



Health service utilisation and health outcomes among people from culturally and linguistically diverse backgrounds, Western Australia, 2007 - 2016: Overview, aims and methods

Overview and Aims

This paper describes the aims and methods used in the preparation of a series of information papers on selected health service utilisation and health outcomes among people from culturally and linguistically diverse (CALD) backgrounds in Western Australia (WA) between 2007 and 2016. The list of CALD information papers is detailed in Table 1, alongside the data sources. These information papers aim to describe the patterns of selected health service utilisation and health outcomes among diverse CALD populations in WA so as to better understand their specific needs. These papers will provide evidence to support health service providers in the planning and delivery of healthcare services to CALD populations.

Background

According to the 2016 Census of Population and Housing, around 32.2% of WA residents were born overseas, an increase of 16.5% from 2011. Around 18% speak a language other than English at home. As well, for the first time in history, the number of people born in non-English-speaking countries exceeded those who were born in main English-speaking countries (OMI 2017).

In general, those born overseas tend to have better health status than the Australian-born population, likely due to the 'healthy migrant effect' where migrants tend to meet the health requirements for immigration (Anikeeva et al. 2010; Kennedy et al. 2007). However, this health advantage diminishes over time with increasing duration of residence in Australia (Jatrana et al. 2017).

Despite this 'healthy migrant effect', past research in Australia has found poorer health outcomes for selected diseases and conditions among selected CALD population groups. For example, in New South Wales (NSW), cervical cancer incidence rates were higher in women born in Vietnam or Fiji compared to Australian-born women (Aminisani et al. 2012). In terms of health service utilisation, hospitalisation rates for diabetes were higher in people born in Lebanon and the Philippines, and hospitalisation rates for coronary heart disease were higher in people born in Lebanon, Fiji, Sri Lanka and Iraq (NSW Department of Health 2008 and 2010). Previous research has also indicated that selected CALD population groups experienced lower health service utilisation, including hospital services as well as community-based services by general practitioners and dentists (ABS 2017). These differences may be due to various factors, such as cultural and language barriers, social supports, migration circumstances (time since arrival, education, trauma experiences) as well as current geographical location (Rao et al. 2006).

A literature review identified that most of the information on health service utilisation and health outcomes among CALD populations were published in other states, including New South Wales, Queensland and South Australia. There is a dearth of information from WA and that served as the impetus for this series of information papers (Forrest 2018).

Methods - Data sources

The data sources used for the respective information papers are detailed in Table 1.

Table 1. List of CALD information papers and data sources

Topic of information paper	Data source
<ul style="list-style-type: none">• Cancer incidence	WA Cancer Registry (WACR)
<ul style="list-style-type: none">• Deaths	WA Mortality Dataset (WAMD)
<ul style="list-style-type: none">• Hospitalisations• Potentially preventable hospitalisations	Hospital Morbidity Data Collection (HMDC)
<ul style="list-style-type: none">• Emergency department presentations• Potentially avoidable GP-type presentations to emergency departments	Emergency Department Data Collection (EDDC)
<ul style="list-style-type: none">• Mental health occasions of service• Hospitalisations due to mental health conditions	Mental Health Information System (MHIS) Hospital Morbidity Data Collection (HMDC)
<ul style="list-style-type: none">• CALD population profile	Australian Bureau of Statistics (ABS)

Methods - Definitions

Culturally and linguistically diverse (CALD)

The Australian Bureau of Statistics (ABS) defines CALD populations mainly by country of birth (COB), main language other than English spoken at home and English proficiency (ABS 1999). In our analysis, we used COB to select people from CALD backgrounds because COB is available in all the health administrative datasets. Individual COB was based on the Standard Australian Classification of Countries (SACC) 2016 (ABS 2016). Individual COB was further grouped into COB regions and broad COB groups for analysis (Appendix 1). As noted by the ABS, the broad COB group of main English-speaking countries (MESC) is not an attempt to classify countries on the basis of whether or not English is the predominant language of each country. It is a list of the main countries from which Australia receives, or has received, significant numbers of overseas settlers who are likely to speak English. It is important to note that being from a non-English-speaking country (NESC) does not imply a lack of proficiency in English (ABS 2013).

Deaths

Death data includes all deaths that occurred and were registered in WA for WA residents. Data is presented for deaths due to all causes and the top four causes of death among the WA population, including ischaemic heart disease, dementia, cardiovascular disease and lung cancer. Leading causes of death are based on the underlying cause of death, defined as the disease or external event which initiated the train of morbid events leading to death (ABS 2018). Causes of death are classified using the International Classification of Diseases (ICD) 10th edition. The ICD-10 codes for the selected causes of death are listed in Appendix 2.

Cancer incidence

Cancer incidence refers to the number of individuals who were diagnosed with cancer during the reference period. Data is presented for all cancers and the top five cancer types including prostate cancer, breast cancer, colorectal cancer, melanoma and lung cancer. The International Classification of Diseases for Oncology (ICD-O) was used to classify cancer types. The ICD-O codes for the selected cancer types are listed in Appendix 2.

Hospitalisations

Hospitalisations are admitted episodes of care that occur in hospitals in WA and exclude hospital admissions related to boarders, funding hospital records, healthy newborns, organ procurements, aged care residents, non-inpatients, and hospital in the home (HITH). Data is presented for all hospitalisations and

selected conditions including diabetes, coronary heart disease, chronic obstructive pulmonary disease and stroke. These conditions were selected as together they make up the most common reasons for hospitalisation across the WA population. The associated International Statistical Classification of Diseases and Related Health Problems, Australian Modification (ICD-10-AM) diagnosis codes for the selected conditions are presented in Appendix 2.

Potentially preventable hospitalisations

Potentially preventable hospitalisations (PPHs) are those considered as potentially being preventable through timely and accessible, quality primary and community-based care (Falster and Jorm 2017). In Australia and internationally, PPHs are used as a health system performance indicator to evaluate the accessibility and effectiveness of non-hospital services. The Australian Institute of Health and Welfare (AIHW) has identified 22 conditions for which a hospitalisation is considered to be potentially preventable, which are further grouped into three broad categories, namely, chronic, acute and vaccine-preventable conditions (AIHW 2016). The conditions included in each of these broad categories and their associated ICD-10-AM diagnosis codes are detailed in Appendix 2.

Emergency Department presentations

Emergency Department (ED) presentations are the occasions where a patient presented to an ED and is registered in one of the electronic data collection systems. Data is presented for ED presentations for all conditions and the five most common conditions among CALD populations including minor single-site injury, major single-site injury, digestive system illness, respiratory system illness and circulatory system illness. The associated ICD-10-AM diagnosis codes are presented in Appendix 2.

Potentially avoidable GP-type presentations to emergency departments

According to the AIHW (2018b), potentially avoidable general practitioner (GP)-type presentations are defined as presentations to public hospital emergency departments with a visit type of Emergency presentation where the patient:

- was allocated a triage category of 4 (Semi-urgent: to be seen within 60 minutes) or 5 (Non-urgent: to be seen within 120 minutes), and
- did not arrive by ambulance, or police or correctional vehicle, and
- was not admitted to the hospital, not referred to another hospital, or did not die.

Data is presented for ED presentations for all conditions and the five most common conditions among CALD populations including major single-site injury, minor single-site injury, musculoskeletal/connective tissue system illness, illness of the skin/subcutaneous tissue/breast and digestive system illness. The associated ICD-10-AM diagnosis codes are presented in Appendix 2.

Ambulatory mental health occasions of service

Ambulatory mental health occasions of service (OOS) are mental health services provided in public specialised community based services and excludes privately funded services in GPs' or psychiatrists' clinics (AIHW 2018a). Data is presented for all mental health conditions and selected conditions including schizophrenia, schizotypal and delusional disorder, mood disorder, neurotic, stress-related and somatoform disorder and behavioural syndromes associated with physiological disturbance. The associated ICD-10-AM diagnosis codes are presented in Appendix 2.

Hospitalisations due to mental disorders

Hospitalisations due to mental disorders are a subset of all-cause hospitalisations. Data is presented for all mental disorders and leading mental disorders including anxiety and mood disorders, alcohol and drug disorders, psychotic disorders and personality and developmental disorders. The associated ICD-10-AM diagnosis codes are presented in Appendix 2.

Methods – Analysis

Disaggregation

Rates of health service utilisation and health outcomes were reported only for individuals whose area of usual residence was within WA and disaggregated by population subgroups including broad COB groups, COB regions and gender. Rates were also disaggregated by leading conditions and year.

Age-standardised rates and confidence intervals

Age-standardised rates (ASR) were calculated and presented to allow for valid comparisons between populations or different years for the same population. Age standardisation is a method of adjusting the crude rate to eliminate the effect of differences in age structures when comparing crude rates for different population sub-groups, different periods of time and/or different geographic areas. In this series of information papers, ASRs were calculated using the direct standardisation method and all age groups of the 2001 Australian standard population were used. To ensure reliability of estimates, a total number of at least 20 cases are required for the calculation of ASRs. Additionally, 95% confidence intervals, which are a range of values that are used to describe the uncertainty around an estimate, were calculated for ASRs and are used to determine whether the rates between two populations were different or whether the rates in different years for the same population were different. In other words, statistically we are 95% confident that the true rate (i.e., ASR) falls between the lower and upper confidence interval values. Two rates are considered significantly different (at the 0.05 level) if their confidence intervals do not overlap. Otherwise, if their confidence intervals overlap, the two rates are not considered significantly different. ASRs and confidence intervals are expressed per 100,000 population.

Population denominators

The population denominators used in the calculation of ASRs were WA resident populations disaggregated by COB. COB-specific populations for census years 2006 and 2011 were requested from the ABS. COB-specific populations for census year 2016 were obtained from the ABS TableBuilder. These populations were disaggregated by age and gender. COB-specific populations for inter-census years by age group were estimated using a linear interpolation method where the difference in population counts between two census years are equally distributed to each inter-census year. Such a difference was divided by the number of inter-census years plus 1 (that is, 5) to determine yearly increase or decrease in population for each age group.

Methods – Limitations

The main limitation of our analysis is that only one CALD measure, country of birth, was used to identify people from CALD backgrounds. Further analysis may consider other CALD measures that are available in some of the datasets, including main language other than English spoken at home (using the 'preferred language' field) which is available in the HMDC dataset, as well as the proficiency in spoken English (using the 'interpreter service required' field) which is available in the HMDC and EDDC datasets (Forrest 2018).

Appendix 1. Broad country of birth groups, country of birth regions and individual countries

Broad COB groups	COB regions	Countries
Australian-born	Australia	Australia (includes External Territories), not further defined; Australia; Norfolk Island; Australian External Territories, not elsewhere classified
Main English-speaking countries (MESC)	New Zealand	New Zealand
	UK/ Ireland	United Kingdom not further defined ; Channel Islands Wales; Scotland; Wales; England ; Isle of Man ; Northern Ireland; Guernsey; Jersey; Ireland
	Northern America	Northern America not further defined; Bermuda; Canada; St Pierre and Miquelon; United States of America
Non-English-speaking countries (NESC)	Other Oceania and Antarctica	Melanesia, not further defined; New Caledonia; Papua New Guinea; Solomon Islands ; Vanuatu ; Micronesia, not further defined ; Guam ; Kiribati ; Marshall Islands; Micronesia, Federated States of ; Nauru ; Northern Mariana Islands; Palau ; Polynesia (excludes Hawaii), not further defined; Cook Islands ; Fiji ; French Polynesia ; Niue; Samoa; Samoa, American; Tokelau; Tonga; Tuvalu; Wallis and Futuna; Pitcairn Islands; Polynesia (excludes Hawaii), not elsewhere classified; Antarctica, not further defined; Adélie Land (France); Argentinian Antarctic Territory; Australian Antarctic Territory; British Antarctic Territory; Chilean Antarctic Territory; Queen Maud Land (Norway); Ross Dependency (New Zealand)
	Other North-West Europe	Western Europe, not further defined; Austria; Belgium ; France ; Germany ; Liechtenstein ; Luxembourg ; Monaco ; Netherlands ; Switzerland; Northern Europe, not further defined; Denmark; Faeroe Islands; Finland; Greenland; Iceland; Norway; Sweden
	Southern and Eastern Europe	Southern and Eastern Europe, not further defined; Southern Europe, not further defined; Andorra ; Gibraltar ; Holy See ; Italy; Malta; Portugal; San Marino; Spain; South Eastern Europe, not further defined ; Albania ; Bosnia and Herzegovina ; Bulgaria ; Croatia ; Cyprus ; Former Yugoslav Republic of Macedonia ; Greece; Moldova; Romania; Slovenia; Montenegro; Serbia; Former Yugoslavia not further defined; Serbia and Montenegro not further defined; Eastern Europe, not further defined; Belarus; Czech Republic; Estonia; Hungary; Latvia; Lithuania; Poland; Russian Federation; Slovakia; Ukraine
	North Africa	North Africa, not further defined; Algeria ; Egypt ; Libya; Morocco; Sudan; Tunisia; Western Sahara; North Africa, not elsewhere classified
	Middle East	Middle East, not further defined; Bahrain ; Gaza Strip and West Bank ; Iran ; Iraq ; Israel ; Jordan ; Kuwait ; Lebanon; Oman; Qatar; Saudi Arabia; Syria; Turkey; United Arab Emirates; Yemen
	South East Asia	South-East Asia, not further defined; Mainland South-East Asia, not further defined; Burma (Myanmar); Cambodia; Laos ; Thailand ; Vietnam ; Maritime South-East Asia, not further defined; Brunei Darussalam; Indonesia; Malaysia; Philippines; Singapore; East Timor

Appendix 1. (cont.)

Broad COB groups	COB regions	Countries
Non-English-speaking countries (NESC)	North-East Asia	North-East Asia, not further defined; Chinese Asia (includes Mongolia), not further defined; China (excludes SARs and Taiwan Province); Hong Kong (SAR of China); Macau (SAR of China) ; Mongolia; Taiwan; Japan and the Koreas, not further defined; Japan; Korea, Democratic People's Republic of (North); Korea, Republic of (South)
	Southern and Central Asia	Southern and Central Asia, not further defined; Southern Asia, not further defined ; Bangladesh ; Bhutan ; India ; Maldives ; Nepal ; Pakistan ; Sri Lanka ; Central Asia, not further defined; Afghanistan; Armenia; Azerbaijan; Georgia; Kazakhstan; Kyrgyz Republic; Tajikistan; Turkmenistan; Uzbekistan
	Other Americas	South America, not further defined ; Argentina ; Bolivia; Brazil ; Chile ; Colombia ; Ecuador ; Falkland Islands ; French Guiana ; Guyana ; Paraguay ; Peru ; Suriname ; Uruguay; Venezuela ; South America, not elsewhere classified; Central America, not further defined ; Belize ; Costa Rica ; El Salvador ; Guatemala ; Honduras ; Mexico ; Nicaragua ; Panama ; Caribbean, not further defined; Anguilla; Antigua and Barbuda; Aruba; Bahamas; Barbados; Cayman Islands; Cuba; Dominica; Dominican Republic; Grenada; Guadeloupe; Haiti; Jamaica; Martinique; Montserrat; Netherlands Antilles; Puerto Rico; St Kitts and Nevis; St Lucia; St Vincent and the Grenadines; Trinidad and Tobago; Turks and Caicos Islands; Virgin Islands, British; Virgin Islands, United States
	Sub-Saharan Africa	Sub-Saharan Africa, not further defined ; Central and West Africa, not further defined; Benin; Burkina Faso ; Cameroon ; Cape Verde ; Central African Republic ; Chad; Congo ; Congo, Democratic Republic of ; Côte d'Ivoire ; Equatorial Guinea ; Gabon ; Gambia ; Ghana ; Guinea ; Guinea-Bissau; Liberia ; Mali ; Mauritania ; Niger ; Nigeria ; Sao Tomé and Príncipe ; Senegal ; Sierra Leone ; Togo ; Southern and East Africa, not further defined; Angola; Botswana; Burundi; Comoros; Djibouti; Eritrea; Ethiopia; Kenya; Lesotho; Madagascar; Malawi; Mauritius; Mayotte; Mozambique; Namibia; Réunion; Rwanda; St Helena; Seychelles; Somalia; South Africa; Swaziland; Tanzania; Uganda; Zambia; Zimbabwe; Southern and East Africa, not elsewhere classified
Not stated/ inadequately described	ABS country codes unable to be assigned to a single country of birth region and therefore excluded from the analysis	Oceania and Antarctica, not further defined; North-West Europe, not further defined; North Africa and the Middle East, not further defined; Americas, not further defined; At sea; Inadequately described/Not elsewhere classified; Not stated

Appendix 2. Selected conditions presented in the CALD information papers and their associated ICD-10/ ICD-O/ ICD-10-AM codes

Information paper	ICD-10/ ICD-O/ ICD-10-AM codes
Deaths	
Ischaemic heart disease	I20-I25
Dementia	F00-F03,G30
Cardiovascular disease	I60-I69, G45
Lung cancer	C33,C34
Cancer incidence	
Prostate cancer	C61
Breast cancer	C50
Colorectal cancer	CRC
Melanoma	MEL*
Lung cancer	C33, C34
Hospitalisations	
Diabetes	E09-E14
Coronary heart disease	I20–I25
Chronic obstructive pulmonary disease	J44
Stroke	I60-I64
Potentially preventable hospitalisations	
Vaccine preventable conditions	
Pneumonia and influenza (vaccine-preventable)	J10, J11, J13, J14
Other vaccine-preventable conditions	A08.0, A35, A36, A37, A80, B01, B05, B06, B16.1, B16.9, B18.0, B18.1, B26, G00.0
Acute conditions	
Pneumonia (not vaccine-preventable)	J15.3, J15.4, J15.7, J16.0
Cellulitis	L02, L03, L04, L08, L88, L98.0, L98.3
Convulsions and epilepsy	G40,G41,R56
Eclampsia	O15
Dental conditions	K02, K03, K04, K05, K06, K08, K09.8, K09.9, K12, K13, K14.0
ENT infections	H66, J02, J03, J06, J31.2
Gangrene	R02, I70.24, E09.52
Pelvic inflammatory disease	N70, N73, N74
Perforated/bleeding ulcer	K25.0, K25.1, K25.2, K25.4, K25.5, K25.6, K26.0, K26.1, K26.2, K26.4, K26.5, K26.6, K27.0, K27.1, K27.2, K27.4, K27.5, K27.6, K28.0, K28.1, K28.2, K28.4, K28.5, K28.6
Urinary tract infections	N10, N11, N12, N13.6, N15.1, N15.9, N28.9, N39.0, N39.9
Chronic conditions	
Angina	I20, I24.0, I24.8, I24.9
Asthma	J45, J46
Chronic obstructive pulmonary disease	J20
	J41, J42, J43, J44
Congestive cardiac failure	I50, I11.0, J81

Appendix 2. (cont.)

Information paper	ICD-10/ ICD-O/ ICD-10-AM codes
Diabetes complications	E10.0–E10.9, E11.0–E11.9, E13.0–E13.9, E14.0–E14.9
Hypertension	I10, I11.9
Iron deficiency anaemia	D50.1,D50.8,D50.9
Nutritional deficiencies	E40, E41, E42, E43, E55.0, E64.3
Rheumatic heart disease	I00, I01, I02, I05, I06, I07, I08, I09
Bronchiectasis	J47, J20
Emergency Department presentations *	
Major single-site injury	2B
Minor single-site injury	2Ba
Digestive illness	3C
Respiratory illness	3B
Circulatory illness	3A
Potentially avoidable GP-type presentations to emergency departments *	
Major single-site injury	2B
Minor single-site injury	2Ba
Musculoskeletal/connective tissue system illness	3H
Illness of the skin/subcutaneous tissue/breast	3I
Digestive system illness	3C
Mental health occasions of service	
Schizophrenia, schizotypal and delusional disorder	F20-F29
Mood disorder	F30-F39
Neurotic, stress-related and somatoform disorder	F40-F48
Behavioural syndromes associated with physiological disturbance	F50-F59
Hospitalisations due to mental disorders	
Anxiety and mood disorders	F40-F44,F48,F30-F34,F38-F39
Alcohol and drug disorders	F10-F19,F55
Psychotic disorders	F20-F25,F28-F29
Personality and developmental disorders	F60-F63,F68-F69,F80-F84,F88-F94

* Major Diagnostic Block (see <https://meteor.aihw.gov.au/content/index.phtml/itemId/449585>)

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For more information

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