

BMJ Open Emergency department presentations related to asthma and allergic diseases in Central Queensland, Australia: a comparative analysis between First Nations Australians and Australians of other descents

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ABSTRACT

Objective To examine the overall incidence rate and trends in emergency department (ED) presentations related to asthma and allergic diseases in regional Australia with a particular focus on First Nations Australians.

Design A retrospective analysis of data from the Emergency Department Information System.

Setting This study used data from 12 public hospitals in Central Queensland, Australia, a region encompassing regional, rural and remote outback areas.

Participants A total of 813 112 ED presentations between 2018 and 2023.

Outcome measure Asthma and allergic diseases were identified using the International Classification of Diseases-Tenth Revision-Australian Modification codes.

Results There were 13 273 asthma and allergic disease-related ED presentations, with an overall prevalence of 1.6% (95% CI 1.6, 1.7). There was a significantly higher incidence rate of asthma and allergic disease-related ED presentations among First Nations Australians at 177.5 per 10 000 person-years (95% CI 169.3, 186.0) compared with 98.9 per 10 000 person-years (95% CI 97.2, 100.8) among Australians of other descents. The incidence rates, with corresponding 95% CIs, of the four most common cases among First Nations Australians and Australians of other descents, respectively, were as follows: asthma (87.8 (82.0, 93.8) and 40.2 (39.0, 41.3)), unspecified allergy (55.3 (50.8, 60.2) and 36.0 (34.9, 37.1)), atopic/allergic contact dermatitis (17.1 (14.6, 19.9) and 10.6 (10.0, 11.2)) and anaphylaxis (7.2 (5.6, 9.1) and 6.2 (5.7, 6.6)).

Conclusion Our findings highlight a significantly higher rate of asthma and allergic disease-related ED presentations among First Nations Australians compared with Australians of other descents. This underscores the urgent need for targeted healthcare interventions integrating culturally appropriate approaches, alongside additional research to understand causality.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The study uses the most recent, large dataset including First Nations Australians and Australians of other descents and all age groups from a study setting encompassing regional, rural and remote outback areas.
- ⇒ The reporting of emergency department (ED) presentations related to asthma and allergic disease relies on the International Classification of Diseases codes entered by physicians at the time of presentation.
- ⇒ This study specifically focused on asthma and allergic disease-related ED presentations and did not encompass all instances of acute asthma and allergic diseases in the general population who may visit health facilities in routes other than the ED.

INTRODUCTION

Chronic diseases including asthma and allergy are a leading cause of premature death and morbidity globally^{1 2} and constitute a growing public health concern.^{3–5} It is estimated that by 2050, 50% of the world's population will be affected by allergies.^{1 6} In Australia, often labelled as the 'allergy capital of the world',⁷ allergies are currently estimated to affect 4.1 million people and are anticipated to increase by 70%, with affected individuals projected to reach 7.7 million (26.1%) by 2050.³

Allergic diseases exert considerable economic and social impact and negatively impact individuals' and families' day-to-day living as well as quality of life.^{8 9} The overall economic cost of food allergy alone in the USA is was estimated to be USD 24.8 billion annually or USD 4184 per child.¹⁰ The total

medicare cost for out-of-hospital services related to food allergy in children aged 1–4 years in Melbourne, Australia, alone was estimated at AUD 26.1 million annually.¹¹

There are clear racial, ethnic and socioeconomic disparities in allergic diseases worldwide.^{12–14} Studies conducted on the burden of allergic diseases in racially and ethnically structurally oppressed communities in Canada and the USA showed an increased burden of allergic and atopic diseases (eczema, allergic rhinitis and asthma) among the Indigenous peoples of Canada.^{15 16} In Australia, the burden of disease in general is 2.3 times higher among First Nations Australians,¹⁷ and health outcomes are poorer when compared with Australians of other descents.¹⁸ Asthma was the second most commonly reported long-term condition (16.6%) affecting First Nations Australians.^{19 20} After adjusting for age difference, First Nations Australians were 1.6 times more likely to report having asthma compared with Australians of other descent.²¹ However, there has been little research into other types of allergic diseases in First Nations Australians.²² In this study, the phrase ‘First Nations Australians’ respectfully refers to the Aboriginal and Torres Strait Islander peoples in Australia.²³

Existing evidence from other countries suggests the presence of disparities in the prevalence of allergic diseases between rural and urban areas. For example, a study conducted in South Africa reported a higher prevalence of self-reported allergies and a higher prevalence of objectively measured food allergies in urban areas compared with rural areas.^{24 25} This underscores the importance of conducting region-specific studies to inform targeted interventions and healthcare strategies. There has been little research into allergic diseases in regional and rural areas of Australia. The lack of comprehensive data in these areas hinders our understanding of the unique factors influencing allergies in regional settings, including distinct environmental exposures and lifestyle variations. Although some evidence²⁶ suggests that certain allergies, including food allergies and eczema, may be less common in Northern Australia based on self-report, region-specific further studies are required to inform targeted interventions and healthcare strategies.

This study endeavours to fill some of the existing evidence gaps by examining the incidence rate and trends of ED presentations related to asthma and allergic diseases, both collectively and individually, among First Nations Australians and Australians of other descents in Central Queensland (CQ), which encompasses both regional and rural and remote areas, from 2018 to 2023. The focus on asthma and allergic disease-related ED presentations in this study is guided by several key considerations. First, ED data provide a relatively accessible and reliable means to investigate asthma and allergic diseases without extensive logistical requirements. Moreover, ED data capture the burden of severe and life-threatening cases that necessitate immediate medical attention, highlighting the acute impact of these conditions. Such data are critical for identifying gaps in preventive care, timely

access to treatment and community health resources, particularly in regional, rural and remote areas. Furthermore, the acute care dimensions of asthma and allergic diseases, especially among Indigenous people in regional, remote and rural areas, are often overlooked in the literature. By addressing these aspects, this study aimed to fill these gaps and complement existing prevalence-focused research.

METHODS

Study design and settings

We conducted a retrospective analysis of routinely collected data from the Emergency Department Information System of Public Hospitals in CQ, a regional district of Queensland, Australia, located in the central east region (the study area map can be found in online supplemental figure 1).²⁷ The map was developed using the digital boundary files from the Australian Bureau of Statistics.²⁸ CQ encompasses rural and remote outback towns.²⁹ This study targeted the service catchment area of Central Queensland Hospital and Health Service (CQHHS) and included all patients presenting to the ED. CQHHS operates 12 public hospitals across various regions. These include (1) Rockhampton, Mount Morgan and Capricorn Coast, situated within Inner Regional Australia; (2) Gladstone, Biloela, Emerald, Baralaba, Moura, Theodore and Blackwater, which fall under Outer Regional Australia and (3) Woorabinda and Springsure, located in remote Australia.^{30 31} CQHHS also provides Aboriginal and Torres Strait Islander health, maternity services, CQ cancer care services, mental health, alcohol and other drug services, oral health and general practitioner referrals.³⁰ Data from the 2021 national census show that the CQ region had a population of 228 246 people.³² There were 59 070 families in CQ, the median age was 38 years and 64% of the population was between 15 and 64 years.³² Overall, 7.2% of the total population in CQ identify as First Nations Australians.³²

Participants

Our analysis included all ED presentation data from CQHHS catchment areas, spanning from January 2018 to November 2023, regardless of age or sex.

Variables

We described the overall asthma and allergic disease-related ED presentations using covariates available in the administrative data. These were self-reported indigenous status (Aboriginal and/or Torres Strait Islanders, which are categorised into First Nations Australians, and not Indigenous and not stated, which were categorised into Australians of other descents,³³ sex (female, male and intersex), age group in years (≤4, 5–14, 15–29, 30–44, 45–59 and 60+) and hospital (Baralaba, Biloela, Blackwater, Emerald, Gladstone, Mount Morgan, Moura, Rockhampton, Springsure, Theodore, Woorabinda and Yeppoon) as indirect indicator of the place of residence.

Data source and measurement

Data were retrieved by one-time extraction from the Business Analysis Decision Support portal, deidentified, replaced with unique codes and securely stored. The extraction was conducted by an experienced and expert data custodian following the CQHHS data extraction protocol. ED presentations related to asthma and allergic diseases were identified using the International Classification of Diseases-Tenth Revision-Australian Modification (ICD-10-AM) codes, as detailed in online supplemental table 1. Given that not all asthma cases are necessarily related to allergy^{34 35} and considering that our dataset encompasses the ICD code J45.9, indicative of unspecified asthma, we presented asthma independently and collectively with allergic diseases. This approach aims to clarify both the overall burden of asthma and allergic diseases collectively, as well as specific instances.

Statistical methods

We described participants' characteristics using frequency with per cent. P values were calculated using Pearson's χ^2 test, except in cases where the expected cell frequency was <5 , where Fisher's exact test was used. The incidence rates, with 95% CIs, assuming a Poisson distribution, were calculated as the number of new asthma and allergic disease-related ED presentations per year divided by the total population in CQ at risk during the same period. The total population in CQ at risk per year was estimated as the total population in CQ as reported by the Australian Bureau of Statistics.³⁶ The comparison of incidence and trends of asthma and allergic disease-related ED presentations over time was assessed using Poisson regression, presented as incidence rate ratios (IRRs) with corresponding 95% CIs. We used the goodness-of-fit χ^2 test to assess whether the Poisson model adequately fit our data. All p values for these tests were not significant (data not presented), suggesting that the Poisson model reasonably fits the observed data. Incidence rates specific to overall, indigenous status and other available covariates, as described above, were presented.

Patient and public involvement

Patients and/or the public were not involved in the design, or conduct, or drafting of this secondary analysis.

RESULTS

There were a total of 813 112 ED presentations between January 2018 and November 2023, ranging from 1248 (0.1%) in Baralaba to 303 138 (37.3%) in Rockhampton (online supplemental table 2).

Background characteristics of patients presenting with asthma and allergic diseases

Table 1 presents the background characteristics of patients presenting to the ED due to asthma and allergic diseases. Statistically significant differences were observed in overall asthma and allergic disease-related

Table 1 Background characteristics of patients presenting with asthma and allergic diseases compared with individuals presenting to the ED for other reasons (n = 813 112)

	Asthma and allergic disease-related ED presentations		
Variable	No	Yes	P value
Indigenous status (n = 812 995)			
First Nations Australians	107 099 (98.4)	1755 (1.6)	0.569
Australians of other descent/not stated	692 623 (98.4)	11 518 (1.6)	
Sex			
Female	397 513 (98.2)	7395 (1.8)	<0.001
Male	402 219 (98.6)	5879 (1.4)	
Intersex	106 (100.0)	0 (0.0)	
Age group (years, n = 813 111)			
≤4	78 484 (97.5)	2018 (2.5)	<0.001
5–14	87 248 (97.2)	2540 (2.8)	
15–29	180 778 (98.4)	2905 (1.6)	
30–44	148 015 (98.5)	2285 (1.5)	
45–59	129 214 (98.4)	2051 (1.6)	
60+	176 098 (99.2)	1475 (0.8)	
Hospital			
Baralaba	1234 (98.9)	14 (1.1)	<0.001
Biloela	41 009 (98.0)	853 (2.0)	
Blackwater	25 048 (98.1)	474 (1.9)	
Emerald	83 599 (98.6)	1216 (1.4)	
Gladstone	203 136 (98.2)	3618 (1.8)	
Mount Morgan	15 972 (98.1)	301 (1.9)	
Moura	12 457 (98.1)	241 (1.9)	
Rockhampton	298 827 (98.6)	4311 (1.4)	
Springsure	7983 (98.2)	144 (1.8)	
Theodore	1414 (98.7)	19 (1.3)	
Woorabinda	12 894 (98.2)	239 (1.8)	
Yeppoon	96 265 (98.1)	1844 (1.9)	
ED, emergency department.			

ED, emergency department.

ED presentations compared with presentations for other reasons, with a higher proportion of asthma and allergic disease-related ED presentations among females, children aged 5–14 years, children aged <5 years and across various hospital catchment areas (table 1).

Incidence rates of asthma and allergic disease-related ED presentations

Overall, the rate of asthma and allergic disease-related ED presentations was 96.9 per 10 000 person-years (95% CI 95.3, 98.6). There was a higher rate of asthma and allergic disease-related ED presentations among the First Nations

Table 2 Incidence rate of asthma and allergic diseases from 2018 to 2023

Asthma and allergic diseases	Asthma and specific types of allergy (per 10000 person-year with 95% CI)		
	First Nations Australians	Australians of other descent	Overall
Asthma*	87.8 (82.0, 93.8)	40.2 (39.0, 41.3)	40.5 (39.4, 41.5)
Unspecified allergy*	55.3 (50.8, 60.2)	36.0 (34.9, 37.1)	34.6 (33.6, 35.6)
Atopic/allergic contact dermatitis*	17.1 (14.6, 19.9)	10.6 (10.0, 11.2)	10.3 (9.7, 10.8)
Anaphylaxis and anaphylactic shock	7.2 (5.6, 9.1)	6.2 (5.7, 6.6)	5.8 (5.4, 6.2)
Allergic urticaria*	4.0 (2.9, 5.5)	2.3 (2.1, 2.6)	2.3 (2.0, 2.5)
Allergic conjunctivitis*	3.6 (2.5, 5.0)	2.4 (2.1, 2.7)	2.3 (2.1, 2.6)
Allergic rhinitis*	1.9 (1.2, 3.0)	0.7 (0.6, 0.9)	0.8 (0.6, 0.9)
Allergic purpura	0.5 (0.2, 1.2)	0.5 (0.4, 0.7)	0.5 (0.4, 0.6)
Overall allergic diseases*†	89.7 (83.9, 95.8)	58.8 (57.4, 60.2)	56.4 (55.2, 57.7)

*P value <0.05 when comparing the incidence rate per person-year between First Nations Australians and Australians of other descent.

†Overall allergic diseases encompass all specific allergic diseases, including unspecified allergy, atopic/allergic contact dermatitis, anaphylaxis, anaphylactic shock, allergic urticaria, allergic conjunctivitis, allergic rhinitis and allergic purpura but not asthma.

Australians, which was 177.5 per 10000 person-years (95% CI 169.3, 186.0), compared with the incidence rate among Australians of other descents, which was 98.9 per 10000 person-years (95% CI 97.2, 100.8).

Table 2 illustrates the incidence rate of specific cases between 2018 and 2023. The four most common cases presenting to EDs were asthma (40.5/10,000 person-years, 95% CI 39.4, 41.5), unspecified allergy (34.6/10,000 person-years, 95% CI 33.6, 35.6), atopic/allergic contact dermatitis (10.3/10,000 person-years, 95% CI 9.7, 10.8) and anaphylaxis and anaphylactic shock (5.8/10,000 person-years, 95% CI 5.4, 6.2). There was a higher incidence rate of asthma, unspecified allergy, atopic/allergic contact dermatitis and allergic urticaria among First Nations Australians compared with Australians of other

descents. No food allergy presentations were reported in our data (table 2).

Time trend of asthma and allergic disease-related ED presentations

Figure 1 presents the time trend in the rates of asthma and allergic disease-related ED presentations in CQ. Except for the notable increase observed between 2018 and 2019, collective asthma and allergic disease-related ED presentations among First Nations Australians remained relatively stable. These rates ranged from 132.3 per 10000 person-year (95% CI 115.3, 151.1) in 2018 to 157.2 per 10000 person-year in 2023 (95% CI 138.6, 177.5; p value =0.462). Similarly, rates of asthma and allergic disease-related ED presentations among Australians of other

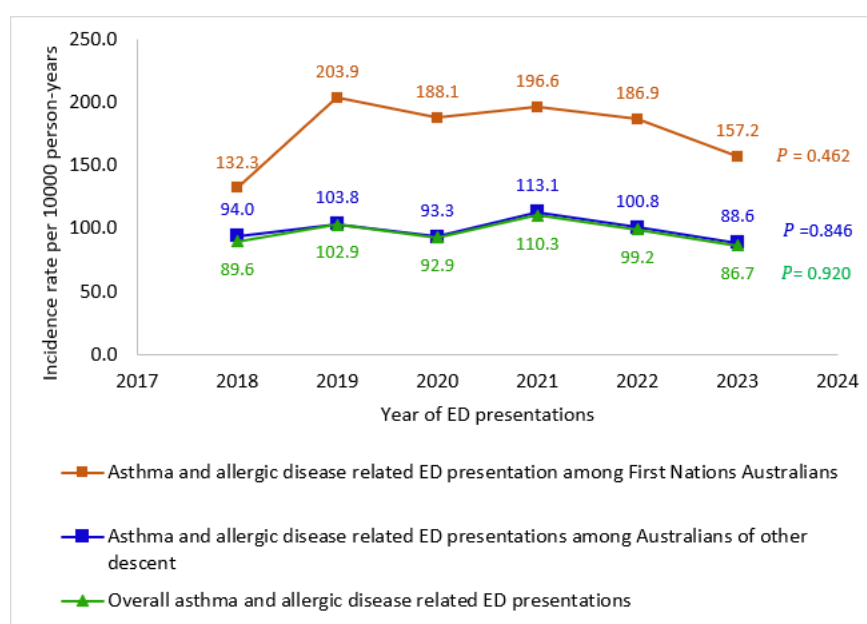


Figure 1 Incidence of asthma and allergic disease-related ED presentations in Central Queensland between 2018 and 2023. ED, emergency department.

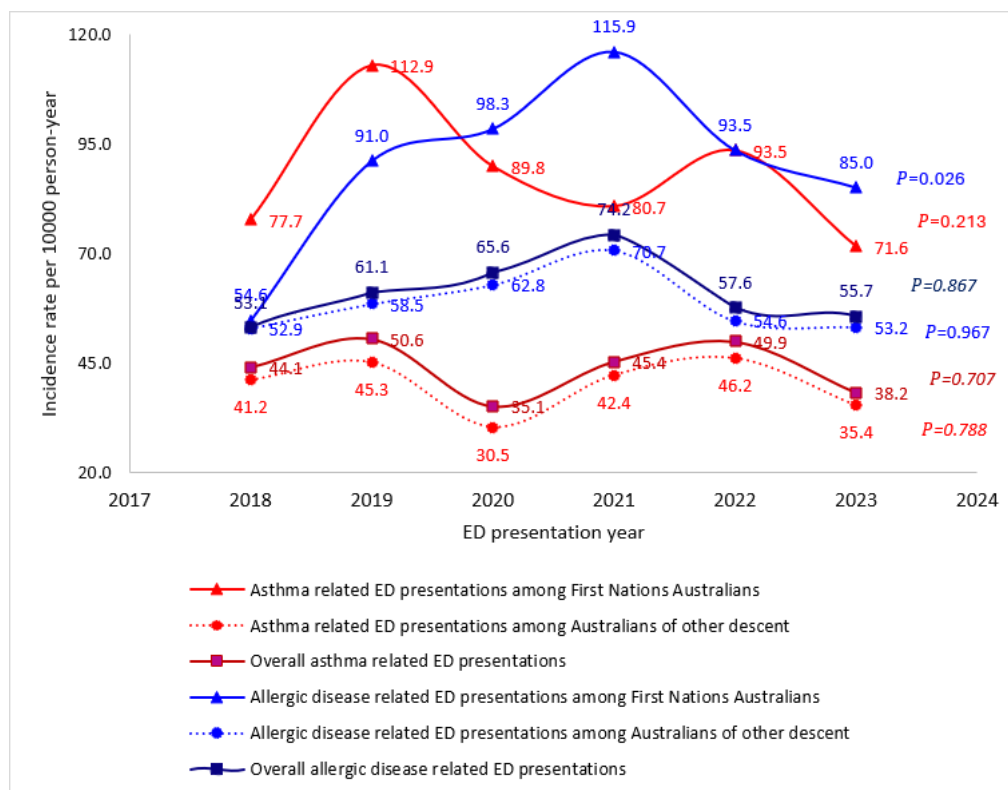


Figure 2 Separate incidence of asthma and allergic disease-related ED presentations in Central Queensland between 2018 and 2023. ED, emergency department.

descents were nearly stable, varying from 94.0 per 10000 person-year (95% CI 89.8, 98.4) in 2018 to 88.6 per 10000 person-year (95% CI 84.5, 92.9, p value = 0.846) in 2023.

Figure 2 shows the time trend of ED presentation rates related to asthma and allergic disease separately. There was a significant increase in the rate of allergic diseases among First Nations Australians over time (p value = 0.026). Except for the peak observed in 2019 among First Nations Australians, asthma-related ED presentations remained relatively stable over time in both First Nations Australians and Australians of other descents.

Table 3 presents the total incidence of asthma and allergic disease-related ED presentations over the study period by sex and age group. The incidence rate of asthma and allergic disease-related ED presentations remained stable across indigenous status, sex and age groups, with one exception. Among children aged 4 years or younger, there was a significant decline in the overall incidence of asthma and allergic disease-related ED presentations (IRR 0.94, 95% CI 0.91, 0.97, p value <0.001) (table 3).

DISCUSSION

To the best of our knowledge, this is the first study to examine asthma and allergic disease-related ED presentations among both First Nations Australians and Australians of other descents in an understudied region of Australia, which encompasses both rural and remote outback towns. There was a significant increase in the rate of allergic disease-related ED presentations among First

Nations Australians between 2018 and 2023. First Nations Australians in CQ experienced a significant rise in allergic diseases, with higher rates of ED presentations compared with Australians of other descents. Asthma, unspecified allergies, atopic/allergic contact dermatitis and anaphylaxis/anaphylactic shock were the most common conditions observed in the ED presentations, with higher rates among First Nations Australians compared with Australians of other descents.

The higher rate of ED presentations related to allergic disease among First Nations Australians was surprising given that allergic and atopic diseases have not been traditionally recognised as an important concern among First Nations Australians.³⁷ Nevertheless, there is currently a growing recognition of this issue. Our findings highlight a substantial and potentially increasing burden of allergic disease among First Nations Australians living in a region encompassing regional, rural and remote outback areas. This finding is in agreement with the findings of a study conducted in Canada and the USA that showed an increased burden of allergic and atopic diseases among the Indigenous peoples of Canada.¹⁵ Other previous studies conducted in the USA and Australia, while lacking specific data on First Nations populations, also documented the existence of racial, ethnic and socioeconomic disparities in food allergies.^{12–14} Further studies are warranted to understand the underlying causes of these observed disparities.

Table 3 Incidence of asthma and allergic disease-related ED presentations (per 10 000 person-years) from 2018 to 2023

Asthma and allergic disease-related ED presentations							
Year	Sex*		Age (years)				
	Female	Male	0–4	5–14	15–29	30–44	45–59
2018	101.2	78.2	281.6	111.9	99.0	75.0	64.5
2019	116.7	89.4	262.6	147.8	119.0	77.5	82.5
2020	105.4	80.7	208.9	105.0	108.9	98.3	80.5
2021	123.6	97.2	240.7	134.2	138.5	100.1	95.3
2022	111.9	86.9	222.3	134.2	135.6	84.2	74.5
2023	96.6	76.9	208.2	133.0	97.4	76.6	60.9
IRR (95% CI)	0.99 (0.95, 1.04)	1.001 (0.951, 1.053)	0.94 (0.91, 0.97)	1.02 (0.97, 1.06)	1.02 (0.97, 1.06)	1.01 (0.96, 1.06)	0.98 (0.93, 1.04)
P value	0.824	0.974	<0.001	0.320	0.432	0.700	0.710
0.587							

*Intersex is not included in this table, as no cases of asthma or allergic disease were reported, as shown in [table 1](#).
ED, emergency department; IRR, incidence rate ratio.

There was a notable peak in recorded asthma-related ED presentations among First Nations Australians in 2019. This could be partially attributed to the bushfires that swept across Australia in 2019–2020, also known as Black Summer, as asthma was one of the primary reasons for the ED presentations. Evidence shows that the national increase in emergency presentation and hospitalisation rates for asthma and chronic obstructive pulmonary disease coincided with increased bushfire activity during the 2019–2020 bushfire season.³⁸ Bushfire smoke exposure was significantly associated with an increased risk of respiratory morbidity and other health impacts.^{39 40} The notable spike in recorded asthma-related ED presentations could also be ascribed to the notably vigorous influenza season in 2019,⁴¹ which is recognised as one of the triggers for an asthma attack.⁴²

The primary reason for ED presentations was asthma, with a significantly higher incidence observed among First Nations Australians compared with Australians of other descents. Within our dataset, asthma cases could encompass both allergic and non-allergic variants. The higher incidence of asthma-related ED presentations could reflect either an increased prevalence of asthma or asthma exacerbations in First Nations Australians and/or an increased propensity of First Nations Australians to present to ED for asthma exacerbations due to socioeconomic or other factors. Literature documented that First Nations Australians were 1.6 times more likely to report having asthma in 2018–2019 compared with Australians of other descents.⁴³ Another study that used birth, hospital and ED for all First Nations Australian children born between 2003 and 2012 in Western Australia reported that 2.7% of children had been hospitalised for asthma at least once between the ages of 1 and 4 years.⁴⁴ The higher incidence of asthma-related ED presentations could be multifactorial including first time/unrecognised asthma, unmet medical need, unsuccessful/inadequate home management, medication non-adherence, exacerbation triggered by environmental factors, including bushfire, environmental pollution and risky health behaviours such as smoking. Literature has documented that nearly half (47%) of the respiratory disease burden among First Nations Australians in 2018 was linked to smoking.⁴⁵ The lack of access to culturally appropriate asthma education and healthcare services could also contribute to the higher incidence of asthma-related ED presentations among First Nations Australians.⁴⁶

Atopic/allergic contact dermatitis ranked as the third most common cause for ED visits, with a higher rate noted among First Nations Australians compared with Australians of other descents. A 5-year retrospective audit of all outpatient encounters with a visiting dermatology specialist in the Kimberley region of Western Australia reported that eczema/dermatitis was the primary condition seen in First Nations Australians (19%) and third most common in Australians of other descents (17%).⁴⁷ Another study conducted in Melbourne between 2009 and 2011 reported that 3.9% of ED presentations were

due to skin complaints, of which eczema/dermatitis was the fourth most common dermatological condition, although data on the indigenous status of the study population⁴⁸ was not reported. It is documented that atopic dermatitis is associated with a higher risk of other atopic disorders, including asthma, hay fever, food allergy and eosinophilic oesophagitis.⁴⁹ It is also a known risk factor for streptococcal skin infection^{49–52} and subsequent systemic and life-threatening complications including sepsis, endocarditis, and bone and joint infections if left untreated.^{49–53–55} For instance, a study at the Wuchopperen Clinic in Cairns, Far North Queensland, found that 73.7% of children and youths treated for skin infections tested positive for group A streptococcus.⁵⁶

We found that anaphylaxis/anaphylactic shock was the fourth most common cause of allergy related ED presentations. Previous studies conducted in Australia^{57–58} documented an increase in the rate of anaphylaxis over time although they lack data based on indigenous status. A study conducted in Victoria reported that the causes of anaphylaxis-related ED presentations were foods (62%), drugs (12%), insect venoms (8%) and other causes (4%).⁵⁹ The current study lacked data to specify the causes of anaphylaxis/anaphylactic shock. Interestingly, there were no food allergy presentations recorded in our data. However, it is possible that a substantial portion of the unspecified allergies, which was the second most frequent cause of ED presentations, may be linked to food allergies. Further studies are required to fill this evidence gap in our study area.

There was a twofold higher rate of allergic urticaria-related ED presentations, which was ranked as the fifth leading cause of ED visits, among First Nations Australians compared with their counterparts. A study conducted in Italy reported that acute urticaria in 1 year accounted for 1.01% of total ED visits and 1.2 admissions per day,⁶⁰ and drugs, insect bites, foods and contact urticaria were the most common triggers identified. With a presumption that allergic urticaria that results in ED presentation in our study is acute urticaria,⁶¹ literature documented its risk factors, including high population density,⁶² personal⁶³ and parental history of allergic diseases^{64–65} and poverty and lower socioeconomic status.^{62–66} Further studies are required to understand risk factors associated with allergic urticaria, particularly among First Nations Australians.

The strengths of this study include the use of the most recent, large dataset including both First Nations Australians and Australians of other descents and all age groups from a study setting encompassing regional, rural and remote outback areas. As a limitation, the reporting of ED presentations related to asthma and allergic disease relies on the ICD codes entered by physicians at the time of presentation. This study specifically focused on asthma and allergic disease-related ED presentations and did not encompass all instances of acute asthma and allergic diseases in the general population, who may visit health facilities in routes other than the ED. Caution should

be taken when generalising our results to the broader population, as they may not fully reflect the overall incidence of asthma and allergic diseases in the community but asthma and acute allergic disease resulting in ED visits only. Our analyses were limited to factors available in the administrative data, not comprehensively incorporating other important factors, including socioeconomic status, which encompasses education, financial resources, social standing, access to transportation, mobile phones, the internet, housing conditions and geographical location,⁶⁷ comorbidities, time of first allergy diagnosis, family history of allergies, obesity/overweight, smoking status and environmental factors among others. For instance, literature has documented that social disadvantage impacts many aspects of allergic diseases, including healthcare access, prevalence and outcomes.^{12–68} Therefore, further research is needed to explore the overall incidence of asthma and allergic diseases, considering a comprehensive set of potential confounders, to provide a more thorough understanding of both overall allergy incidence and its associated factors. Also, it is important to note that this study relied on the accurate reporting of individuals' indigenous status in medical records.

CONCLUSION

The findings highlight a significantly higher rate of asthma and allergic disease-related ED presentations among First Nations Australians compared with Australians of other descents in CQ. This underscores the urgent need for further research to understand the causality and targeted healthcare interventions integrating a culturally sensitive approach.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Ethics approval was obtained from the Human Research Ethics Committee (HREC) of the Central Queensland Hospital and Health Service (CQHS) (Reference Id: 101806). Owing to the retrospective design of this study and its reliance on routinely collected hospital administrative data for medical services, seeking individual consent was deemed unnecessary.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data may be obtained from a third party and are not publicly available. Deidentified patient data can be requested from the Central Queensland Hospital and Health Service.

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