

Does community cultural connectedness reduce the influence of area disadvantage on Aboriginal & Torres Strait Islander young peoples' suicide?

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Past and present colonisation in Australia has resulted in injustice against First Peoples through forced removal of communities from traditional homelands and children from their families, as well as genocide, dispossession, subjugation and discrimination.¹⁻³ Discriminatory legislation, paradoxically titled 'Protection Acts', provided state governments, or 'Chief Protectors', the authority to remove children without evidence of neglect, take property and deny access to lands, displace people, control wages (if wages were received), control who people could marry and dictate where people could reside.^{1,4-6} Many regulations existed until the 1970s, and some components of these policies still exist today.⁷ The systemic and widespread oppression of Aboriginal and Torres Strait Islander peoples in Australia has resulted in profound inequalities across multiple domains, including employment, housing, income, education, incarceration, infant mortality and life expectancy.^{1,8} Aboriginal and Torres Strait Islander communities also bear disproportionately higher burden of psychotic and mood disorders, involuntary hospital admissions and substance use disorders than non-Indigenous communities in Australia.^{8,9} Throughout the paper the phrase 'Aboriginal and Torres Strait Islander people' is used to represent the First Peoples/First Nations peoples in the lands now referred to as Australia, while references pertaining to international First Nations or First Peoples populations are reported as such.

Abstract

Objective: The study aimed to examine associations of community cultural connectedness with Aboriginal and Torres Strait Islander young peoples' suicide rates in areas with elevated risk factors.

Methods: Age-specific suicide rates (ASSRs) were calculated using suicides recorded by the Queensland Suicide Register (QSR) of Aboriginal and Torres Strait Islander young people (aged 15–24 years) in Queensland from 2001–2015. Rate Ratios (RRs) compared young peoples' suicide rates in areas with high and low levels of cultural connectedness indicators (cultural social capital and Indigenous language use) within areas with elevated risk factors (high rates of discrimination, low socioeconomic resources, and remoteness).

Results: Within low socioeconomically resourced areas and where Aboriginal and Torres Strait Islander people experienced more discrimination, greater engagement and involvement with cultural events, ceremonies and organisations was associated with 36% and 47% lower young peoples' suicide rates respectively (RR=1.57, 95%CI=1.13–2.21, $p<0.01$; RR=1.88, 95%CI=1.25–2.89, $p<0.01$). Within remote and regional areas, higher levels of community language use was associated with 26% lower suicide rates (RR=1.35, 95%CI=1–1.93, $p=0.04$), and in communities experiencing more discrimination, language use was associated with 34% lower rates (RR=1.53, 95%CI=1.01–2.37, $p=0.04$).

Conclusion: Cultural connectedness indicators were associated with lower Aboriginal and Torres Strait Islander young peoples' suicide rates in communities experiencing the most disadvantage.

Implications for public health: This provides initial evidence for trialling and evaluating interventions using cultural practices and engagement to mitigate against the impacts of community risk factors on Aboriginal and Torres Strait Islander suicide.

Key words: culture, social determinants of health, Aboriginal and Torres Strait Islander health, suicide, young peoples' health

Of immense importance, First Peoples die by suicide at more than twice the rate of other people in Australia, with young people particularly overrepresented.^{10,11} In the state of Queensland specifically, the suicide rate for Aboriginal and Torres Strait

Islander young people is four times higher than the non-Indigenous rate.^{12,13} Moreover, Aboriginal and Torres Strait Islander young people are more likely to reside in communities that experience known risk factors for youth suicide generally, including

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poverty, socioeconomic disadvantage and limited access to opportunities and services as a social and environmental legacy of colonisation.^{8,14} First Nations young people in Australia also experience a higher rate of environmental and contextual suicide risk factors, including child protection and correctional services involvement, substance use, exposure to suicide and interpersonal violence.^{8,12} Therefore, in terms of suicide prevention specifically, understanding protective factors that promote resilience against suicide or buffer the influence of contextual risk factors is key to developing effective intervention models for this population.¹⁵⁻¹⁷

Cultural connectedness

There is increasing evidence that cultural connectedness is a protective factor for colonised and 'minority' or non-culturally dominant racial and ethnic populations and, indeed, is critical to optimal development and wellbeing.¹⁸⁻²⁰ Cultural connectedness includes many factors related to the attachment among cultural group members, such as a sense of belonging, positive cultural identity and engagement with cultural practices.²¹⁻²³ Notably, cultural connectedness buffers against the harmful effects of discrimination, social and economic disadvantage, racism, and acculturative stress (stressors associated with adapting and functioning within a context where one is of the non-dominant cultural group).^{24,25} Evidence indicates that engagement with cultural practice and sense of belonging to one's cultural group buffers the effect of poor mental health and discrimination on suicidal ideation among Hispanic young adults and African American college students.^{26,27}

For First Peoples globally, scholars argue that cultural connectedness is a critical protective factor in mitigating against harms to the community and its members resulting from systemic cultural dislocation, disadvantage, discrimination, and other impacts of colonisation.²⁸⁻³⁰ In research among First Nations adults with grandparents forcibly removed from their families within the Canadian residential school system (acknowledged as attempted cultural genocide through forced assimilation of children), greater cultural connectedness was associated with improved mental wellbeing.^{31,32} In comparison, for those First Nations adults without a family history of the residential school system, cultural

connectedness did not have a similar association. Therefore, the researchers of this study suggested that cultural connectedness is uniquely protective in mitigating the impact of transgenerational colonial trauma for First Peoples.³²

Cultural connectedness and First Nations suicidality

Despite evidence indicating that cultural connectedness can buffer the relationship between risk factors and adverse outcomes, protective effects against the impact of risk factors on Indigenous suicide trajectories are unexplored.^{10,21} Promisingly, however, international research has found indicators of cultural connectedness including sense of belonging, engagement with cultural practices and positive cultural identity are associated with lower suicidality for First Peoples,³³⁻³⁵ though potential buffering effects remain unknown.

Further, most research examining cultural connectedness and Indigenous suicide to date has explored the effects on individual-level indicators of suicidality (suicidal ideation or suicide attempts), with limited examination of community-level indicators. While suicide attempts or ideation and suicide fatalities are interrelated, persistent differences are observed between groups of people who attempt suicide and those who die by suicide.^{36,37} Although previous attempt may be strongest 'predictor' of suicide deaths,³⁸ the majority of people who die by suicide do not have previous attempts.¹¹ For Aboriginal and Torres Strait Islander populations particularly, evidence suggests that suicidal ideation or suicide attempts may be poorer indicators of suicide mortality than for non-Indigenous populations.¹⁴ As such, it cannot be presumed that protective effects against ideation or attempt, will be inherently protective against deaths by suicide or associated with lower suicide rates.³⁹ Therefore, examining protective effects on community-level suicide mortality rates is vital to inform Aboriginal and Torres Strait Islander suicide prevention strategies. This study examines the impacts of cultural connectedness in protecting against suicide mortality in communities experiencing the most disadvantage.

Promisingly, community-level research to date has found indicators of cultural connectedness to be associated with lower rates of Aboriginal and Torres Strait Islander suicide mortality. In First Nations

populations in Canada, communities with access to cultural facilities, sovereign lands or land claims, majority Indigenous language speakers, community control over healthcare, policing and education had lower youth suicide rates than those without.^{40,41} Research in Australia has exhibited similar findings, wherein communities in which Aboriginal and Torres Strait Islander people generally had greater involvement and attendance in cultural events, ceremonies, organisations and activities had lower youth suicide rates.¹³

However, the potential protective capacity of cultural connectedness to reduce or eliminate the impact of risk factors and harms from colonisation, such as disadvantage and discrimination, has not been examined concerning suicide-related outcomes for Aboriginal and Torres Strait Islander people.^{10,21} It is unknown if cultural connectedness independently influences Indigenous suicide rates beyond moderating known risk and protective factors.¹³ Specifically, although First Peoples globally are overrepresented in communities experiencing disadvantage,^{8,42} to our knowledge, whether cultural factors protect against suicide mortality in the context of disadvantage within communities is unexplored.

Study Aim

The aim of this study was to examine if community-level cultural connectedness indicators, in the form of Indigenous language use and engagement with cultural activities, ceremonies and organisations (cultural social capital) were associated with lower suicide rates for Aboriginal and Torres Strait Islander young people in areas with elevated risk factors. These areas with elevated risk factors are remote areas, socioeconomically disadvantaged areas, and areas where Aboriginal and Torres Strait Islander people experience more discrimination.

Methods

Procedure

Age-specific suicide rates (ASSRs) were calculated as the average yearly number of suicide deaths per 100,000 persons among Aboriginal and Torres Strait Islander young people in Queensland, Australia, from 2001 to 2015. This study examined suicide rates for young people due to the larger suicide

disparities for this age group compared to older Aboriginal and Torres Strait Islander cohorts.^{10,11} Young people were aged between 15-24 years following the United Nations definition of this age group.⁴³ To compare suicide rates in different areas, rate ratios (RR) and their 95% confidence intervals and exact probability levels were calculated.

The data analyses comprised three major phases. The first phase examined suicide rates in areas with high as compared to low levels of community-level cultural connectedness using two indicators; cultural social capital and Indigenous language use. The second phase examined suicide rates in communities with three types of community-level risk factors; (1) high as compared to lower rates of discrimination, (2) high as compared to low socioeconomic disadvantage, and (3) geographical remoteness as compared to urban environments. The third phase examined suicide rates in communities with high as compared to low levels of cultural connectedness indicators (cultural social capital and Indigenous language use) in areas with elevated risk at the community level (high rates of discrimination, high socioeconomic disadvantage and geographical remoteness). Table 1 includes the full list of variables and classifications used. Correlations between community-level factors are also presented.

Data sources

Queensland Suicide Register (QSR).

The QSR is a public health surveillance suicide mortality database which includes all suspected and confirmed suicides of Queensland residents of all ages from 1990 to 2017.¹¹ The QSR only had records until 2015 at the time the analysis occurred. The QSR sources data from police reports from the Queensland Police Service; and post-mortem examinations, toxicology and coronial reports from the National Coronial Information System (NCIS).¹¹ The Queensland Registry of Births, Deaths and Marriages supplies information on Indigenous status missing from primary data sources or where the police mis-identify the person. The QSR includes information on a wide range of demographic, psychosocial, psychiatric, medical, contextual and behavioural aspects of suicide cases. This information is used to classify the probability of suicide as either 'unlikely', 'possible', 'probable' or 'beyond reasonable doubt' using a decision tree.¹¹ This study included suicides classed as 'probable' or 'beyond reasonable

Table 1: Variable classification and age-specific suicide rates (ASSRs) of Aboriginal and Torres Strait Islander young people (15-24 years) by sex, age, cultural social capital, Indigenous language use, discrimination, Index of Relative Socioeconomic Advantage and Disadvantage (IRSAD), and Remoteness Areas, Qld, 2001-2015.

Variable	Classification	N (SA2s)	N (Suicides)	Rate	95% LL	95% UL
Cultural social capital						
Low	Lowest 1/3	166	163	55.35	47.18	64.53
High	Highest 2/3	315	63	34.75	26.7	44.47
Language use						
Low	<5% of residents	459	185	42.62	31.2	56.84
High	>5% of residents	51	46	48.12	41.44	55.58
Discrimination						
High	>30% of residents	218	134	50.74	42.51	60.09
Low	<30% of residents	263	92	43.46	35.40	53.3
IRSAD						
Low	Three lowest-ranked quintiles (Lowest 60%)	313	203	49.64	43.05	56.96
High	Two highest-ranked quintiles (Highest 40%)	198	28	33.54	22.28	48.47
Remoteness Areas						
Regional & remote	Inner regional, Outer Regional, Remote, Very Remote	234	173	51.79	44.36	60.11
Metropolitan	Major Cities	292	58	36.62	27.80	47.34

Note:
 Cultural Social capital index scores available for 481 SA2s; Synthetic estimates of discrimination percentages available for 481 SA2s; Synthetic estimates of Indigenous language use percentages available for 510 SA2s; IRSAD indices available for 512 SA2s. 95% LL 95% Confidence interval lower limit, 95% UL 95% Confidence interval upper limit.

doubt'. This study used data from the QSR on all suicides of Aboriginal and Torres Strait Islander young people age 15-24 years during the period 2001–2015 in Queensland.

The last known or usual residential address recorded in the QSR was further coded into Statistical Area Level Two (SA2) for this study to analyse rates at the community level. To calculate ASSRs by Statistical Area Level Two (SA2) the 2011 Census was used as the closest Census to the midpoint of the analysis period. SA2 is part of the Australian Statistical Geography Standard used in the Census. There were 526 Queensland SA2s in the 2011 Census. Population data were obtained from the Queensland Government Statistician's Office (QGSO) to calculate ASSRs. While it is acknowledged that significant cultural, historical and social differences exist between the many First Nations on these lands, due to the limitations of available population denominator data, which does not further disaggregate, results presented include all Aboriginal and Torres Strait Islander individuals.

Australian Standard Geographical Classification - Remoteness Areas (ASGC-RA). The Remoteness Areas measure remoteness by the accessibility of areas to goods and services using five categories - major cities, inner regional, outer regional, remote, and very remote.⁴⁴ Inner regional, outer regional, remote and very remote were merged into a single variable 'Regional

and Remote areas' for comparison with 'Metropolitan areas' (major cities) due to data sparsity.

Index of Relative Socioeconomic Advantage and Disadvantage (IRSAD). The IRSAD is a SEIFA (Socio-Economic Indexes for Areas) index ranking areas in Australia and Queensland according to comparative socioeconomic advantage and disadvantage and includes variables related to education (year 11 or lower), occupation (professional, management) disabilities, overcrowded housing and income.⁴⁵

SA2 Social Indicators for the Indigenous Population (Synthetic estimates). Estimates were accessed from the Australian Urban Research Infrastructure Network (AURIN) system. The National Centre for Social and Economic Modelling (NATSEM) produces these synthetic estimates using a spatial microsimulation model combining demographic information from the 2011 Census at the SA2 level with the richer data from the 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) to gain reliable small-area estimates of Indigenous social indicators. The NATSISS collects information on demographic, social, cultural, environmental and economic indicators, including geography, language and cultural activities, social networks and support, health and wellbeing, education, employment, income and personal safety. It is completed by Aboriginal and Torres

Strait Islander residents aged 15 years and older.⁴⁶ Due to the sensitivity and potential for identification, confidentialised unit record files (or CURFs) from the survey dataset were unavailable. Instead, a synthetic unit record file of Aboriginal and Torres Strait Islander residents built with observations summing to the population totals from the survey census was extracted using the ABS Survey Census Tablebuilder system and the information from the NATSISS were imputed using regression technique from the ABS secured Remote Access Data Laboratory.⁴⁷ A spatial microsimulation approach was then applied to this synthetic unit record file using a generalised regression reweighting algorithm that reweights the synthetic unit record file to small-area Census benchmarks at SA2 level. These benchmarks included income, age, sex, education and other demographic items (see 48 for the complete benchmarks list). The results were validated against the aggregated NATSISS survey data. The model automatically eliminates any SA2 that fails to achieve the threshold of acceptable error (the Total Absolute Error from the model is greater than the population of the SA2), in which case the model would not provide an estimate.^{47,48} The SA2s in Queensland that did not meet the threshold were predominantly industrial and commercial areas in Brisbane.

The indicators selected for this study from this model (and originally from the NATSISS 2008) were:

The cultural social capital index, assessing cultural aspects of social capital such as involvement and attendance in cultural events, ceremonies or organisations, sporting,

social or community activities, contact with family or friends and the proportion of friends identifying as Aboriginal and Torres Strait Islander people. This index also includes the ability to get or give support outside the household and comfort in contributing to family/community. Index scores can range from -1 to 1 and were available for 481 of the 526 Queensland SA2s (as seen in Table 1). In this study sample, scores ranged from 0.000 to 0.323. SA2s with the highest two-third scores were compared to those with the lowest-thirds scores on the cultural social capital index (above and below 0.080).

Indigenous language use score reflects the percentage of Aboriginal and Torres Strait Islander residents who report speaking an Indigenous language in the home. The proportion of the First Nations population speaking an Indigenous language ranged from 0% to 96.4%. Due to the positively-skewed language use distribution, areas were delineated as high and low based above and below 5% of Aboriginal and Torres Strait Islander persons speaking an Indigenous language.

Discrimination score reflects the percentage of Aboriginal and Torres Strait Islander residents reporting discrimination in the past 12 months. The scope includes discrimination in the workplace, community, educational institutions, recreational settings, court settings, treatment by the police, health professionals or government agency staff when seeking any public services. In these SA2s, between 9.4% and 50.9% of the Aboriginal and Torres Strait Islander population reported discrimination in

the previous year. Areas with high levels of discrimination were those in which 30% or more of the population reported discrimination in the last year.

Results

Demographic factors

Two hundred and thirty-one (231) suicide deaths were recorded for Aboriginal and Torres Strait Islander young people aged 15–24 years between 2001–2015 in Queensland, equivalent to an ASSR of 46.91 suicides per 100,000 persons. This rate was nearly four times higher than non-Indigenous young people during this period (RR=3.85, 95%CI=3.34–4.44, $p<0.01$). The suicide rate for First Nations young males was almost twice the rate for females during this period (RR=1.92, 95%CI=1.33–2.76, $p<0.01$).

Phase 1: Cultural connectedness indicators

As seen in Table 2, areas classified as having low levels of cultural social capital had a 59% higher suicide rate for First Nations young people than areas classified as having high levels of cultural social capital (RR=95%CI=1.2–2.14, $p<0.01$). Whereas the suicide rates for communities classified as having low compared to high levels of Indigenous language use were not significantly different (RR=1.13, 95%CI=0.82–1.57, $p=0.47$).

Phase 2: Risk factors

Regarding the first risk factors, the suicide rate for young people in communities classified as having low socioeconomic resources was 48% higher than those classified as having high levels of socioeconomic resources (RR=1.48, 95%CI=1.01–2.24, $p=0.04$). The finding was similar for the second risk factor, with the suicide rates of young people in regional and remote areas being 41% higher than those in regions classified as metropolitan (RR=1.41, 95%CI=1.06–1.92, $p=0.02$). Lastly, with regards to the third risk factor, in communities classified as experiencing high levels of racial discrimination the suicide rate was estimated at 18% higher than communities with lower levels of discrimination (RR=1.18, 95%CI=0.90–4.53, $p=0.25$). While not meeting the threshold for statistical significance, there was an evident trend that in areas of high discrimination, suicide rates were 50.74 compared to 43.46

Table 2: Suicide Rate Ratios of Aboriginal and Torres Strait Islander young people (15–24 years) by sex, and by community-level cultural connectedness indicators and risk factors; cultural social capital, Indigenous language use, discrimination, Index of Relative Socioeconomic Advantage and Disadvantage (IRSAD), and Remoteness Areas, Qld, 2001–2015.

	Rate Ratio	95% LL	95% UL	<i>p</i>
Sex				
Male/Female	1.92	1.33	2.76	<0.01**
Cultural social capital				
Low/High	1.59	1.20	2.14	<0.01**
Language use				
High/Low	1.13	0.82	1.57	0.47
Discrimination				
High/Low	1.18	0.90	4.53	0.25
IRSAD				
Low/High	1.48	1.01	2.24	0.04*
Remoteness Areas				
Regional & remote/Metropolitan	1.41	1.06	1.92	0.02*

Note:

* $p<0.05$; ** $p<0.01$, 95% LL 95% Confidence interval lower limit, 95% UL 95% Confidence interval upper limit.

per 100,000 persons in areas with low discrimination.

Phase 3: Cultural connectedness indicators in elevated community-level risk factors

Table 3 outlines the analyses undertaken concerning the impacts of cultural connectedness in the context of community-level risk. Results indicated that communities classified as having low socioeconomic resources (i.e. high risk) that also had low levels of cultural social capital (i.e. low protection) had suicide rates 57% higher compared to communities with similar levels of socioeconomic resources and higher cultural social capital (RR=1.57, 95%CI=1.13–2.21, $p<0.01$). Additionally, suicide rates trended higher (albeit non-significantly) in communities with low socioeconomic resources where there were low levels of Indigenous language use compared to communities with similar levels of socioeconomic resources and high language use (RR=1.16, 95%CI=0.84–1.64, $p=0.39$).

In areas classified as regional and remote (i.e. high risk) that had low Indigenous language use, suicide rates were 35% higher compared to similar regional and remote areas where there was higher language use (RR=1.35, 95%CI=1–1.93, $p=0.04$). There were similar trends (32% higher) found in regional and remote areas with low cultural social capital compared to high cultural social capital. However, this difference was not significant (RR=1.32, 95%CI=0.88–2.04, $p=0.19$).

Lastly, in areas classified as having high levels of racial discrimination (i.e. high risk) that also had low cultural social capital (RR=1.88, 95%CI=1.25–2.89, $p<0.01$) or low Indigenous language use (RR=1.95, 95%CI=1.01–2.37, $p=0.04$) there were suicide rates 88% and 53% higher, respectively, compared to communities with high levels of discrimination with high levels of these protective factors.

Community-level correlations

As seen in Table 4, spearman rank-order correlations revealed significant intercorrelations between cultural social capital scores, Indigenous language use, discrimination scores, remoteness and socioeconomic resources, with discrimination and socioeconomic resources the only pairing for which significant correlations were not found ($r_s=0.022$, $p>0.05$).

Table 3: Suicide Rate Ratios of First Nations young people (15–24 years) by levels of cultural social capital and Indigenous language use within community risk factors; low socioeconomic resources, regional and remote communities, and areas with high discrimination, Qld, 2001–2015.

	N	Rate	LL	UL	Rate Ratio	LL	UL	p
Low socioeconomic resources								
Low cultural social capital	157	57.14	48.56	66.82	1.57	1.13	2.21	<0.01**
High cultural social capital	45	36.4	26.55	48.71				
Regional/remote								
Low cultural social capital	145	55.4	46.75	65.2	1.32	0.88	2.04	0.19
High cultural social capital	26	42.04	27.46	61.6				
High discrimination								
Low cultural social capital	105	61.97	50.69	75.02	1.88	1.25	2.89	<0.01**
High cultural social capital	28	34.35	22.82	49.64				
Low socioeconomic resources								
Low language use	160	51.35	43.7	59.95	1.16	0.84	1.64	0.39
High language use	43	44.19	31.98	59.53				
Regional/remote								
Low language use	131	56.23	47.01	66.73	1.35	1.00	1.93	0.04*
High language use	42	40.51	29.96	56.2				
High discrimination								
Low language use	107	56.11	45.98	67.8	1.53	1.01	2.37	0.04*
High language use	27	36.79	24.24	53.52				

Note:
* $p<0.05$; ** $p<0.01$.

Table 4: Spearman rank-order correlations between SA2 cultural social capital index scores, Indigenous language use, discrimination scores, remoteness and socioeconomic resources.

	1	2	3	4	5
1. Socioeconomic resources	1	-0.466**	-0.238**	0.554**	0.022
2. Remoteness	-0.466**	1	0.296**	-0.494**	-0.354**
3. Indigenous Language use	-0.238**	0.296**	1	-0.366**	0.188**
4. Cultural social capital	0.554**	-0.494**	-0.366**	1	-0.96*
5. Discrimination	0.022	-0.354**	0.188**	-0.96*	1

Note:
* $p<0.05$; ** $p<0.01$

Discussion

This study indicates that cultural connection has a relationship with Aboriginal and Torres Strait Islander suicide mortality rates even when risk factors such as geographic and service isolation, discrimination, and poverty are elevated. In communities where Aboriginal and Torres Strait Islander people have greater cultural social capital, in that people attended and participated in more cultural events, ceremonies, organisations and activities, and were more connected and involved with the broader community, young people died by suicide at a rate 37% lower. Within the least socioeconomically resourced areas and in places where there was a higher level of discrimination experienced, greater cultural capital was associated with 36% and 47% lower suicide rates, respectively. Higher community language use was associated with 26% lower suicide rates within

remote and regional areas and 35% lower rates in communities experiencing more discrimination. These findings suggest that cultural factors may be protective even within the most disadvantaged or 'at-risk' areas; Indeed, language use was found to have greater effects in more disadvantaged areas than in the population overall. These results provide supporting evidence to the growing research proposing cultural connectedness as a specific protective factor against the transgenerational harms, disadvantages and continued legacies of colonisation faced by First Nations People today.^{28–30} Due to the comparatively small numbers available for analysis, it was not possible to determine if cultural connectedness had greater moderating effects on suicide rates in more disadvantaged areas than in less disadvantaged areas, as reported in individual-level studies.^{32,49} However, these findings address a crucial limitation of

previous research as correlations between risk factors and cultural indicators may have influenced the effect of cultural connectedness on suicide mortality.¹³ These results indicate that community-level cultural factors are independently associated with lower suicide mortality rates beyond potential correlations with community-level risk factors.

In areas with more reported discrimination, higher levels of Indigenous language use and greater access to and engagement with cultural events, ceremonies, organisations and activities were associated with lower suicide rates for Aboriginal and Torres Strait Islander young people. At an individual level, positive cultural identity has modified the adverse effects of racism on Aboriginal children's outcomes,⁵⁰ which this study suggests may similarly occur at a community level. Notably, community-level experiences of discrimination were not correlated with area socioeconomic resources, highlighting the continued pervasiveness of racism and discrimination as public health challenges.^{50,51}

The 'Cultural Continuity Model' proposed that a key contribution to higher Indigenous suicide mortality was that colonisation has disrupted the connections between past, present and future culture and ways of life.⁴⁰ Cultural continuity - identification with a culture whose ways and bonds reach into the past and extend into possible positive futures - can support young peoples' connection and commitment to their futures during periods of change or self-identity disruption.⁵² This connection and commitment can, in turn, reduce suicide risk.^{40,52} Connection and commitment to personal futures is particularly important during adolescence, a developmental stage characterised by considerable social, physical and emotional change and the risk of disrupted individual self-concept.⁵² These findings are consistent with this theoretical model, suggesting that cultural factors may buffer against environmental and social disadvantage for young First Nations Peoples.¹⁷

In rural and remote areas, only high levels of Indigenous language use had a significant association with suicide rates. This result may reflect greater language persistence as a result of differing historical trauma experiences of assimilation interventions within remote communities compared to urban communities. Some other studies have reported comparatively better health outcomes in Aboriginal and Torres Strait Islander communities today where fewer

'protection' and control policies were implemented.^{53,54} Similarly, individual-level analyses have found that children today, whose family members were removed as part of the stolen generations, experience poorer outcomes than other Aboriginal and Torres Strait Islander children.^{3,55} These analyses serve as further evidence of the continued intergenerational effects of colonial actions and highlight the need to understand nuances of colonial experiences in community-based initiatives. Within both this study and the analyses examining effects of cultural factors on First Nations' suicide rates in Canada, historical trauma remains a crucial, often inferred, yet unmeasured indicator of variability in Indigenous suicide rates for which further research is needed.^{29,56} As with other research,^{13,14} Aboriginal and Torres Strait Islander young people in remote and regional areas in this study died by suicide at a higher rate than those in urban settings. Some cross-sectional survey research, however, has reported that experiences of mental health challenges and suicidal ideation did not vary significantly between Aboriginal and Torres Strait Islander youth in more remote settings compared to their urban counterparts.⁵⁷ Potentially, these mixed findings reflect that lower access to early intervention mental health services in remote locations may influence progression from ideation to attempt differently than in urban areas. As community-level factors, such as remoteness, may further influence the relationship between suicidal ideation and suicide fatalities, greater understanding of the interactions between risk and protective pathways at both individual and community levels for Aboriginal and Torres Strait Islander young people is needed.

Public health implications

Importantly, these findings provide initial support for trialling strategies to reduce Indigenous suicide mortality through enriching and maintaining cultural practices and facilitating cultural expression and engagement. This has earlier been proposed by Elders, researchers and community members alike, often referred to as 'culture as treatment', whereby engaging with and revitalising cultural practices and structures facilitates healing through cultural and community sense of belonging, esteem, meaning and interconnectedness.^{15,29,30} This provides supporting evidence to trial

cultural connection initiatives to ameliorate some of the harmful impacts of racism and discrimination, as the findings suggest that the effects of discrimination on suicidality may be amenable to change through cultural connection interventions.

Limitations and future research

There are several limitations influencing the interpretation of these findings. As the associations in this study are cross-sectional, causality cannot be inferred. While the examination of suicide mortality is a key strength of this study, implementing study designs which could infer causality of changing suicide rates are challenging as some community-level protective factors may be quite static and suicide rates may change slowly over time. However, future research should endeavour to use alternative and more rigorous designs such as controlled trials of community-wide cultural expression and enrichment initiatives, or naturalistic controlled interrupted time series observations of suicide mortality trends.

SA2s may have been misclassified due to changes occurring before or after the NATSISS data was collected in 2008 or despite the benchmarking within the spatial microsimulation model to develop these synthetic estimates. As the available data to measure cultural aspects of social capital in this study used a multi-item index incorporating attendance, participation and support, and did not exclude possible non-Indigenous support, it is not possible to delineate specific protective effects within the domains of the index. Further research is needed to replicate these analyses within other Australian jurisdictions and First Peoples populations and to examine the effects of other cultural connectedness indicators on suicide mortality rates.

Crucially, data was not available for several potentially critical indicators, such as access to the Aboriginal Community-Controlled Healthcare Sector or culturally safe mental health services, or for many indicators of community-level cultural connectedness that were associated with lower suicide mortality in international literature, including self-governance, land rights, community control of policing, education and child protection.⁵⁸ There is a clear need for data development to be led and owned by Aboriginal and Torres Strait Islander people and communities to effectively measure the critical cultural, social and environmental determinants of Indigenous wellbeing.^{59,60}

Conclusion

The results of this study reflect that cultural connectedness indicators are independently associated with Aboriginal and Torres Strait Islander young peoples' suicide rates beyond moderating relationships with other risk and protective factors, even within the most socially and environmentally disadvantaged communities. This provides evidence for trialling strategies to reduce and mitigate the impact of risk factors for Indigenous suicide using interventions that seek to increase community cultural connection (such as strategies to enrich and maintain cultural practices, and facilitate cultural expression and engagement) and incorporating these components into comprehensive suicide prevention plans, as has been consistently advocated for by Elders, community members and Indigenous scholars.^{15,30}

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