

RESEARCH ARTICLE

Demographic drivers of the growth of the number of Aboriginal and Torres Strait Islander people living with dementia, 2016–2051

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Abstract

Objective: To examine the demographic drivers that contribute to the future growth in the population of Aboriginal and Torres Strait Islander peoples living with dementia in Australia.

Methods: Design: Multistate, Indigenous status, cohort component, population projection model. Setting: National-level, Aboriginal and Torres Strait Islander population. Data: Data prepared by the Australian Bureau of Statistics on births, deaths, migration and identification change. Australian Institute of Health and Welfare estimates of dementia prevalence alongside estimates from several studies. Major outcome measures: Number of older people living with dementia alongside a decomposition of demographic drivers of growth.

Results: By 2051, the relative growth in the number of Aboriginal and Torres Strait Islander peoples aged 50+ with dementia ranges from 4½ to 5½ times (under three prevalence scenarios) its 2016 estimate. Cohort flow (the gradual movement of younger cohorts into the 50+ age group, and the depletion of older cohorts from death, over time) is a key driver of the growth in the number of older people living with dementia.

Conclusions: High growth in the number of people living with dementia poses implications for culturally appropriate care, health-care access and support for Aboriginal and Torres Strait Islander families, carers and their communities.

KEYWORDS

dementia, health services-Indigenous, population forecast

1 | INTRODUCTION

Despite a relatively young age structure, the Aboriginal and Torres Strait Islander population is ageing.¹ Between

1986 and 2016, the number of Aboriginal and Torres Strait Islander people aged 45 and over in Australia increased from approximately 30,000 to 167,000. By mid-century, this is projected to increase to almost 450,000 people.

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Among those 85 years and older, numerical ageing is even more pronounced, with the number of Aboriginal and Torres Strait Islander people aged 85 years and over projected to increase by almost 800% from 2016 to 2051.¹

In the context of this rapid population ageing, understanding the implications for the numbers of older people living with chronic conditions is critical to health service provision and planning. Dementia is a term used to describe a group of conditions characterised by the gradual impairment of brain function that interferes with independence in everyday activities. With chronological age being the biggest known risk factor for dementia, dementia is now considered the greatest cause of disability in Australians aged over 65 years and the second leading cause of death.^{2,3} Projections by the Australian Institute of Health and Welfare (AIHW) indicate a tripling in the number of older Australians living with dementia during the period 2010–2050.² However, there is a limited understanding of the differential risk of dementia throughout sub-groups of the Australian population. Indeed, the AIHW argue that a key data and research gap is an understanding of the Aboriginal and Torres Strait Islander population living with dementia.⁴

Available data on the prevalence of dementia in the Aboriginal and Torres Strait Islander population of Australia are limited. Few prospective population-based studies have been conducted,^{5–7} and while these tend to be of high quality, the data relate to particular geographical regions of Western Australia, New South Wales or Queensland, and the results may not generalise nationally. Recently, a new study examined the prevalence of dementia among 18 islands and five mainland communities in the Torres Strait and Northern Peninsula of Far North Queensland.⁸ Strengths of these studies include strong community engagement, good-to-excellent response rates (62%–95%) and the use of standardised culturally appropriate assessment and diagnosis including collateral/carer input, associated risk factor assessments and inclusion of residential aged care facilities in the sampling.

These studies have all reported substantially higher prevalence rates compared to non-Indigenous Australians, with dementia prevalence progressively increasing across older age groups but higher rate ratios observed in younger age groups. For instance, Smith and colleagues⁷ reported dementia prevalence 5.2 times higher at ages 45+ (remote WA), whereas Radford et al.⁵ reported prevalence 3.1 times higher at ages 60+ (urban and regional NSW). The relatively small samples in these studies ($N = 92–363$) produce prevalence estimates that lack precision, especially when examining age and/or sex sub-groups, and this is likely exacerbated by differences in the recruitment, assessment and diagnostic methods across these studies. However, despite these limitations, along with marked

Policy Impact

The Aboriginal and Torres Strait Islander population is ageing. Regardless of assumptions made about dementia prevalence, the relative growth in the population of Aboriginal and Torres Strait Islander peoples living with dementia is considerable. With cohort flow being the major determinant, significant growth in the short-to-medium term is irreversible. The development of best practice models of culturally appropriate care for Aboriginal and Torres Strait Islander people living with dementia, and improved health-care access and support for their families, carers and communities, are urgently required.

demographic differences in the samples (e.g. language, education, remoteness and access to health services), the overall prevalence estimates are remarkably comparable; for example, 26.8% (WA) and 25.1% (QLD) at ages 65+, and 21.0% (NSW) and 23.8% (WA) at ages 60+.

Data from large national or state-wide samples have been obtained in retrospective studies using health and aged care services data and data linkage,^{9–11} which have tended to show lower dementia prevalence rates compared to prospective studies. Retrospective studies do not include standardised assessment or diagnostic criteria, and dementia is likely to be under-diagnosed and/or under-documented in these data, an effect that may impact Aboriginal and Torres Strait Islander peoples disproportionately. Li and colleagues⁹ sought to correct this by empirically estimating the missing dementia cases in their dataset. Nevertheless, these studies typically show higher prevalence of dementia in the Aboriginal and Torres Strait Islander population based on age-standardised rates compared to the non-Indigenous population,^{9–11} reported being in the order of 2.0 (NSW, all ages)¹¹ to 2.5 (NT, ages 45+)⁹ times higher.

The above studies underscore the complexity of measuring and estimating dementia prevalence among the Aboriginal and Torres Strait Islander population. Nonetheless, the studies also consistently highlight the higher dementia prevalence relative to the non-Indigenous population. The purpose of this study is to contribute to this emerging literature through an understanding of the demographic drivers of the *number* of older Aboriginal and Torres Strait Islander people living with dementia. Specifically, utilising low, medium and high dementia prevalence assumptions, we examine the role of changing population dynamics in the Aboriginal and Torres Strait Islander population in driving growth in the number of

people living with dementia. First, we outline our data, methods and assumptions. Then, we describe our key results before discussing the policy relevance of our findings. The authors provide open access to the data for interested users.

2 | METHODS

Projections of Australia's Aboriginal and Torres Strait Islander population aged 50+ with dementia were prepared in two stages. First, projections of the population by Indigenous status, age and sex were prepared; and then second, various estimates of dementia prevalence rates by age and sex were multiplied by the projected populations to obtain projections of those aged 50+ with dementia. The advantage of using population projections and dementia rates disaggregated by age and sex permits the growing size and shifting age–sex composition of the 50+ population to interact with highly age-variable dementia prevalence rates.

Projections of the population by Indigenous status, 5-year age group and sex were calculated out to 2051 using a multistate cohort-component population projection model, a standard demographic approach. Starting with the 2016 Estimated Resident Populations, the model applies fertility, mortality, migration and identification change (people reporting their Indigeneity differently from one census to the next) rates to project both Indigenous and non-Indigenous populations forward in 5-year increments out to 2051. The projections were produced for capital city and balance of the state regions (i.e., non-capital cities) to capture the geographical heterogeneity of demographic change, with national-scale projections created as the sum of all subnational projections. Specifically, the national projection is an aggregation of projections produced for 15 capital cities and the balance of state regions of Australia. All regions have different assumed demographic rates. A conservative approach was taken in formulating projection assumptions for fertility, mortality, migration and identification change: it was assumed recently that observed trends would continue into the future. In particular, future identification change is highly uncertain. In the absence of any strong evidence (as to an increase or decrease in identification rates), we employ a conservative approach, assuming a continuation of recent trends. Details of the population modelling and data inputs are available elsewhere.^{1,12}

As there are no definitive statistics on dementia prevalence for the Aboriginal and Torres Strait Islander population of Australia, estimates were obtained from the existing literature, revealing a wide range of prevalence

TABLE 1 Assumed low, medium and high scenarios (prevalence proportion), females and males

Age group	Low	Medium	High
<i>Female rates (prevalence proportion)</i>			
50–54	<0.01	0.01	0.02
55–59	<0.01	0.01	0.02
60–64	0.02	0.01	0.06
65–69	0.03	0.08	0.06
70–74	0.04	0.08	0.07
75–79	0.08	0.28	0.07
80–84	0.14	0.28	0.59
85+	0.23	0.28	0.59
<i>Male rates (prevalence proportion)</i>			
50–54	<0.01	0.01	0.03
55–59	<0.01	0.01	0.03
60–64	0.02	0.01	0.27
65–69	0.02	0.08	0.27
70–74	0.04	0.08	0.31
75–79	0.07	0.23	0.31
80–84	0.12	0.23	0.54
85+	0.19	0.23	0.54

Note: Proportions rounded to two decimal places. Estimates with greater precision were used in the modelling. Low (AIHW),² Medium (Li et al)⁹ and High (Smith et al).⁷

rate estimates. Three sets of rates were selected for this study, one near the lower end of the distribution, one in the middle and another at the top. They were as follows: (a) national prevalence rates for the whole Australian population published by the Australian Institute of Health and Welfare (D2.4)²; (b) Northern Territory Aboriginal and Torres Strait Islander prevalence rates estimated from various administrative data sources by Li et al.⁹; and (c) prevalence rates estimated for the Aboriginal and Torres Strait Islander population of the Kimberley, Western Australia, by Smith et al.⁷ based on cognitive assessments using a culturally specific tool and consensus diagnosis. These three sets of rates were designated low, medium, and high prevalence rate scenarios, as shown in Table 1. In the absence of reliable time series to permit the identification of long-run trends, all sets of rates were held constant through the projection horizon. It is important to note that in doing so, we omit any exogenous shocks to the underlying risk factors for dementia, including hypertension, diabetes, depression, hearing loss, head injury, harmful alcohol use, insufficient physical activity, smoking, obesity, social isolation and air pollution.¹³

The results of the three scenarios therefore cannot be regarded as providing accurate numbers of the current

and future 50+ Aboriginal and Torres Strait Islander population living with dementia. However, their value lies in demonstrating the *relative* growth in the number of people with dementia which can be expected over the coming decades as a result of the growth and ageing of Australia's Aboriginal and Torres Strait Islander population. Specifically, the growth we project is relative to the baseline population of older Aboriginal and Torres Strait Islander people under each scenario. Although demographic trends cannot be forecast with complete precision, both high population growth and ageing among the Aboriginal and Torres Strait Islander populations are certain to occur under any plausible demographic parameters.¹

The contributions to the relative growth of the number of dementia cases from three key demographic factors can be identified through a decomposition analysis. This quantifies the extent to which the growth of dementia cases is due to (a) net gains to the Aboriginal and Torres Strait Islander population through identification change, (b) increasing life expectancy, and (c) cohort flow (new cohorts entering the 50+ age group and old cohorts dying out). The decomposition uses successive analytic projection variants in which each of the key factors of population growth are successively removed. Identification change is removed first, then life expectancy increases are removed by holding mortality rates constant over time; the remaining growth is due to cohort flow.¹⁴ Ethics approval for this project was granted by the Melbourne School of Population and Global Health Human Ethics Advisory Group (HEAG)—Ethics ID: 2021-22105-19137-2.

3 | RESULTS

Projections of the number of people with dementia among the Aboriginal and Torres Strait Islander population aged 50+ are shown in Figure 1. Given substantial projected growth of this older segment of the population, all scenarios involve increasing numbers of people with dementia. The range of numbers across scenarios is considerable. The low scenario increases from about 2300 in 2016 to 12,600 by 2051, which represents 1.9% (2016) to 3.2% (2051) of the Aboriginal and Torres Strait Islander 50+ population; the equivalent numbers under the high scenario are 12,900 in 2016 and 57,800 by 2051, or 10.4% and 14.5% of the 50+ population. However, relative growth over the projection horizon varies much less between scenarios, with the 2051 projected total being about 5½ times the 2016 estimate in the low scenario and about 4½ times under the high scenario.

Table 2 shows the projected growth of the Aboriginal and Torres Strait Islander population with dementia by

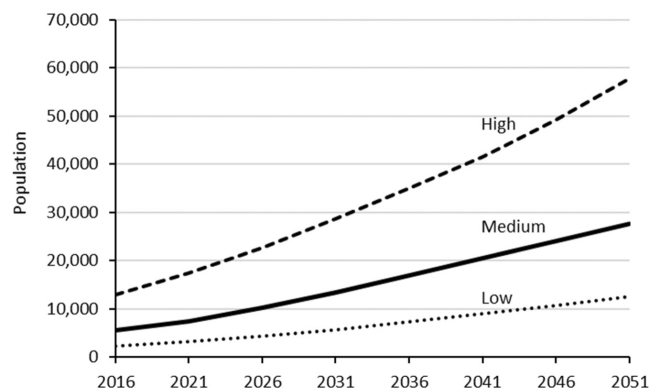


FIGURE 1 The projected Aboriginal and Torres Strait Islander population of Australia aged 50+ with dementia, 2016–2051, according to three prevalence scenarios.

Source: Authors' projections

broad age group. Under all scenarios, proportional growth rises with increasing age, although the growth in absolute numbers is more variable across age groups due to differences in the age pattern of prevalence rates. Both low and medium scenarios project more women than men aged 50+ with dementia. This is due to both more women in the projections at ages 50+ (due to sex mortality differentials) and slightly higher female prevalence rates at the very highest ages. The high scenario projects more men than women with dementia due to much higher male prevalence rates over ages 60–79. The projected age–sex structure of the population with dementia under the medium scenario is depicted in Figure 2, showing substantial projected growth in people with dementia at the highest ages.

The demographic factors behind the projected growth of those developing dementia are revealed in Table 3. The bottom row of the table reports multipliers for the number of those living with dementia, defined as ratios of projected dementia numbers in 2051 to estimated totals in 2016, while the main body of the table shows multipliers for key demographic processes. For example, under the medium scenario, the multiplier is about 5, indicating five times as many people with dementia in 2051 as compared with 2016. The product of the component multipliers equals the total multiplier. In the medium scenario, net identification gains to the Aboriginal and Torres Strait Islander population contribute a modest multiplier of 1.11 while increasing life expectancy between 2016 and 2051 contributes a multiplier of 1.28 (i.e. if increasing life expectancy was the only factor at work, the number of dementia cases would grow by 28% over the projection horizon). By far the largest contributor, however, is cohort flow, which is responsible for the majority of growth in the number of those with dementia over the projection horizon. This refers to the large cohorts currently in the young

TABLE 2 The projected Aboriginal and Torres Strait Islander population of Australia with dementia by broad age group, selected years

Age group	2016	2021	2036	2051	% growth
<i>Low scenario</i>					
50–59	84	101	132	223	165
60–69	730	980	1639	2330	219
70–79	737	1105	2656	3806	417
80+	773	981	2918	6278	712
<i>Medium scenario</i>					
50–59	807	962	1268	2081	158
60–69	1468	1989	3500	4852	230
70–79	2001	2974	7418	10,891	444
80+	1239	1588	4742	9873	697
<i>High scenario</i>					
50–59	1764	2100	2780	4586	160
60–69	6024	8003	13,043	19,139	218
70–79	2478	3825	8871	12,601	409
80+	2673	3435	10,306	21,466	703

Source: Authors' projections.

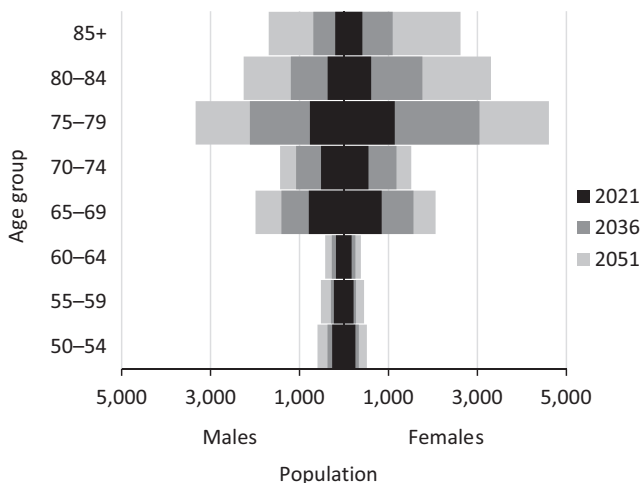


FIGURE 2 The projected age–sex structure of the Aboriginal and Torres Strait Islander population of Australia with dementia, medium scenario, 2021, 2036 and 2051.

Source: Authors' projections

and middle adult ages which will gradually shift into the 50+ age group over the course of the projection horizon.

The only way the growth contribution of cohort flow could be offset is with a dramatic reduction in dementia prevalence rates over future decades. Using the medium assumption prevalence rates, we calculated that rates would have to fall by one-fifth of their 2016 values by 2051 to counteract the effect of cohort flow.

TABLE 3 Growth multipliers of the Aboriginal and Torres Strait Islander population of Australia aged 50+ with dementia, 2016–2051

Demographic factors	Scenario		
	Low	Medium	High
Identification gains	1.09	1.11	1.14
Increasing life expectancy	1.33	1.28	1.27
Cohort flow	3.75	3.53	3.09
Total	5.44	5.02	4.47

Note: The total growth multiplier is the ratio of the 2051 population aged 50+ with dementia to the 2016 estimate. The product of the component multipliers equals the total multiplier.

Source: Authors' projections.

4 | DISCUSSION

There is considerable uncertainty in the national-level prevalence of dementia in Australia, particularly within the Aboriginal and Torres Strait Islander population, notwithstanding agreement across the literature that prevalence is substantially higher than in the non-Indigenous population. The key contribution of this study is in demonstrating the *relative* growth in the number of people with dementia which can be expected over the coming decades as a result of the growth and ageing of Australia's Aboriginal and Torres Strait Islander population. We illustrate that by 2051, the relative growth in the number of Aboriginal and Torres Strait Islander people with dementia ranges from 4½ to 5½ times (under three prevalence scenarios) its 2016 estimate. Using simulations, we further show that dementia prevalence rates would have to fall to 22% of their 2016 values by 2051 to counteract the effect of cohort flow. In summary, regardless of prevalence trajectories, our modelling indicates very strong growth in the number of Aboriginal and Torres Strait Islander people living with dementia, until at least the middle of this century due to population ageing.

The outcome of this analysis highlights the urgent need to plan for culturally safe, trauma-informed and person-centred care to meet the needs of the projected number of older Aboriginal and Torres Strait Islander people with dementia. Addressing this is especially urgent given that all survivors of the Stolen Generations will be eligible for aged care services by 2023, with the Royal Commission into Aged Care painting a grim picture of the cultural safety and accessibility of aged care services for this population.^{15,16} On this subject, it is important to note that while there are additional levels of trauma experienced by members of the Stolen Generation; all Aboriginal people who lived through the period 1900–2000 were traumatised by historic policies and poverty arising from social exclusion. These would have significant implications on

their well-being and access to culturally appropriate care in later life.^{17,18}

In the case of dementia, in particular, myths and stigma relating to the diagnosis are commonly found among Australian indigenous communities and are likely to inhibit early diagnosis and adequate support along care pathways.¹⁹ Community models of care that have been developed, implemented and evaluated for this population are few, yet it is evident that principles of genuine collaboration, culturally secure and community-based services, workforce capacity building, the flexibility of service provision and ongoing advocacy are essential.^{20–23} A ‘one size fits all’ approach is not appropriate, and considerations of diversity in language, culture and geography are required.²⁴ Older Aboriginal and Torres Strait Islander peoples have described the factors that contribute to their well-being through interrelated elements that strengthen the inner spirit.²⁵ Feelings of safety and security, respect, planning for the future and being connected to the Country are a few of the domains described as important to older people. A co-ordinated and co-designed approach to support the needs of this vulnerable group is vital and must include the needs of carers and their communities.

Many older Aboriginal and Torres Strait Islander people prefer to access health and aged care services through local Aboriginal community-controlled health services,²⁶ and culturally appropriate models of dementia care suitable for implementation in such primary care settings have been co-designed and implemented.^{27,28} It is important that all health and aged care services seek to adopt Aboriginal and Torres Strait Islander care frameworks which support the well-being of older people living with dementia and their families,^{21,25} work in partnership with local communities and organisations, integrate service delivery and respond flexibly to the diverse needs of Elders and older people.^{22,29}

These projections also highlight that immediate action to reduce the rates of dementia in this population is needed. As the studies reviewed for this research show, unacceptable disparities already exist in the prevalence of dementia and this will be amplified in coming decades with rapid population ageing. Dementia prevention needs to be viewed as a public health priority, and one focused on health equity.³⁰ According to the latest Lancet Commission analysis,¹³ the global prevalence of dementia could be reduced by 40% by eliminating key modifiable risk factors across the life course. This is promising but also underscores the enormity of the challenge ahead. While complete elimination of hypertension, diabetes, depression, hearing loss, head injury, harmful alcohol use, insufficient physical activity, smoking, obesity, social isolation and air pollution is unlikely, there are evidence-based

interventions for many of these risk factors.³¹ However, we lack specific data for Australian populations and for our geographic region, in general, which is a serious challenge to successful dementia prevention initiatives, which need to be culturally adapted and appropriate.³²

We have quantified that dementia prevalence rates would have to fall dramatically (to about one-fifth of their 2016 values by 2051) to prevent the current situation from worsening, but even this would not go far enough to reduce the inequitable rates of dementia in Australia. Moreover, there remains limited evidence on risk factors for dementia in Aboriginal and Torres Strait Islander peoples,^{4,5,8} or on how these drive disparities in dementia rates.³³ There are likely to be differences in the most critical modifiable factors underpinning dementia risk between Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians, as has been observed in other Indigenous populations³⁴ and for which evidence is emerging in Australia.⁵ Investigations of dementia risk reduction need to focus on a wide range of factors that are culturally relevant and important to Aboriginal and Torres Strait Islander peoples, and in ways that align with holistic and collectivist conceptions of health and well-being.²⁴ Preventing and managing chronic health conditions is vital for healthy ageing but addressing the sociocultural determinants of health, including the enduring impacts of colonisation and systemic racism, is also crucial.^{35,36} Addressing social determinants of health will also address health literacy, access to culturally appropriate health care and therefore reduce the risk of cardiometabolic risk factors in mid-life. Broad systematic approaches to improving health, education and environments are likely to be needed to address the risk of dementia but these also will address multiple chronic diseases and healthy ageing. Population-level dementia prevention in particular requires a concerted, comprehensive and Indigenous-led strategy to improve health, education, environments and systems with and for Aboriginal and Torres Strait Islander peoples of all ages, with widespread government, industry and societal support.

5 | CONCLUSIONS

This study has sought to examine the demographic drivers that contribute to the future growth in the population of Aboriginal and Torres Strait Islander peoples living with dementia in Australia. Although data on dementia prevalence in this population have considerable limitations, our modelling shows that by mid-century the relative growth in the number of Aboriginal and Torres Strait Islander peoples aged 50+ with dementia ranges from 4½ to 5½ times (under three prevalence scenarios) its 2016

estimate. The gradual movement of younger cohorts into the 50+ age group, and the depletion of older cohorts from death, over time, referred to as cohort flow, is a key driver of the growth in the number of older people living with dementia.

High relative growth in the number of people living with dementia (regardless of prevalence levels) poses implications for culturally appropriate care, health-care access and support, along with effective risk reduction strategies, for Aboriginal and Torres Strait Islander families, carers and their communities. However, to inform this process, improvements to data collection, availability and modelling are a key priority. Specifically, larger and more nationally representative prospective studies, as well as improvements to administrative data systems may assist with strengthening dementia prevalence estimates to better guide service planning and delivery for and by Aboriginal and Torres Strait Islander peoples. Combined with detailed demographic projections as presented here, improved precision can be obtained on the population futures of Aboriginal and Torres Strait Islander people living with dementia.

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CONFLICTS OF INTEREST

No conflicts of interest declared.

DATA AVAILABILITY STATEMENT

The authors provide open access to our data and modelling for interested users.

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REFERENCES

1. Temple JB, Wilson T, Taylor A, Kelaher M, Eades S. Ageing of the Aboriginal and Torres Strait Islander population: numerical, structural, timing and spatial aspects. *Aust N Z J Public Health*. 2020;44(4):271-278. doi:10.1111/1753-6405.13001
2. Australian Institute for Health and Welfare (AIHW). *Dementia in Australia*. AIHW; 2012 Accessed April 2021. <https://www.aihw.gov.au/getmedia/199796bc-34bf-4c49-a046-7e83c24968f1/13995.pdf.aspx?inline=true>
3. van der Flier WM, Scheltens P. Epidemiology and risk factors of dementia. *Journal of Neurology, Neurosurgery & Psychiatry*. 2005;76(suppl 5):v2-v7.
4. Australian Institute for Health and Welfare (AIHW). *Dementia Data Gaps and Opportunities*. AIHW; 2020 Accessed July 2021 <https://www.aihw.gov.au/getmedia/73e0b74b-1267-4981-b412-9fb926795235/aihw-age-105.pdf.aspx?inline=true>
5. Radford K, Lavrencic LM, Delbaere K, et al. Factors associated with the high prevalence of dementia in older Aboriginal Australians. *J Alzheimers Dis*. 2019;70(s1):S75-S85. doi:10.3233/JAD-180573
6. Zann S. Identification of support, education and training needs of rural/remote health care service providers involved in dementia care: Rural Health Support, Education and Training (RHSET) final report: Aboriginal and Islander Health Program, Northern Regional Health Authority. 1994.
7. Smith K, Flicker L, Lautenschlager NT, et al. High prevalence of dementia and cognitive impairment in Indigenous Australians. *Neurology*. 2008;71(19):1470-1473.
8. Russell SG, Quigley R, Thompson F, et al. Prevalence of dementia in the Torres Strait. *Australas J Ageing*. 2021;40(2):e125-e132.
9. Li SQ, Guthridge SL, Eswara Aratchige P, et al. Dementia prevalence and incidence among the Indigenous and non-Indigenous populations of the Northern Territory. *Med J Aust*. 2014;200(8):465-469. doi:10.5694/mja13.11052
10. Cotter PR, Condon JR, Barnes T, Anderson IPS, Smith LR, Cunningham T. Do Indigenous Australians age prematurely? The implications of life expectancy and health conditions of older Indigenous people for health and aged care policy. *Aust Health Rev*. 2012;36(1):68-74. doi:10.1071/AH11996
11. Randall DA, Lujic S, Havard A, Eades SJ, Jorm L. Multimorbidity among Aboriginal people in New South Wales contributes significantly to their higher mortality. *Med J Aust*. 2018;209(1):19-23. doi:10.5694/mja17.00878
12. Taylor A, Wilson T, Temple J, Kelaher M, Eades S. The future growth and spatial shift of Australia's Aboriginal and Torres Strait Islander population, 2016–2051. *Population, Space and Place*. 2021;27(4):e2401. doi:10.1002/psp.2401
13. Livingston G, Huntley J, Sommerlad A, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet commission. *Lancet*. 2020;396(10248):413-446. <https://www.sciencedirect.com/science/article/pii/S0140673620303676>
14. Bongaarts J, Bulatao RA. Completing the demographic transition. *Popul Dev Rev*. 1999;25(3):515-529. doi:10.1111/j.1728-4457.1999.00515.x
15. Royal Commission into Aged Care Quality and Safety. Final report: care, dignity and respect Commonwealth of Australia. 2021. Accessed July 2021. <https://agedcare.royalcommission.gov.au/publications/final-report>
16. Australian Institute for Health and Welfare (AIHW). *Aboriginal and Torres Strait Islander Stolen Generations Aged 50 and Over*. AIHW; 2018 <https://www.aihw.gov.au/reports/indigenous-australians/stolen-generation-aged-50-and-over/contents/table-of-contents>
17. Temple JB, Kelaher M, Paradies Y. Prevalence and context of racism experienced by older Aboriginal and Torres Strait Islanders. *Australas J Ageing*. 2019;38(1):39-46. doi:10.1111/ajag.12604
18. Temple JB, Kelaher M, Paradies Y. Experiences of racism among older Aboriginal and Torres Strait Islander people: prevalence, sources, and association with mental health. *Can J Aging*. 2019;39(2):178-189. <https://www.cambridge.org/core/article/>

- experiences-of-racism-among-older-aboriginal-and-torres-strait-islander-people-prevalence-sources-and-association-with-mental-health/C3657006EC31691D908DB7F2272BE1BF
19. Bryant J, Noble N, Freund M, et al. How can dementia diagnosis and care for Aboriginal and Torres Strait Islander people be improved? Perspectives of healthcare providers providing care in Aboriginal community controlled health services. *BMC Health Serv Res.* 2021;21(1):699. doi:10.1186/s12913-021-06647-2
 20. National Advisory Group for Aboriginal and Torres Strait Islander Aged Care (NAGATSIAC), Davis D. Submission to the Royal Commission into aged care quality and safety. 2019. Accessed July 2021. <https://agedcare.royalcommission.gov.au/system/files/2020-06/RCD.9999.0222.0001.pdf>
 21. Davy C, Kite E, Aitken G, et al. What keeps you strong? A systematic review identifying how primary health-care and aged-care services can support the well-being of older Indigenous peoples. *Australas J Ageing.* 2016;35(2):90-97. doi:10.1111/ajag.12311
 22. LoGiudice D, Smith K, Shadforth G, et al. Lungurra Ngoora – a pilot model of care for aged and disabled in a remote Aboriginal community – can it work? *Rural Remote Health.* 2012;12(2078):1-11. doi:10.22605/RRH2078
 23. Gilbert A, Owusu-Addo E, Feldman P, Mackell P, Garratt S, Brijnath B. Models of integrated care, health and housing: report prepared for the Royal Commission into aged care quality and safety: La Trobe. 2021. Accessed July 2021. [10.26181/5ff67526a028e](https://doi.org/10.26181/5ff67526a028e)
 24. NHMRC National Institute for Dementia Research. Aboriginal and Torres Strait Islander roadmap for dementia research and translation. 2020. Accessed July 2021. <https://www.nhmrc.gov.au/research-policy/research-priorities/dementia/nnidr>
 25. Smith K, Gilchrist L, Taylor K, et al. Good Spirit, good life: a quality of life tool and framework for older Aboriginal peoples. *Gerontologist.* 2021;61(5):e163-e172. doi:10.1093/geront/gnz185
 26. Larke BM, Broe GA, Daylight G, et al. Patterns and preferences for accessing health and aged care services in older Aboriginal and Torres Strait Islander Australians. *Australas J Ageing.* 2021;40(2):145-153. doi:10.1111/ajag.12864
 27. Bradley K, Smith R, Hughson J-a, et al. Let's CHAT (community health approaches to) dementia in Aboriginal and Torres Strait Islander communities: protocol for a stepped wedge cluster randomised controlled trial. *BMC Health Serv Res.* 2020;20(1):208. doi:10.1186/s12913-020-4985-1
 28. Dawson A, Harfield S, Davy C, et al. Aboriginal community-controlled aged care: principles, practices and actions to integrate with primary health care. *Prim Health Care Res Dev.* 2021;22:e50.
 29. Mackell P, Squires K, Fraser S, et al. Art centres supporting our Elders—'old people, that's where our strength comes from'—results from a national survey of Australian Aboriginal and Torres Strait Islander community controlled art centres. *Rural Remote Health.* 2022;22:6850. doi:10.22605/RRH6850
 30. Stephan BCM, Siervo M, Brayne C. How can population-based studies best be utilized to reduce the global impact of dementia? Recommendations for researchers, funders, and policymakers. *Alzheimers Dement.* 2020;16(10):1448-1456. doi:10.1002/alz.12127
 31. World Health Organization. Risk reduction of cognitive decline and dementia: WHO. 2019. Accessed June 2021. <https://www.who.int/publications/i/item/risk-reduction-of-cognitive-decline-and-dementia>
 32. Anstey KJ, Ee N, Eramudugolla R, Jagger C, Peters R. A systematic review of meta-analyses that evaluate risk factors for dementia to evaluate the quantity, quality, and global representativeness of evidence. *J Alzheimers Dis.* 2019;70(s1):S165-S186. doi:10.3233/JAD-190181
 33. Anstey KJ, Kiely KM, Booth H, et al. Indigenous Australians are under-represented in longitudinal ageing studies. *Aust N Z J Public Health.* 2011;35(4):331-336. doi:10.1111/j.1753-6405.2011.00727.x
 34. Zawaly K, Moyes SA, Buetow S, Tippett L, Kerse N. Modifiable risk factors and change in cognition of Māori and non-Māori in advanced age: LiLACS NZ. *J Appl Gerontol.* 2022;41(1):262-273. doi:10.1177/0733464821997214
 35. Arkles R, Jackson Pulver L, Robertson H, Draper B, Chalkley S, Broe A. *Ageing, Cognition and Dementia in Australian Aboriginal and Torres Strait Islander Peoples: A Life Cycle Approach.* Neuroscience Research Australia and Muru Marri Indigenous Health Unit, University of New South Wales; 2010 Accessed July 2021. http://www.dementiaresearch.org.au/images/dcrc/output-files/260-ipwd1_monograph.pdf
 36. Broe G, Radford K. Multimorbidity in Aboriginal and non-Aboriginal people. *Med J Aust.* 2018;209(1):16-17. doi:10.5694/mja18.00348

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