diverse.



**Table 3** Comparisons of care delivery related to ED presentations for low back pain by CALD status between two COVID-19-related lockdowns and the equivalent non-lockdown periods

	Overall		Country of birth			Preferred language			Required an interpreter					
	Frequency	%	Australia	%	Overseas	English	%	Other	%	No	%	Yes	%	
<b>Presentations</b>														
Lockdown	850		432	50.8	401	47.2	680	80.0	170	20.0	785	92.4	65	7.6
Control	1252		608	48.6	632	50.5	958	76.5	294	23.5	1145	91.5	107	8.5
<b>Mode of arrival</b>														
Lockdown	286	33.6	163	37.7	119	29.7	231	34.0	55	32.4	265	33.8	21	32.3
Self-present	564	66.4	269	62.3	282	70.3	449	66.0	115	67.6	520	66.2	44	67.7
Control	447	35.7	258	42.4	183	29.0	336	35.1	111	37.8	402	35.1	45	42.1
Self-present	805	64.3	350	57.6	449	71.0	622	64.9	183	62.2	743	64.9	62	57.9
RR (95% CI)	0.94 (0.84 to 1.06) 0.89 (0.76 to 1.04) 1.02 (0.84 to 1.24) 0.97 (0.85 to 1.11) 0.86 (0.66 to 1.11) 0.96 (0.85 to 1.09) 0.77 (0.51 to 1.16)													
<b>Opioid administration</b>														
Lockdown	480	56.5	243	56.3	227	56.6	378	55.6	102	60.0	440	56.1	40	61.5
No opioid	370	43.5	189	43.8	174	43.4	302	44.4	68	40.0	345	43.9	25	38.5
Control	690	55.1	317	52.1	366	57.9	517	54.0	173	58.8	627	54.8	63	58.9
No opioid	562	44.9	291	47.9	266	42.1	441	46.0	121	41.2	518	45.2	44	41.1
RR (95% CI)	1.02 (0.95 to 1.11) 1.08 (0.96 to 1.21) 0.98 (0.88 to 1.09) 1.03 (0.94 to 1.13) 1.02 (0.87 to 1.19) 1.02 (0.94 to 1.11) 1.05 (0.81 to 1.34)													
<b>Lumbar imaging</b>														
Lockdown	178	20.9	80	18.5	97	24.2	126	18.5	52	30.6	154	19.6	24	36.9
No imaging	672	79.1	352	81.5	304	75.8	554	81.5	118	69.4	631	80.4	41	63.1
Control	301	24.0	127	20.9	170	26.9	197	20.6	104	35.4	258	22.5	43	40.2
No imaging	951	76.0	481	79.1	462	73.1	761	79.4	190	64.6	887	77.5	64	59.8
RR (95% CI)	0.87 (0.74 to 1.03) 0.89 (0.69 to 1.14) 0.90 (0.72 to 1.12) 0.90 (0.74 to 1.10) 0.86 (0.66 to 1.14) 0.87 (0.73 to 1.04) 0.92 (0.62 to 1.36)													
<b>Hospital admission</b>														
Lockdown	145	17.1	72	16.7	72	18.0	106	15.6	39	22.9	125	15.9	20	30.8
No	705	82.9	360	83.3	329	82.0	574	84.4	131	77.1	660	84.1	45	69.2
Control	209	16.7	84	13.8	123	19.5	130	13.6	79	26.9	176	15.4	33	30.8
No	1043	83.3	524	86.2	509	80.5	828	86.4	215	73.1	969	84.6	74	69.2
RR (95% CI)	1.02 (0.84 to 1.24) 1.21 (0.90 to 1.61) 0.92 (0.71 to 1.20) 1.15 (0.91 to 1.46) 0.85 (0.61 to 1.19) 1.04 (0.84 to 1.28) 1.00 (0.63 to 1.58)													

CALD, culturally and linguistically diverse; RR, relative risk.

and perceive patients' pain differently from patients' personal expectation.<sup>17</sup> As a result, more intensive care, such as simple radiograph and hospital admission, may be requested by physicians to ease communication, obtain objective results and screen for underlying serious condition. While this escalation of care is well intentioned, it does carry the risk of triggering downstream events (eg, opioid use, surgery). Meanwhile, due to insufficient patient-physician communication, patients are not able to fully express their concerns nor thoroughly understand their health condition. When being involved in clinical decision making, patients' preferences can vary related to cultural stereotypes and perceived efficacy of medication and pain management modalities.<sup>18</sup> For example, despite awareness of the radiation risks of CT scans, white patients were found to have a stronger preference for this test in the ED than African-Americans.<sup>19</sup> Apart from treatments led by ED physicians, racial and ethnic differences were also found in prehospital care and triaging assessment,<sup>20 21</sup> which determines ED presentation rate and the urgency of care delivery in the ED.

Harm associated with opioid use<sup>22</sup> and inappropriate use of imaging<sup>23 24</sup> for LBP have been reported in previous reviews. Unwarranted hospital admission has received less attention but is arguably equally as important due to the consequent risk of wasting healthcare resources and exposing patients to extended but guideline-discordant care for LBP, such as continued opioid use. There are other aspects of care for LBP in the ED that we did not study, such as self-management advice and pain education, which may also be impacted by English proficiency and cultural stereotypes and are worth investigating in future research. To ensure equity and high value of ED care in multicultural communities, clinical trials evaluating interventions to mitigate stereotypes, compensate for the lack of English proficiency and encourage guideline-concordant care for CALD patients in the ED are warranted.

### Strengths and limitations

This study used three variables to describe CALD status and stratify immigrants and different levels of English proficiency. By sourcing data from over 14 600 ED presentations over a 70-month period, this study provided a comprehensive overview of care delivery to CALD patients with LBP in Australian EDs. To our knowledge, the impact of COVID-related lockdowns on ED care for LBP by CALD status has not previously been evaluated.

We acknowledge some limitations in this study. We analysed only opioid administration during the ED visit, whereas data for opioid prescription at ED discharge were not available. There were missing data for opioid administration in two EDs, but valid data from 10 537 ED presentations still assured precise estimates. In addition, measuring interpreter use might not precisely reflect the proportion of patients who lacked English proficiency. Patients with poor spoken English but who presented to an ED with an English-speaking family member or friend might have been overlooked in our estimates as no interpreter was engaged.

### CONCLUSIONS

This study reveals that CALD patients presenting to Australian EDs with LBP are more likely to be imaged with simple radiographs, and admitted to hospital than non-CALD patients, but less likely to receive weak opioids or arrive via ambulance. The differences in care are more pronounced in patients who require interpreter service. Future interventions and services aiming to promote quality of ED care for LBP should specially focus on care delivery to CALD patients in multicultural communities.

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