

SUICIDE IN INDIGENOUS POPULATIONS OF QUEENSLAND



Diego De Leo, Jerneja Sveticic, Allison Milner, Kathy McKay

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Australian Institute for Suicide Research and Prevention
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Forewords

Suicide is a significant health and social issue across Australia and throughout Queensland. Each year, around 500 Queenslanders take their own lives. Each life lost is tragic, and the impact of suicide on family, friends and the community is considerable.

Throughout the world, the rate of suicide within Indigenous populations is consistently higher than suicide rates within non-Indigenous populations. This is also true for Queensland, where the rate of suicide among Aboriginal and Torres Strait Islander people is 70% higher than rates among non-Indigenous Queenslanders.

The prevention of suicide is of the highest priority in Queensland, with significant government investment in suicide prevention strategies since 1998. We are continually striving to enhance our understanding and efforts to reduce the number of lives lost to suicide within the general and Indigenous population. In line with contemporary evidence, *Reducing Suicide: The Queensland Government Suicide Prevention Strategy 2003–2008* adopted a whole-of-life approach to suicide prevention. This strategy directed priority actions towards high-risk populations, including Indigenous Queenslanders.

To build on our successes and promote greater health equality, the Queensland Government is currently developing a new statewide suicide prevention action plan that strategically targets these high-risk groups.

There is a relative lack of empirical information regarding Indigenous suicide in Australia; however, our understanding of the complexities involved in Indigenous suicide is growing. We are committed to continually striving towards better understanding of the causes of suicide among Indigenous Queenslanders, and in turn, developing and implementing effective strategies to prevent it.

The *Suicide in Indigenous Populations in Queensland* report has been produced by the Australian Institute for Suicide Research and Prevention (AISRAP), a world-renowned centre of excellence in suicide prevention. The data used in this report were derived from the Queensland Suicide Register (QSR), a comprehensive and independent statewide database of suicide mortality data. The QSR is managed by AISRAP, and has been funded by Queensland Health since 1990. The quality and

breadth of data recorded in the QSR is unmatched in any other Australian state or territory.

The report provides an unprecedented and detailed analysis of the incidence and distinctive characteristics of Indigenous suicide in Queensland. The findings will provide Queensland Government departments, and non-government community agencies and service providers with crucial information regarding the complex needs of Aboriginal and Torres Strait Islanders in Queensland, as well as assist in informing strategic and culturally tailored approaches to suicide prevention in Queensland.

I congratulate Institute Director, Professor Diego De Leo, and his team on the development of this report, and commend the institute on its productive collaboration with the Office of the State Coroner, which has made the report possible. I look forward to Queensland Health continuing to work with the Institute as a leading partner in the prevention of suicide in Queensland.

A handwritten signature in black ink, appearing to read 'Tony O'Connell', with a stylized flourish at the end.

Dr Tony O'Connell
Director-General

Suicide was virtually unknown in traditional Aboriginal society. Even in post-colonial Australia, with its widespread dispossession and denial of basic human rights, it was very rare. While the validity of the statistical data on which these assertions are based is questionable, it seems suicide rates among Aborigines and Torres Strait Islanders before 1960 were lower than in the general population. It is against this background that the apparent explosion in the incidence of suicide among the original Australians in the later part of the 20th century has caused such concern and consternation.

In the 1980s I had the privilege of representing the families of some of those whose deaths were investigated by the Royal Commission into Aboriginal Deaths in Custody (RCADIC). In some cases it was suspected the people in police or prison custody had been murdered. Even when after exhaustive investigation that was not proven, in most cases family members continued to believe the authorities were responsible: that something had been done or not done that precipitated the prisoner taking his or her life. In view of the mistreatment of so many Indigenous by the criminal justice system, this accusation is easy to understand. However, despite extensive research, the Royal Commission's reports did little to help us understand why so many Aboriginal people self-destructed in custody, focusing instead on strategies to reduce the numbers being incarcerated.

Since the Royal Commission, there has been a growing recognition that Aboriginal suicide is different, to quote the title of a ground-breaking paper by Professor Colin Tatz that significantly contributed to this awakening. He and others have attempted to analyse suicide rates among sections of the Indigenous population, and identify contributing social factors. There has, however, been such a paucity of accurate and comprehensive statistical data that the drawing of scientifically valid conclusions has been difficult. That is why the research undertaken by Professor De Leo and his colleagues at the Australian Institute for Suicide Research and Prevention, and contained in this report, is so important: it is comprehensive and rigorously substantiated.

The RCADIC shone a rigorously searching light on the coronial systems of the Australian states and territories. In all cases it highlighted significant deficiencies. Each jurisdiction responded to the criticism by reforming the law under which coroners operate. Death prevention, improvements in public health and safety, and the administration of justice became primary objectives of coronial investigations. Coroners still have to establish the particulars of the deaths they investigate — who, when, where and why — but they must now also consider how the deaths occur, what are the underlying factors that precipitate the sudden, violent or unnatural deaths that are reported to them, and what changes to government policies or regulatory regimes are likely to reduce the incidence of similar deaths.

Coroners are lawyers, and so it might reasonably be asked how they can be expected to contribute to such esoteric policy formulation. As Lydgate, in George Eliot's wonderful novel *Middlemarch*, so succinctly, if politically incorrectly, put it: 'Legal training only makes a man more incompetent in questions that require knowledge of another kind ... A lawyer is no better than an old woman at a post mortem examination.'

As usual, Ms Eliot also supplied the answer: 'You are aware I suppose, that it is not the coroner's business to conduct the post mortem, but only to take the evidence of the medical witness,' said Mr Chichely with some scorn.' So many and varied are the circumstances in which sudden and unnatural deaths occur, that coroners could never have sufficient expertise to properly analyse the underlying causes of those deaths. They must rely on appropriately qualified specialists. The willingness of Professor De Leo and the staff at AISRAP to share their expertise has been essential to the efforts of my coroner colleagues and myself to contribute to the reduction of suicide through the critiquing of the care given to those who have died and the review of the clinical pathways promulgated for the assistance of clinicians.

The collaboration between the Office of the State Coroner in Queensland, and AISRAP is multifaceted and continuing. I am proud we have been able to assist the valuable work undertaken by the Institute by making data from coronial files available for inclusion in the Queensland Suicide Register and by seeking among the consumers of our services volunteers to participate in research projects. I am grateful for the willingness of Professor De Leo and his staff to provide expert advice to my office as we grapple with explaining incidents of intentional self-harm causing death.

I am confident the unique data sets and insightful analysis contained in this report will be of great assistance to researchers and inform policy development. For the first time, the researchers at AISRAP, with the leadership of Professor De Leo, have produced tables that are complete in quantitative terms and contain detailed analyses of the characteristics of the Indigenous victims of suicide in Queensland.

This report redresses the paucity of empirical data on the incidence of Indigenous suicide and the identifiable risk factors. In my view it will make a vital contribution to the evaluation of suicide prevention strategies. Its authors are to be congratulated.

Michael Barnes
State Coroner, Queensland
Adjunct Professor
Faculty of Law, Queensland University of Technology

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Preface

The loss of anyone to suicide is a tragic event, and each year approximately 500 Queenslanders take their own lives. There is little doubt that suicide is a significant social issue, and one with entwined tangible and intangible influences of gender, ethnicity, connectedness, and mental and physical wellbeing. Indigenous suicide remains even more poorly understood, due to additional factors linking it to questions such as colonisation, dispossession, racism and social marginalisation. Yet, with so many Indigenous people affected by suicide, each life lost clearly suggests that we must continually strive to better understand the causes of suicide and, in turn, implement effective strategies to prevent it.

In recent years, a growing number of publications, strategies and programs have been developed with the aim of reducing the many disadvantages faced by Indigenous Australians, particularly in regard to their health outcomes. In line with contemporary evidence, 'Reducing Suicide: The Queensland Government Suicide Prevention Strategy 2003–2008' (QGSPS) adopted a whole-of-life approach with priority attention directed to high-risk populations, including Indigenous Queenslanders. This is expected to continue with the current development of The Queensland Government Suicide Prevention Action Plan 2010–2015.

The Australian Institute for Suicide and Prevention is in a unique position to utilise the data collected within the Queensland Suicide Register, a comprehensive suicide mortality database that, to date, remains unmatched in any other Australian State and Territory. This data source allowed the authors to present reliable trends of suicide mortality rates of Indigenous persons residing in Queensland, and also to investigate their characteristics and associated risk factors in ways no other report or publication has yet allowed. The findings provide the Queensland Government, and a wide range of non-governmental agencies and service providers, with vital information on the complex and often insufficiently understood needs of Indigenous populations so as to better inform future collaborative approaches to suicide prevention.

I encourage readers from different disciplines and backgrounds to use this document as a tool to further their understanding of this complicated social phenomenon. I remain optimistic that the relevant findings contained in this report will lead to meaningful translations into tailored, and most of all, efficient suicide prevention activities.

Diego De Leo

Acknowledgments

This report has been produced by the Australian Institute for Suicide Research and Prevention, WHO Collaborating Centre for Research and Training in Suicide Prevention and National Centre of Excellence in Suicide Prevention. The assistance of Queensland Health, Mental Health Branch, for the continuing support of the Queensland Suicide Register is gratefully acknowledged. This report has been realised through a specific grant from Queensland Health, Mental Health Directory.

We gratefully acknowledge the contribution of several members of staff at AISRAP, in particular Dr Helen Klieve and Kirsty Andersen.

Overview of Main Findings

Indigenous populations have been recognised to have elevated rates of suicide in many countries around the world, including Australia. However, to date, comprehensive understanding of the complexities of suicides among persons of Aboriginal and/or Torres Strait Islander origin (in the report referred to as Indigenous populations or Indigenous Australians) has been limited due to scarce epidemiological evidence about its prevalence and specific factors that distinguish Indigenous suicides from those among non-Indigenous populations.

This report aims to fill in this gap by providing an analysis of the incidence of suicide among the Indigenous population in Queensland, thereby increasing the understanding and awareness of the distinctive aspects of Indigenous suicide. Specific outcomes of the report include:

1. a review of the international and Australian literature on epidemiology and characteristics of Indigenous suicide, focusing on historical, social and cultural issues and the impact of suicide contagion
2. analysis of the extensive data on all suicide cases collected through the Queensland Suicide Register from 1994 to 2006, comparing the trends of suicide mortality and key characteristics of Indigenous and non-Indigenous suicides
3. enhanced understanding of the particularities of suicidal behaviours in Indigenous populations to enable policy interventions for communities and individuals at risk.

The Queensland Suicide Register (QSR) is an independent database of suicide mortality data, managed by the Australian Institute for Suicide Research and Prevention (AISRAP) and funded by Queensland Health since 1990. It contains socio-demographic, medical, psychiatric, behavioural and contextual aspects of all suicide deaths of Queensland residents. Information collated in the QSR is provided by the Queensland Office of the State Coroner in the form of police reports (including the psychological autopsy questionnaire), toxicology analysis and post-mortem examination reports. It should be noted that the majority of information analysed in this report was obtained through psychological autopsies. Since these data rely mainly on the depth of the information provided by the deceased's next-of-kin, their accuracy and completeness can be affected by possible lack of awareness of particular aspects of the deceased's life (such as history of physical or

mental illnesses, received treatments by mental health professionals, or significant life events that might have preceded their death) or their intentional concealment. Therefore, when interpreting the results presented, this should be considered as a limitation and a likely source of under-reporting of prevalence of potential risk factors associated with suicide.

In the central part of the report, all cases of Indigenous and non-Indigenous suicides between 1994 and 2006 were analysed (suicides occurring prior to 1994 were excluded due to the high percentage of cases that had no information about the deceased's ethnicity). Over this time period, 425 Indigenous cases (351 males and 74 females) and 6,288 non-Indigenous suicide cases (4,923 males and 1,305 females) were collected. Indigenous people accounted for 6.4% of all deaths by suicide in Queensland.

The main findings were as follows:

- From 1990–2006, the rates of suicide in Queensland remained rather stable, at around 15 per 100,000.
- Before 1998, when recording of ethnicity became compulsory in death certificates, suicide was grossly under-reported among the Queensland Indigenous population. This was particularly marked in the years 1990–1993, before the introduction of the psychological autopsy questionnaire.
- During 1994–2006, the rates of suicide in Indigenous people were on average 25.7 per 100,000, which was about 70% higher than in non-Indigenous Australians. The difference was more pronounced in males (a 1.8-times higher rate in Indigenous than non-Indigenous) than in females (a 1.3-times higher rate).
- In Indigenous children younger than 15 years, the suicide rate was more than 7 times higher than their non-Indigenous peers.
- In the age group 15–24 years, Indigenous youth had a 3.6 times higher suicide rate than non-Indigenous youth; the rate was 2.4 times higher between 25 and 34 years of age.
- After the age of 55, there were no cases of female suicide in Indigenous people.
- Hanging was used in 86.6% of all suicides in Indigenous people, compared with 36.3% in non-Indigenous suicides.
- The majority of Indigenous suicides (51.7%) occurred among single or never-married persons, a significantly higher proportion than that among the non-Indigenous (31.5%). On the other hand, almost twice as many non-Indigenous suicide cases were separated or divorced at the time of death than Indigenous suicide cases.

- Almost half the Indigenous suicide cases were unemployed at the time of their death, which was about twice as many as in non-Indigenous cases.
- Based on results from the QSR, Indigenous and non-Indigenous Australians share a similar burden of disease for mental illnesses. Generally, these were equally present in the suicide cases of both populations, with alcohol and substance abuse (cannabis) being significantly more prevalent in Indigenous suicide cases.
- Unipolar depression was nearly 4 times less present in Indigenous suicide cases than in non-Indigenous suicide cases. Alone, this explained the overall lower prevalence of mental illnesses among Indigenous suicides cases.
- On average, 23.3% of Indigenous suicide cases had received treatment from a mental health professional in their lifetime (compared to 42.3% of non-Indigenous suicide cases), and 10.1% in the last 3 months prior to suicide (compared to 25.6% of non-Indigenous suicide cases).
- The most frequent source of mental health care for Indigenous people was represented by hospitalisation in psychiatric wards, reported in almost half the Indigenous suicide cases. In contrast, non-Indigenous people were more likely to have received treatment from a general practitioner than Indigenous people. Similar proportions of Indigenous and non-Indigenous cases received treatment as out-patients or from other services, such as counselling groups or telephone help-lines.
- Similar percentages of Indigenous and non-Indigenous suicide cases communicated suicidal intent and had histories of previous suicidal behaviour. Suicide notes were left much more rarely by Indigenous people than by other Australians.
- The role of physical illnesses in Indigenous suicide seems less relevant than in the suicide cases of non-Indigenous Australians.
- Two-thirds of the entire sample (both Indigenous and non-Indigenous cases) reported being exposed to at least one major stressful life event, with no significant differences observed across age or gender.
- There were several commonalities among the types of life events (e.g., relationship issues), but also appreciable differences. In Indigenous suicide cases, there was a much larger representation of: (1) exposure to suicide in the social group; (2) bereavements; (3) conflict situations in the immediate social group; and, (4) past or pending legal issues.

Suicide in Indigenous Populations of Queensland

- Among non-Indigenous Australians, factors of discrete relevance were: (1) affective mental illnesses; (2) medical conditions; (3) school/work-related problems; and, (4) financial issues.

These results highlight certain unique characteristics and risk factors for suicide in Indigenous communities, and call for the development of suitably tailored prevention programs.

1 | Introduction

... they may appear to some to be the most wretched people upon Earth, but in reality they are far more happier than we Europeans ...

(James Cook, *Journal* 1768–1771)

Throughout the world, Indigenous people are reported to die by suicide at a consistently higher rate than non-Indigenous people (Cantor & Neulinger, 2000; Chandler & Lalonde, 1998; Chandler et al., 2003; Leenaars, 2006; Procter, 2005; Trovato, 2001). This also seems to be the case for Indigenous Australians (Aboriginal and Torres Strait Islander people), where the dimension of the suicide phenomenon was virtually unknown until the 1960s (Cantor & Neulinger, 2000; Elliott-Farrelly, 2005a; Leenaars, 2006; Tatz, 2004). In the 1980s, Indigenous suicide began to be perceived as a public problem, and rates have been reported to be continuously rising (Adams & Danks, 2007; Elliott-Farrelly, 2004, 2005a; Hunter, 1996; 2007; Hunter & Milroy, 2006; Tatz, 2004). It should be noted that the statistics cited in support of these increasing rates often neglect to display trends over time or include age-specific rates (e.g., Adams & Danks, 2007); combine suicide deaths into broader categories of general mortality trends (e.g., Ring & Firman, 1998); only display data for set geographical areas (e.g., Capp et al., 2001); or do not control for possible false inflation of the data, which may indicate improved data collection systems (Andreasyan et al., 2007; Pink & Allbon, 2008; Ring & Firman, 1998). The most comprehensive suicide mortality trends (1975–1997) remain those provided by Hunter et al. (1999), albeit with statistics that are over a decade old. While it is possible that suicide rates are rising, it is difficult to form an accurate assessment of the severity or characteristics of Indigenous suicide in the absence of an updated and reliable dataset (Andreasyan et al., 2007; Pink & Allbon, 2008; Ring & Firman, 1998).

Uncertainties about the ‘quantity’ and ‘quality’ of suicide mortality data concerning Indigenous Australians make it difficult to develop, implement or evaluate prevention programs. This renders the eventual success of all efforts impossible to ascertain. Consequently, the current report was guided by the recognised need for: (1) a detailed exploration of the incidence and characteristics of Indigenous suicidal behaviours; and (2) a credible baseline for Indigenous suicide prevention approaches, supported by a sound knowledge of suicide risk factors.

This report presents an analysis of data from the Queensland Suicide Register (QSR) in order to profile the current incidence and characteristics of suicide among the Queensland Indigenous population, compared to the characteristics of suicide of other ethnicities for the period 1994–2006.

1.1 Indigenous populations in Queensland

Indigenous Australians are all persons of Aboriginal and/or Torres Strait Islander origin who identify themselves as an Aboriginal and/or Torres Strait Islander and are accepted as such by the community in which they live (*Commonwealth of Australia v. Tasmania — The Tasmanian Dam Case* [1983]). While there is great diversity among different Indigenous communities in Australia, each with unique cultures, customs and languages, for the purposes of this report we refer to them as Indigenous Australians or Indigenous populations to describe these groups combined.

The 1971 Census was the first to include Indigenous Australians in the population count. Since then, there has been a recognised increase in people identifying themselves as of Aboriginal and/or Torres Strait Islander ethnicity. Much of the growth in the Indigenous population can be explained by natural increase (births minus deaths) and other non-demographic factors, such as improvements in Census-collection methods and people identified as being of Indigenous origin for the first time in the Census (ABS, 2008a).

In 2006, the estimated resident population of Indigenous Australians was 517,174 or 2.5% of the total population. When compared to 2001, this showed an increase of 13% (ABS, 2008a). In Queensland, there was an increase of 16%. In terms of absolute numbers, New South Wales (148,178) and Queensland (146,429) had the largest Indigenous populations, followed by Western Australia (77,928) and the Northern Territory (66,582) (ABS, 2008a).

Among the 517,174 people identified as Indigenous in the estimated resident population calculations, 463,874 (89.7%) were of Aboriginal origin; 33,112 (6.4%) were of Torres Strait Islander origin; and 20,188 (3.9%) identified themselves as both Aboriginal and Torres Strait Islander (ABS, 2008a) (see Table 1).

Almost one-third of the Indigenous population in 2006 resided in Major Cities, 21% lived in Inner Regional areas, 22% in Outer Regional areas, 10% in Remote areas and 16% in Very Remote areas. In the non-Indigenous population, there was a much higher concentration of residency in Major Cities (69%), with less than 2% in Remote and Very Remote areas (ABS, 2008a).

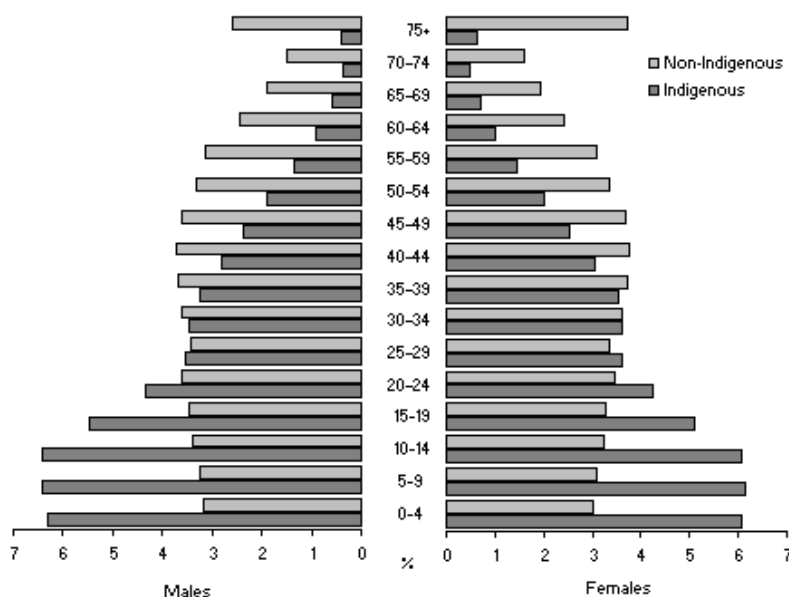
TABLE 1

Estimated Resident Population in Queensland and Australia, 2006

	Queensland	Australia
Population	146,429	517,174
Proportion of total Indigenous population	28.3%	100.0%
Proportion of state/nation population	3.6%	2.5%
Inter-censuses change 2001–2006	16.3%	12.8%

Source: *Population Characteristics, Aboriginal and Torres Strait Islander Australians, 2006* (ABS, 2008a).

Compared to the non-Indigenous population, the Australian Indigenous population has a significantly different age structure, with a median age of 21 years, compared to 37 years in the non-Indigenous population. Further, the Indigenous population has a larger proportion of individuals younger than 15 years of age; children comprise 37% of the Indigenous population, which is more than twice the percentage of non-Indigenous children in Australia (19%). In contrast, the non-Indigenous population is older; 13% of the population is aged 65 years and over, compared to 3% of the Indigenous population in the same age group (ABS, 2008a) (see Figure 1).

**FIGURE 1**

Age distribution in estimated resident population by age, Indigenous and non-Indigenous populations, Australia, 2006.

Source: *Population Characteristics, Aboriginal and Torres Strait Islander Australians, 2006* (ABS, 2008a).

1.2 Current knowledge on Indigenous suicide

Although understanding of Australian Indigenous suicidality is growing, there is still a relative paucity of empirical information, the outcome of which is three-fold. First, significant flaws in data collection processes compromise the construction of an accurate baseline for Indigenous suicide mortality. Second, while it is clear that Indigenous suicide is a particularly complex issue, the identification of suicide risk factors and causal pathways is ambiguous and often based more on anecdotal reports than empirical evidence. Third, a lack of rigorous and objectively evaluated programs means that the effectiveness of existing prevention interventions is uncertain.

In order to review the available literature on Indigenous suicidal behaviours, an electronic search was conducted using Medline, Proquest and Psych-Info databases for the period 1966 to March 2009. Additionally, a hand-search was made of relevant books and governmental reports. Search terms included: 'suicide', 'suicidal' and 'self-harm' coupled with 'Indigenous', 'Aboriginal', and 'Aborigine'. Articles written in languages other than English were excluded. A total of 123 articles, reports and books were identified; of these 86, (10 reports, 8 books and 68 peer-reviewed journals) were selected with common consensus by two researchers of the team for inclusion.

1.2.1 Data collection issues

The centrality of data collection processes to the investigation of Indigenous suicide and the subsequent formulation of effective evidence-based prevention strategies cannot be overstated (Hunter et al., 2001). It has been estimated that true suicide mortality figures may be three times higher than current approximations (Elliott-Farrelly, 2004; Tatz, 2001). Reasons for this include inaccurate classification systems (e.g., exclusion of equivocal death, and misclassification of suicides on compassionate grounds to avoid community/familial distress and stigma), and divergent and incomplete data collection processes (e.g., inconsistent coding methods between states and territories, and only partial geographical coverage) (Cantor & Neulinger, 2000; Elliott-Farrelly, 2004; 2005a; Hanssens, 2007a; Kosky & Dundas, 2000; Tatz, 2001; 2004; Thomson & Krom, 2007). Prior to 1971, Indigenous suicide data were not formally recorded; a practice that continues in Victoria and Tasmania (Elliott-Farrelly, 2005a; Pink & Allbon, 2008). Queensland has attempted to rectify this reporting bias in two ways. First, in 1990, the most comprehensive database of suicides (including those of Indigenous ethnicity) in Australia was established, called the Queensland Suicide Register (QSR). Second, in 1998, recording ethnicity in death notification processes became mandatory (De Leo et al., 2006). Prior to

this, identification of Indigenous suicide cases was based on informant notification or coronial discretion (Andreasyan et al., 2007; De Leo et al., 2006; Pink & Allbon, 2008). Furthermore, even when accurate data are available, they are infrequently accessed by Indigenous communities, which makes their active contributions in the designing of suicide prevention strategies difficult (Hunter et al., 1999). A final issue to consider, and one which is problematic to address, is the transient lifestyle of many inhabitants of Indigenous communities, which poses significant difficulties in determining the exact circumstances, or coronial jurisdiction, in which a death occurred (Hanssens, 2007a).

1.2.2 Risk factors

Investigation of Indigenous suicide has been a relatively neglected area, with research only undertaken within the last 20 years (Procter, 2005). The focus of much of this research has been the identification of risk factors. Numerous studies have confirmed that, as in non-Indigenous suicide, Indigenous suicide is influenced both by non-modifiable factors, such as age and ethnicity, and other modifiable factors, such as stressful life events, including domestic violence (McKnight, 2002), assault (Macintosh & Pearson, 2003), physical illness (McKnight, 2002; Shah & Johnson, 1992), relationship breakdown, child abuse, financial/legal issues, unemployment (Hanssens, 2007b; Hunter & Harvey, 2002; Kosky & Dundas, 2000; McKnight, 2002), grief (Robinson, 1990), substance abuse (Clough et al., 2006; Hanssens, 2007a; Kahn et al., 1990; McKnight, 2002; Tatz, 2001), and previous suicidal behaviours (Davidson, 2003). Further, recent research has suggested additional factors that may increase the risk for impulsive and/or violent behaviours; these factors tend to affect Indigenous populations at higher rates than Australians of other ethnic backgrounds. These particularly pertain to sustained levels of cortisol, exposure to alcohol during pregnancy, and 'second-generation' trauma, which can impact on the parent's caretaking capabilities of their child and can cause developmental delays and higher vulnerability to physical and mental illnesses (Hunter & Milroy, 2006).

To date, there has been very limited research devoted to the role of resiliency in protecting the Indigenous population from suicide; however, it appears that protective factors observed in the non-Indigenous population, such as marriage and parenthood, have little buffering effect in the Australian Indigenous population (Hanssens, 2007a). In light of the well-documented importance of social bonds to Indigenous wellbeing (Hunter & Milroy, 2006; McKnight, 2002; Tatz, 2001; Tsey et al., 2002), it is reasonable to assume that these ties would provide some protection from suicidal behaviours, as has been seen in Canada (Chandler & Lalonde, 1998). However, this effect has not been documented in the Australian Indigenous population.

While it is beyond the scope of this report to provide a comprehensive analysis of the complexities inherent in Indigenous suicide, the following sections consider risk factors that have been consistently identified in the literature as especially influential: age and gender, mental illnesses, alcohol abuse, the historical context, living conditions, and suicide imitation (see Table 2).

1.2.2.1 Gender and age

As in the general Australian population, male gender is also correlated with a consistently higher risk of suicide in the Indigenous population. Further, Indigenous suicides are reportedly associated with a younger age (< 35 years) than in the non-Indigenous population (De Leo et al., 2006; Elliott-Farrelly, 2004; 2005a; Helps & Harrison, 2004; Hunter et al., 1999; McCormack et al., 2001; McCoy, 2007; Tatz, 2004). A partial explanation for this difference is that the Indigenous population has a much younger age structure than the non-Indigenous population (see Figure 1). According to Tatz (2004), of particular concern has been the recent ominous increase in child suicides in New South Wales, with children as young as 8 years old counted among the 15 per 100,000 Indigenous suicide deaths in the 5–14 years age group.

1.2.2.2 Mental illness

It may be argued that much of the current literature is based on the assumption that non-Indigenous suicide risk factors are translatable to Indigenous populations (Elliott-Farrelly, 2005a). Despite inconclusive evidence of the prevalence of diagnosable mental illnesses in Indigenous populations, few studies have examined their role in suicides of the Australian Indigenous people (Butler et al., 2007; Elliott-Farrelly, 2005a; Measey et al., 2006; Tatz, 2001; 2004). Parker and Ben-Tovim (2002) found that only one Indigenous suicide case had been formally diagnosed with a mental illness prior to death, compared to 35 non-Indigenous suicide cases. This suggests that there may be lower than currently estimated rates of mental illness in Indigenous communities (Tatz, 2001). Conversely, from other studies, it would appear that mental illness may be greatly undetected, partly due to limited access to mental health services. For example, higher rates of mental illness were found in 64% of incarcerated Indigenous women compared to 52% of non-Indigenous women (Butler et al., 2007; Kariminia et al., 2007). From 2005 to 2007, Indigenous Australians had a hospital separation rate for mental illnesses and behavioural problems that was 1.8 times the rate of non-Indigenous Australians (AIHW, 2009). The majority of these hospitalisations were attributed to mental illnesses due to psychoactive substance use. Further, Indigenous people were hospitalised for self-harm at more than twice the rate of other Australians, with Indigenous males hospitalised at 2.9 times the rate of other Australians (AIHW, 2009).

TABLE 2
Suicide Risk Factors in Indigenous People and General Population

Risk factors	Indigenous people	General population*
Age	< 35 years of age (De Leo et al., 2006)	25–34, 75+ years of age (De Leo et al., 2006)
Male/female ratio	3.0:1 (De Leo et al., 2006)	3.8:1 (De Leo et al., 2006)
Low socio-economic status/poverty	Reported as particularly frequent (Ellis, 2007; Parker & Ben-Tovim, 2002)	Increases up to 5 times the risk of suicide (Stack, 2000)
Unemployment	72% (Hanssens, 2007a)	Increases up to 4 times the risk of suicide (Horton, 2006)
Single status	No clear evidence (Hanssens, 2007a)	Up to 60% (De Leo & Spathonis, 2004)
Relationship breakdown	Reported as frequent (Hanssens, 2007b; Parker & Ben-Tovim, 2002)	46% in non-fatal suicidal behaviour (Lohr & Schmidtke, 2004); 30% in fatal suicidal behaviour (Wyder et al., 2009)
Same-sex attraction	No available evidence	Increases up to 7 times frequency of non-fatal suicidal behaviour. No evidence for fatal suicidal behaviour (Horton, 2006).
Bereavement	Reported as frequent (Hanssens, 2007b)	13–44% of non-fatal suicidal behaviour (De Leo & Spathonis, 2004)
Suicidal behaviour in the social group	Reported as particularly frequent (Hanssens, 2007b; Hunter, 2007; Parker & Ben-Tovim, 2002)	54% in non-fatal suicidal behaviour (Schmidtke et al., 2004) 59.8% in fatal suicidal behaviour (De Leo & Heller, 2008)
Prior non-fatal suicidal behaviour	Reported as frequent (Davidson, 2003; Parker & Ben-Tovim, 2002)	Up to 44% (Kerkhof & Arensman, 2004)
Hanging as suicide method	89.2% (De Leo et al., 2006)	41.2% (De Leo et al., 2006)
Mental illness	Present, but unclearly determined (Butler et al., 2007; Elliott-Farrelly, 2005a; Kariminia et al., 2007)	<ul style="list-style-type: none"> • Schizophrenia: 7% (De Leo & Klieve, 2007) • Major depression: 60% (Fawcett, 2006) • Personality disorders: 3–9% (Oquendo et al., 2006)
Substance abuse: <ul style="list-style-type: none"> • Alcohol • Other 	Up to 77% (Hanssens, 2007a) Up to 10 times (Clough et al., 2006)	19–47% (Neulinger & De Leo, 2001) Up to 30% (Keeley et al., 2004))
Legal troubles	No clear evidence (Kariminia et al., 2007)	5–37% (Neulinger & De Leo, 2001)
Victim of sexual abuse	Reported as frequent (Hanssens, 2007a)	11–19% of non-fatal suicidal behaviour (Salandar-Renberg et al., 2004)
Loss of traditional culture	Reported as frequent (Hunter & Milroy, 2006)	No clear evidence
Social marginalisation	Reported as frequent (Hunter & Milroy, 2006)	No clear evidence

Note: * Inclusive of Indigenous people

Nonetheless, research suggests that, contrary to evidence derived from studies on suicide in non-Indigenous populations, mental illnesses may not be the best predictor of suicide in the Australian Indigenous population (Adams & Danks, 2007; Brown, 2001; Elliott-Farrelly, 2005a). This is particularly evident when considering the difficulties in establishing uniform definitions for mental illnesses relevant to the Indigenous experience (Adams & Danks, 2007; Brown, 2001; Elliott-Farrelly, 2005a; Tatz, 2001). Various attempts have been made with the aim of composing a culturally relevant definition of mental illness in Indigenous people; however, little is currently known about Indigenous conceptualisations of mental health (Brown, 2001). Further, culturally inappropriate assessment tools make ascertaining incidence rates difficult (Esler et al., 2007). Butler and associates (2007) hypothesised that Indigenous Australians may have a unique understanding of mental illness in terms of presentation of symptoms or responses to western treatments. Subsequently, the criteria set by the Diagnostic Statistical Manual for Mental Disorders — IV Edition (DSM-IV) may have little relevance to Indigenous concepts of mental health (Brown, 2001). Compounding these concerns, anecdotal evidence documented by Hunter et al. (1999) indicated that spirituality, which may include voices from deceased ancestors inciting an individual to suicide, can often be mistaken for mental illness. The consequence of such discord between Western and Indigenous interpretations of mental illness can mean that stigma can be attached to the recognition and treatment of mental illnesses, which may heighten latent suicide risk (Brown, 2001; Westerman, 2004). A further complication is the insufficient health care facilities in rural and remote areas (Butler et al., 2007; Hunter, 2007; Kosky & Dundas, 2000). In fact, Sawyer et al. (2000) reported that 80% of Indigenous people living in rural areas do not have mental health services located within 25 km of their dwelling, and only 35% have access to a permanent doctor.

1.2.2.3 Alcohol use

The hypothesised connection between high rates of substance abuse and Indigenous suicide can be traced back to the introduction of alcohol canteens in the 1970s. Some researchers have suggested that suicide in Aboriginal communities came into existence concurrently with the availability of alcohol and its subsequent effect on their culture (Elliott-Farrelly, 2004; Hunter, 1996; Hunter et al., 2001; Laugharne, 1999; Lee et al., 2008; McKnight, 2002; Tatz, 2001). A recent Northern Territory study estimated that alcohol was directly implicated in up to 77% of Indigenous suicide deaths (Hanssens, 2007a). Current research often lacks depth in explaining the mediating pathways by which alcohol abuse can lead to suicide; however, alcohol intoxication notoriously affects cognitive performances (Monti et al, 2005). In particular, alcohol lowers an individual's capacity to control powerful feelings, with consequences such as poor self-control and impaired decision-making (Aguirre & Watts, 2010; Laliberte' & Tousignant, 2009).

Hunter (1996), and more recently Hanssens (2007a) and Fergusson et al. (2009), suggested that substance abuse exacerbates known suicide risk factors such as depression, violence, child abuse and antisocial behaviour, thereby weakening an individual's resilience and indirectly precipitating suicide.

1.2.2.4 Living conditions

Another suggested denominator in Indigenous suicide highlighted by numerous sources is the substandard living conditions experienced by many Australian Indigenous people (Ellis, 2007; Hunter & Milroy, 2006; Shah & Johnson, 1992). Undeniably, Australian Indigenous communities have to cope with substantially more disadvantages than the general Australian population in terms of health, education, employment, and poverty than the general Australian population (Blair et al., 2005; Hunter & Milroy, 2006; Pink & Allbon, 2008; Shah & Johnson, 1992). For example, 16.6% of housing within Indigenous communities is overcrowded, compared to 2.8% of non-Indigenous housing (Seebeck et al., 2007). These houses often lack basic amenities, such as sewerage facilities or electricity (Ring & Brown, 2002). Indigenous individuals also retain a higher overall mortality rate than the general population, with up to 16% dying from unnatural causes, including accidents, homicide and suicide, compared to 6% of non-Indigenous individuals (Pink & Allbon, 2008). Additionally, life expectancy at birth is estimated to be significantly lower for the Indigenous population. Average life spans for Indigenous Australians are estimated to be 17 years shorter than for non-Indigenous Australians (ABS, 2008b), with 75% of Indigenous males and 65% of Indigenous females dying before the age of 65 years (compared to 26% and 16% for non-Indigenous males and females, respectively; Cooke et al., 2007). In 2009, after applying significant changes in the calculation of life expectancies at birth, ABS reported that in 2005–2007 the life expectancy for Indigenous men was 11.5 years shorter than for non-Indigenous men, and 9.7 years shorter for Indigenous women than for non-Indigenous women (ABS, 2009b). Indigenous infant mortality still represents a major problem, with rates three times higher than non-Indigenous infant mortality (Pink & Allbon, 2008).

Chronic lifestyle diseases are also prevalent in Indigenous communities (Hunter, 2003; Ring & O'Brien, 2007; Silburn et al., 2007); rates of preventable illnesses, such as diabetes, are consistently higher than in the general population (Kutcher & Szumilas, 2008; Silburn et al., 2007). This vulnerability may be exacerbated by poorer access to nutritious food (Shah & Johnson, 1992).

Education attainment levels are also lower, which is partly explained by low rates of school compliance (Cooke et al., 2007; Linacre, 2002). This low level of basic education results in merely 22.7% of Indigenous people completing Year 12, compared to 38.6% of non-Indigenous people (Seebeck et al., 2007). This has

serious impact on their future employment opportunities, with Indigenous unemployment rates significantly higher than non-Indigenous unemployment rates (males: 21.5% vs 8.5%; females: 18.1% vs 7.3%) (Seebeck et al., 2007), and over half the Indigenous population being dependent on government pensions or benefits (Department of Communities, 2006). How exactly these environmental conditions may lead to suicide is still unknown; however, as Clarke et al. suggest (2008), it is logical to assume that substandard living conditions may have a negative impact on the psychological health of Indigenous communities, encouraging substance abuse and suicidal behaviours.

1.2.2.5 Cultural/historical context

There is reason to believe that the risk factors influential to non-Indigenous suicide (such as mental illnesses and alcoholism) also have a role in the development of Indigenous suicidal behaviours. However, the literature suggests that there may be an additional subset of risk factors unique to Indigenous populations (Elliott-Farrelly, 2004; Hanssens, 2007a; Parker & Ben-Tovim, 2002).

At the core of most sociological explanations for the high rates of suicide in the Australian Indigenous population is the historical dispossession of land and consequent marginalisation and exclusion of Indigenous Australians from mainstream society (Hunter & Milroy, 2006; Hunter, 2001; 2007; Tatz, 2001). Until the 1970s, Indigenous Australians were subject to restrictions on travel, education, employment, living and marriage arrangements, and the forced removal of children to missions, orphanages and foster homes (Hunter & Milroy, 2006; Hunter, 2007; McKnight, 2002; Rowse, 1993). Even in 2002, Indigenous children in Queensland were almost five times more likely to be placed in foster care than non-Indigenous children, while 8% of Indigenous people over the age of 15 reported having been removed from their birth family (Linacre, 2002). Undeniably, the inequalities experienced by Indigenous people have had a devastating effect on their social, spiritual and cultural wellbeing. National recognition of Aboriginals as the first Australian inhabitants, and the reconciliation movement, began with the 1967 referendum, which granted Indigenous Australians citizenship and the right to vote; both rights from which Aboriginal Australians had been historically excluded (Hunter, 2007). This decision was followed by the High Court Mabo verdict in 1992 that formally recognised Indigenous cultural ownership of the land and granted Indigenous communities legal rights to land where 'continuous usage' of the land could be proven (Rowse, 1993). Further, in 1997 the Human Rights and Equal Opportunity Commission report, *Bringing Them Home: Report of the National Inquiry Into the Separation of Aboriginal and Torres Strait Islander Children From Their Families*, recognised the injustices inherent in the forced removal of the

Indigenous children — the Stolen Generations (Human Rights and Equal Opportunity Commission, 1997; Hunter, 2002). Finally, on 13 February 2008, Prime Minister Kevin Rudd issued an unprecedented public apology on behalf of the Australian population for the oppression suffered by Australia's Indigenous people (Welch, 2008). This was an attempt to construct a basis for mutual understanding and tolerance between Indigenous and non-Indigenous Australians.

The historical marginalisation of Indigenous Australians has resulted in their disconnection from land, culture, religion, tradition and kinship groups (Folds, 1987; Hocking, 2002; Petchkovsky et al., 2004; Smith, 1999). This has led researchers to question whether Indigenous suicidal behaviours are more related to hopelessness, cultural disconnectedness and grief than specific risk factors, such as mental illness (Hunter et al., 2001; Tatz, 2001). However, how the historical experiences of the Indigenous people contribute to suicidal behaviour still remains undetermined.

1.2.2.6 Imitation of suicidal behaviour

Another characteristic that appears particularly present in the Indigenous population, is the imitation of suicidal behaviour. Several authors have noticed the special frequency with which a single suicide death acts as a catalyst for further suicides within a family or community, often in the form of 'clusters' (Elliott-Farrelly, 2004; Hanssens, 2007a; Parker & Ben-Tovim, 2002). Reasons for this phenomenon await explanation; however, Hanssens (2007a) noted that Indigenous suicides in general, and suicide clusters in particular, are characterised by the same choice of method and are often associated with geographical isolation and/or natural disasters, such as the 1998 Katherine floods in the Northern Territory. Other authors (Hunter et al., 2001; Kosky & Dundas, 2000; Tatz, 2001) have examined the cultural meanings behind hanging and suggested that the choice of this specific means relates to colonial oppression, racism, and the traditional use of hanging as a method of capital punishment. In this way, it has been suggested that suicide might assume the meaning of a political protest, expressing both anger at historical injustices and a reaction to racism and intolerance (Wilson, 1982). Alternatively, it can be argued that the choice of suicide method may be more reflective of availability of means rather than any symbolic connotation, especially considering that hanging is currently the most common suicide method in the general population (De Leo et al., 2006; Hanssens, 2007a; Tatz, 2001). Other mechanisms, implied to increase the risk of suicide imitation, include: desensitisation of young people towards death and suicide (Farrelly, 2008; McKnight, 2002), the visibility of suicides occurring in the communities (Hanssens, 2007a; Hunter et al., 1999), and/or communication about these deaths via media or word of mouth (Hanssens, 2007a; 2007b; Hunter et al., 2001; Parker & Ben-Tovim, 2002).

1.2.3 Suicide prevention programs

In addressing the issue of suicide, Australia has seemingly been less prompt than other developed nations in terms of recognising and responding to the unique problems and needs of the Indigenous population (Hunter, 2003; 2007; Procter, 2005). This may be partially a result of the historical ‘invisibility’ of Indigenous people in mainstream Australian society (Hunter & Milroy, 2006), and their limited, although recently increasing, political and social influence (Shah & Johnson, 1992). Nevertheless, a variety of suicide prevention strategies have been developed over the last two decades (e.g., McCormack et al., 2001). These have been mainly informed by international research (e.g., Chandler et al., 2003), and have typically operated from within western stress-vulnerability treatment frameworks (Adams & Danks, 2007). While having evolved over time to more comprehensively accommodate the unique Indigenous experience, these initiatives are still often culturally inappropriate, unsustainable or beset by operational issues (Westerman, 2004). For example, programs in remote areas are often unable to recruit the necessary skilled professionals (Tsey, 2000). Due to the delivery of unsuitable strategies and/or the community stigma associated with mental illness, prevention initiatives often fail to engage those at the highest risk of suicide, in particular young males (Tsey et al., 2003, 2004). In an examination of a men’s group intervention, Tsey et al. (2003, 2004) concluded that the potential effectiveness of the strategy was compromised by a lack of recruitment, which was found to directly relate to community stigma.

Indigenous people have been identified as one of the population priority groups in *Reducing Suicide: The Queensland Government Suicide Prevention Strategy 2003–2008* (Queensland Government, 2003). The Queensland Government Suicide Prevention Strategy provided a comprehensive and whole-of-government approach to suicide prevention, covering a full range of activities including promoting positive mental health and wellbeing, illness prevention and early intervention, through to access to treatment for those at risk. The Queensland Government *Suicide Prevention Action Plan 2010–2015* will provide a blueprint for a whole-of-government approach to suicide prevention across the state. The Queensland Government is currently developing a strategic plan to enhance the cross-sectional response in detecting, responding to and managing suicide risk in the Queensland population through actions at the state and service delivery levels. These actions will complement and align with existing state and national frameworks, strategies, and policies that work to address suicide risk and contribute to suicide prevention, such as the *Fourth National Mental Health Plan 2009–2014* and the *Queensland Plan for Mental Health 2007–2017*.

Indigenous prevention strategies rarely target suicide directly. Instead, focus is placed on protective or risk factors, such as social networks, physical and mental health (Queensland Government, 2003), empowerment (incorporating positive identity, strong family relationships, and community connection), and substance abuse (Bishop et al., 2006; Clarke et al., 1999; Department of Communities, 2006). These follow a common belief that enhanced resilience, coping mechanisms and quality of life will ultimately reduce suicide rates (Rees et al., 2004; Tsey et al., 2007). For specific examples of prevention efforts based on stress-vulnerability models refer to Clarke et al. (1999), McCalman et al. (2007), and Tsey et al. (2005a).

The New South Wales Gatekeeper Suicide Prevention Strategy, a suicide-focused program, was implemented in response to rising Indigenous suicide rates between 1989 and 1996. The program centred on helping participants, predominately youth workers, to identify and support individuals at risk through increasing the availability of mental health information/services and creating practical strategies for dealing with suicidal individuals (Capp et al., 2001). Participants who completed the program exhibited some confidence in their newly acquired abilities to identify and assist suicidal individuals; however, the success of the strategy was reduced by people's inability to trust and utilise available mental health services (Deane et al., 2006). In addition, evidence of effective suicide prevention, such as reduced suicide rates and increased mental service utilisation, was lacking (Deane et al., 2006).

A final integral flaw in the current knowledge of Indigenous suicide is the apparent scarcity of rigorous and objective evaluations of prevention strategies (Elliott-Farrelly, 2004). The findings of the few evaluation studies conducted so far (Tsey & Every, 2000; Tsey et al., 2003) remain limited in their clinical applicability to suicide prevention initiatives. This is due to the lack of experienced assessors and/or Indigenous distrust of non-Indigenous assessors. Also, there is limited generalisability of such studies. For example, where programs were implemented in atypical sample populations, or in a single Indigenous community, findings were difficult to incorporate in one 'unified' model due to the great diversity of Indigenous communities (Blair et al., 2005; Deane et al., 2006; Elliott-Farrelly, 2005b; Tsey, 2000; Tsey & Every, 2000).

Furthermore, anecdotal rather than evidence-based considerations appear to inform much of the current knowledge of the effectiveness of suicide prevention strategies (e.g., McCormack et al., 2001; Tsey et al., 2002, 2003, 2007). Evidence, collected in self-report format through questionnaires, discussion forums and surveys, carries with it a potential for bias, which may result in data of questionable validity (Clarke et al., 2008). However, qualitative approaches offer opportunities for more in-depth analyses of the perceptions of Indigenous people on particular

strategies and carries greater cultural appropriateness. An evaluation of the Queensland Family Wellbeing program demonstrated the positive impact of the program on resilience, problem-solving, social skills, and the creation of positive role models through the delivery of parenting and school-based programs (Tsey et al, 2005a, 2005b). Despite the fact that participants reported increased community involvement, problem-solving skills and hope for the future, there was an absence of evidence to support an actual reduction in the suicide rate (Tsey et al., 2003a, 2007). Additionally, the evidence provided for its effectiveness appeared to be weakened due to a self-reported evaluator bias and the assessment measures, prevailing participant feedback (Tsey, 2000; Tsey et al., 2003). A final potential problem in conducting evaluations includes difficulties in measuring, or controlling for, the influence of constructs, such as culture (Taylor, 2008).

Clearly, there is a need for a multifaceted view of Indigenous suicide prevention when implementing or evaluating future strategies. In effect, this may mean facilitating stronger partnerships with Indigenous communities (Brideson & Kanowski, 2004; Elliott-Farrelly, 2004; Esler et al., 2007; Farrelly, 2007; Haswell-Elkins et al., 2005; McCalman et al., 2008; Westerman, 2004; Ypinazar et al., 2007), in particular by applying a participant-observation approach and modifying existing assessment tools, or utilising alternative assessment instruments to incorporate the Indigenous context (e.g., illiteracy and different communication styles, particularly narrative styles; Tatz, 2001; Tsey, 2000; Westerman, 2004). This last point is important to research understanding and subsequent applicability of prevention interventions, as traditional assessment measures may fail to capture the nuances of Indigenous understanding of suicide and mental illnesses (Brown, 2001; Reid, 1982; Reid & Trompf, 1991; Westerman, 2004). Finally, there is a need for longitudinal evaluative studies (Tsey & Every, 2000; Tsey et al., 2003), not only to assess the effectiveness of strategies in relation to suicide reduction, but also to demonstrate that interventions are not detrimental to Indigenous wellbeing (Elliott-Farrelly, 2005b).

In conclusion, research knowledge of Indigenous suicide is still unsatisfactory, partly due to incomplete and unreliable data collection processes (e.g., fragmented use of datasets, reliance on anecdotal evidence and lack of generalisability). Consequently, while the available literature provides evidence that Indigenous suicidality is a multifaceted phenomenon, incorporating unique environmental, historical, cultural and social elements, specific suicide risk factors and associated causal pathways are yet to be precisely identified.

2 | Methodology of the Report

2.1 The Queensland Suicide Register

The Queensland Suicide Register (QSR) is a comprehensive database of suicide mortality data, managed by the Australian Institute for Suicide Research and Prevention (AISRAP) and funded by Queensland Health since 1990. The database gathers information on all Queensland residents who have died by suicide and includes data obtained from the following sources:

- report to the Coroner by police officer in the event of a possible suicide (prior to December 2003: 'Form 4' and post December 2003: 'Form 1'; a psychological autopsy questionnaire was added to these forms in December 1993)
- post-mortem examination report
- toxicology results.

The Queensland Office of the State Coroner provides AISRAP with reports on all possible suicide deaths in Queensland, including information on the underlying causes of death, pre-mortem conditions and circumstantial evidence from the police investigation. The toxicology report provides an analysis of substances present in the circulatory, urinary and digestive systems at the time of death.

Form 1 combines the information previously collected in Form 4 (demographic details and circumstances surrounding the death) with the psychological autopsy questionnaire (data on medical history, current psychological history of the deceased and critical life events). This questionnaire is completed by a police officer during their investigation of a possible suicide case and involves interviews with informants close to the deceased. As the psychological autopsy came into full use at the end of 1993 (and was later revised in 1999, 2001, 2005, and 2007), the information on QSR cases prior to 1994 is relatively limited.

The QSR provides an independent assessment of the incidence of suicide in Queensland. There are other sources of suicide mortality data, in particular Australian Bureau of Statistic (ABS) annual publications on causes of death. The ABS has historically accessed data on suicides through the Registry of Births, Deaths and Marriages, using coronial reports for the final determinations of the cause of death. For a death to be considered a suicide, it must be 'recognised as due to other than natural causes and established by a coronial inquiry that death results from a

deliberate act of the deceased with the intention of taking his or her own life' (ABS, 2007, p. 20). Where there are uncertainties about intent and circumstances surrounding the death, the default category 'accident' is assigned under the ICD-10 requirements (ABS, 2007). In addition, Australian states and territories do not have standardised certification practices, which hinders the uniform compilation of national suicide mortality data. This is further hindered by reluctance in determining suicidal intent by some coroners due to personal opinions about stigmatisation and sympathy for the feelings of family bereaved by such deaths (De Leo, 2009).

It has been recognised that the balance adopted by the ABS between the timeliness of data provision and the accuracy with which it is delivered may impact the quality of data on the incidence of suicide in Australia. In recent years, an increase of open coroners' cases has been observed. Cases that are not finalised and where findings are not available to the ABS in time for publication of causes of death statistics are assigned to the category 'Other ill-defined and unspecified causes of mortality' (R99, International Classification of Diseases, 10th Revision; ABS, 2006a).

In 2003, the ABS commenced using the National Coroners Information System (NCIS), a national internet-based data storage and retrieval system for all Australian coronial cases registered after July 2000, to code coroner certified deaths. However, until the end of 2005, ABS personnel had sought clarification on causes of death by undertaking personal visits to coroners' offices to extract information from court, hospital and police records (ABS, 2009c; Walker et al., 2008). Since 2006, NCIS has been the only source of data used by the ABS for coding coroner-certified deaths. This has resulted in an increase of deaths assigned to unspecified causes of mortality, particularly in New South Wales and Queensland (ABS, 2009c). Under-reporting of suicide mortality, due to delays in coronial processes, was also suggested in a recent study by Elnour and Harrison (2009). In 2007, the ABS introduced some novel approaches, aiming to minimise the effects of delays in coronial finalisations of reported incidences of coroner-certified deaths and to increase specificity of the assigned ICD-10 codes. All death registered after 1 January 2007 are now subject to a revision process, allowing the incorporation of additional information as they become available over time. Revised data will be published two years after the year of occurrence (ABS, 2009c).

Since the establishment of the Queensland Suicide Register in 1990, its reports on suicide mortality in Queensland were initially well aligned with those of the ABS, with fluctuations within the range of 10% (De Leo, 2007; 2009). However, from 2002 onward, the discrepancy between the two systems increased almost exponentially, reaching a difference of almost 200 suicide deaths in 2006 (De Leo,

2009; De Leo et al., 2010). The QSR, like the ABS, uses information obtained through the Office of the State Coroner and cross-checks it with data available on NCIS. Causes of death are scrutinised in the QSR following the Suicide Classification Flow Chart, developed by AISRAP (presented in Appendix A). There has been a continual disparity between the two datasets with regard to the year of death: while the ABS reports the year of registration of death, the QSR enters the case by year in which the death actually occurred. However, this difference in recording practices has always existed and does not explain the important divergences witnessed in recent years.

All suicide cases in the QSR are classified into one of the following categories:

1. beyond reasonable doubt
2. probable
3. possible.

This method of assessment may lead to a lower threshold for classifying a death as a suicide, since it is based on health research criteria rather than on an assessment from coroners' findings, as applied by the ABS (De Leo et al., 2006). An adaptation of the QSR system is currently being used by the Queensland Commission for Children and Young People and Child Guardian in this investigations of child suicide (Commission for Children and Young People and Child Guardian, 2006).

During the period 1990–2006, the QSR collected 9,388 suicide cases. Of those, 7,518 were classified as 'beyond reasonable doubt', 1,385 as 'probable' and 485 as 'possible'. After exclusion of the 'possible' cases, in which the available information was not sufficient to determine suicide as the most likely cause of death (i.e., the death might have been due to other external causes such as accident), the total sample of QSR cases used in this report comprises 8,903 cases. Table 3 shows the number of cases within each categorisation per year. It should be noted that the total number of suicides in Queensland, presented herein, may differ from figures published in some previous reports, such as *Suicide in Queensland 2002–2004* (De Leo et al., 2006). The reason for this is that additional cases (undetected or not yet finalised at the time of printing), or supplementary information about the previously included cases, were obtained since then and subsequently added to the database.

While the proportion of 'possible' cases of suicide has remained quite constant through the years, numbers of 'probable' cases have been increasing. This may reflect changes in the investigative practices and/or attitudes of coroners (in Queensland five coroners are now operating). Further, the flowchart used to

TABLE 3

Number of Suicides by Level of Probability and Year, QSR Databank, 1990–2006

	Beyond reasonable doubt	Probable	Possible	Total
1990	425	9	11	445
1991	424	16	20	460
1992	426	19	11	456
1993	383	19	12	414
1994	483	22	28	533
1995	512	26	13	551
1996	472	98	30	600
1997	460	85	17	562
1998	436	164	22	622
1999	456	71	44	571
2000	513	51	27	591
2001	468	39	27	534
2002	438	145	32	615
2003	382	165	60	607
2004	428	172	65	665
2005	434	135	52	621
2006	378	149	14	541
Total	7,518	1,385	485	9,388

attribute levels of probability to each suicide case (see Appendix A) was altered in 1999. Prior to this year, the presence of information on individuals' past suicide attempts routinely generated a category of a suicide 'beyond reasonable doubt'; after 1999, this was no longer a sufficient prerequisite for the highest level of certainty. This shift offers an additional (partial) justification of the increase in the number of 'probable' suicide cases in recent years. Additionally, several revisions of the psychological autopsy questionnaire over the years have led to variations in the methodical capturing of specific information about the deceased's life. This has been particularly evident when considering precipitating events leading up to suicide, past suicidal behaviours and communications of suicidal intent, which are key data supporting decisions about the level of probability of a particular case being a suicide.

2.2 Recording ethnicity

In the QSR, ethnicity is recorded as: Caucasian, Aboriginal or Torres Strait Islander, Asian, Other, and Unknown. This information does not differentiate between Aboriginal or Torres Strait Islander ethnicity; therefore, for the purposes of this report, the term ‘Indigenous’ is used for people of Aboriginal and/or Torres Strait Islander origin.

Table 4 shows the number of suicide cases of Indigenous, non-Indigenous and unknown ethnicity per year. The non-Indigenous group consists of Caucasian, Asian and other ethnicities, such as African, Middle-Eastern, Latin American, and Maori. Between 1990 and 2006, the majority of suicide cases in Queensland were of persons of non-Indigenous ethnicity (80.4%), while Indigenous people (478 cases) represented 5.4% of all suicides. Considering that Indigenous people represent 3.6% of the entire population of Queensland, these numbers immediately illustrate the high prevalence of suicide deaths among them.

TABLE 4

Number of Suicides of Indigenous, Non-Indigenous and Unknown Ethnicities, Qld, 1990–2006

	Indigenous	Non-Indigenous	Unknown
1990	13 (3.0%)	318 (73.3%)	103 (23.7%)
1991	16 (3.6%)	195 (44.3%)	229 (52.0%)
1992	10 (2.2%)	216 (48.5%)	219 (49.2%)
1993	14 (3.5%)	200 (48.5%)	188 (46.8%)
1994	19 (3.8%)	438 (86.7%)	48 (9.5%)
1995	36 (6.7%)	424 (78.8%)	78 (14.5%)
1996	37 (6.7%)	459 (80.5%)	74 (13.0%)
1997	33 (6.1%)	440 (80.7%)	72 (13.2%)
1998	37 (6.2%)	489 (81.5%)	74 (12.3%)
1999	23 (4.4%)	427 (81.0%)	77 (14.6%)
2000	30 (5.3%)	450 (79.8%)	84 (14.9%)
2001	45 (8.9%)	454 (89.5%)	8 (1.6%)
2002	43 (7.4%)	533 (91.4%)	7 (1.2%)
2003	28 (5.1%)	517 (94.5%)	2 (0.4%)
2004	30 (5.0%)	570 (95.0%)	0 (0.0%)
2005	29 (5.1%)	539 (94.7%)	1 (0.2%)
2006	35 (6.6%)	488 (92.6%)	4 (0.8%)
Total	478 (5.4%)	7,157 (80.4%)	1,268 (14.2%)

The percentage of cases with no indication of the deceased's ethnicity was highest prior to 1994; on average, accounting for 42.9% of all cases. Between 1994 and 2000, on average, 13.1% of cases had unknown ethnicity; after 2001, this percentage dropped to an average of 0.7% (see Table 4).

There are a few possible reasons behind the observed variation in the number of suicide cases with unknown ethnicity over the studied time period. First, ethnicity was not formally required on Queensland police reports until 1998. This means that, prior to this year, the recording of a suicide case as of Indigenous ethnicity was based on individual coroners' willingness to include this information in the post-mortem examination report. Second, since its introduction at the end of 1993, the psychological autopsy questionnaire has provided an additional source of information that has led to an improvement in the recording of ethnicity statuses in subsequent years. However, between 1994 and 2006, there were still several cases where such information was missing (on average 7.4% of cases). This may be due to either the unavailability of the psychological autopsy (see Figure 2) or a lack of knowledge on the part of the informant regarding the deceased's ethnicity. Further, it can also be assumed that this particular question has not been rigorously applied to all investigated cases of possible suicides. Last, as all reportable deaths that occurred in Queensland from 1 January 2001 onward are now available via NCIS, this database was utilised to crosscheck the QSR suicide cases with no reported ethnicity. However, since NCIS does not differentiate between specific ethnicities but only notes whether the persons was of Aboriginal and/or Torres Strait Islander background or not, 404 (4.5% of the total sample) were categorised as 'Unknown ethnicity, but not Indigenous'. This has substantially lowered the percentage of cases with unknown ethnicity in the years between 2001 and 2006 to an average of less than 1%.

2.3 Availability of sources of data

The quality of information gathered in the QSR relies on the availability of different sources of data and the amount of missing data contained in each of them.

Between 1990 and 2006, of the 8,903 suicide cases (the total number of 'beyond reasonable doubt' and 'probable' suicides), post-mortem reports were obtained in 98.8% of deaths. There were similar percentages of availability and consistency over time between cases of Indigenous (98.5%), non-Indigenous (98.7%) and unknown ethnicities (99.5%). Prior to 1998, results from toxicology analyses were very rarely available; in 1998, analyses of urine and/or blood started being systematically performed on suicide victims. Between 1998 and 2006, 80.7% of all suicide cases had toxicology analyses performed.

The psychological autopsy questionnaire was first added to Form 4 in December 1993. Between 1994 and 2006, the availability of this source of data was on average 78.4%. Marked differences were observed in the availability of psychological autopsies between the three groups of ethnicities, the lowest being in cases with no known ethnicity (21.6% of cases). A psychological autopsy was available in 80.8% of Indigenous suicide cases,, and in 84.0% of non-Indigenous suicide cases.

The availability of psychological autopsies and toxicology reports in Indigenous and non-Indigenous suicide cases between 1994 and 2006 is compared in Figure 2. Due to the absence of toxicology reports prior to 1998, their availability is analysed only for the period between 1998 and 2006, when the non-Indigenous group was found to have a significantly higher percentage of these reports than the Indigenous group, 81.5% vs. 72.4%; $\chi^2(1) = 18.65, p < .001$.

2.4 Datasets

In order to compare the trends of suicide rates over the years, as well as provide comparisons of the key characteristics of Indigenous and non-Indigenous suicides, the following datasets were used:

1. Complete dataset, 1990–2006: $n = 8,903$ cases. These cases were used for an overview of suicide in Queensland, 1990–2006.

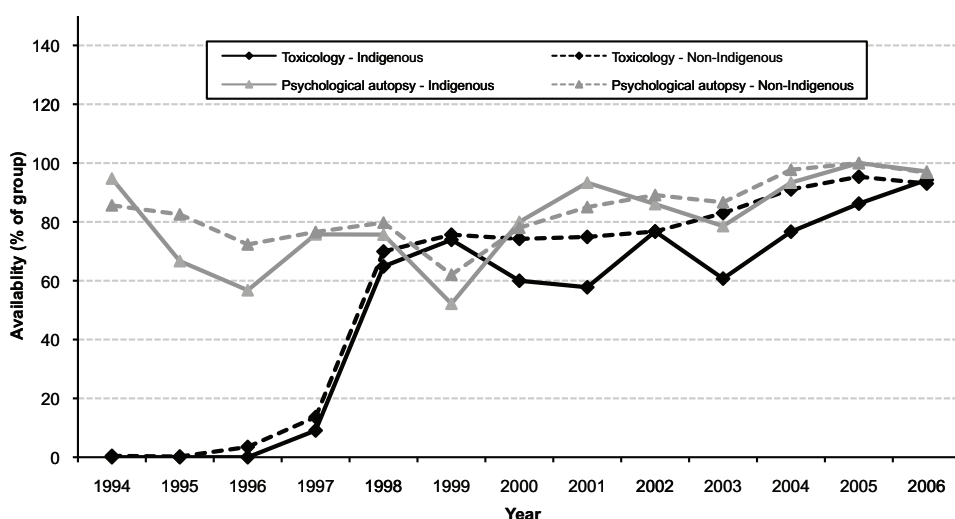


FIGURE 2

Availability of psychological autopsy and toxicology reports, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

2. Dataset 1994–2006: $n = 7,182$ cases. These cases were used to calculate suicide rates comparing the Indigenous and non-Indigenous populations. Cases prior to 1994 were excluded due to the high percentages of cases with unknown ethnicity.

3. Dataset with recorded ethnicity, 1994–2006: $n = 6,653$ cases. These cases were used to compare the characteristics and risk factors of Indigenous and non-Indigenous suicides. Cases with unknown ethnicity ($n = 529$) were excluded.

2.5 Statistical analysis

2.5.1 Suicide rates

In this report, suicide rates are expressed as a number of suicide deaths per 100,000 population per year. Age-standardisation of suicide rates was performed by using the 2001 Australian standard population. The rates adjust for differences in the age distribution of Indigenous and non-Indigenous populations by applying the observed age-specific mortality rates for each population to a standard population.

Population data utilised to calculate suicide rates were obtained from the following sources:

- Population data for total Queensland were obtained from the *Population by Age and Sex, Australian States and Territories June 2006*, published by the ABS (cat. no. 3201.0).
- Population data for the Indigenous population were obtained from *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians*, 1991 to 2021 (ABS, 2009a). This provided estimates of the Queensland Indigenous population between 1990 and 2006.
- Population data for the non-Indigenous population was calculated by subtracting numbers of Indigenous population from the total Queensland population.
- Suicide rates by age groups were calculated using the population distribution of Indigenous people in Queensland in the year 2001.
- Population data for specific marital and employment statuses for all Queensland and Indigenous population were obtained from the ABS website, presenting results from the 2001 *Census of Population and Housing* (2001 Census Tables).

Trends in suicide rates over time were calculated using the general linear model (GLM) regression of log-transformed suicide rates. This calculated the significance of changes in suicide rates in Indigenous and non-Indigenous populations (inclusive of cases with unknown ethnicity) for the period 1994 to 2006.

2.5.2 Characteristics of Indigenous and non-Indigenous suicides

When analysing the characteristics of Indigenous and non-Indigenous suicides, cases with no reported ethnicity were excluded to ensure that the incidence of factors was not confounded by those occurring in cases with unknown ethnicities. A detailed investigation of relevant circumstances surrounding the death (information derived from the psychological autopsies, such as life events, medical conditions, and mental illnesses) has been limited to suicide cases from 1994 to 2006. As stated previously, prior to 1994, there was very limited information collected for each suicide case due to the absence of psychological autopsies which consequently led to the poorer recording of ethnicities. Results in this chapter are presented in a number of forms, including tables, line graphs, pie charts and histograms. Bivariate analyses to compare specific risk factors between the Indigenous and non-Indigenous group were conducted using the chi-square (χ^2) test.

Further, logistic regression was used to model the factors that distinguished between Indigenous and non-Indigenous suicide cases. Variables were entered into the analysis using main effects analysis.

The statistical significance of all performed analyses was set for a level of probability greater than 95%. All statistical analyses were undertaken using SPSS, Version 15, and Stata, Version 10.

2.5.3 Cases with unknown ethnicity

During the period 1990–2006, 14.2% of suicide cases ($n = 1,268$) in the QSR lacked information regarding ethnicity. This is particularly problematic in the period prior to 1994, when almost half of the cases did not include any record of the deceased's ethnicity. Consequently, it is likely that a substantial number of Indigenous cases have been under-reported. To assess the possible level of additional Indigenous cases among those with unknown ethnicity, an imputation process was undertaken using canonical discriminant analysis. A more detailed explanation of this methodological approach is described in section 4.14, 'Suicide cases with unknown ethnicity: Predicted suicide rates of Indigenous population'.

2.6 Methodological limitations

Despite the comprehensiveness and wide range of variables collected in the QSR, several limitations may hinder the accuracy of results based on this dataset and should be considered when reading the report.

First, the most relevant source of information is the psychological autopsy questionnaire included in the Form 1. This is typically completed by a member of the Queensland Police Service immediately, or soon after, the body is found, following an interview with the deceased's next-of-kin. In response to an increasing appreciation of data quality issues by police, this form has undergone significant revisions in recent years. However, some information that might be relevant for better understanding a person's death can go unrecorded if the investigating officer does not systematically enquire about them.

Second, accuracy of data may also be hindered by the informant's lack of knowledge of particular aspects of the deceased's life, such as history of mental illness or precipitating adverse life events. In these circumstances, no data (missing value) is entered in the QSR, generating an underestimation of some values and a possible inflation in the distributions of others. This under-reporting of valuable information may be even further impacted by feelings of shame and stigma connected to suicide, which might lead to the next-of-kin's intentional concealment of some relevant contextual or behavioural aspects of the deceased's life. However, this limitation affects all studies, including research tools such as the psychological autopsy, and it is not possible to determine whether the extent of this concealment was dissimilar in Indigenous and non-Indigenous populations.

Further, the utilisation of psychological autopsy questionnaires may be less culturally appropriate when investigating possible suicides in the Indigenous population, than when dealing with suicides in non-Indigenous Australians. The reasons for this include possible language barriers and the particular attention placed on risk factors most commonly recognised to be associated with suicidal behaviours in non-Indigenous persons that may be irrelevant to Aboriginal and Torres Strait Islander. Other variables analysed in this report that might be particularly impacted by the above-mentioned limitations are: previous suicidal behaviour, communication of suicidal intent, use of alcohol and illicit substances and recent life events, such as the experience of abuse or other traumatic early-life experiences.

Finally, it needs to be acknowledged that, due to the methodological design of this study, the results presented do not allow for a conclusion on the causal nature of associations between the studied risk factors.

3 | Overview of Suicide in Queensland (1990–2006)

Before presenting the results of the analyses of suicides in the Queensland Indigenous population, this section looks at some basic demographic characteristics of all suicides from the QSR during the period 1990–2006. Included in these analyses were 8,903 cases, classified as either ‘beyond reasonable doubt’ or ‘probable’.

3.1 Suicide by age and gender

Of the 8,903 suicide cases, 7,066 (79.4%) were males and 1,837 (20.6%) were females. Figure 3 presents age-standardised suicide rates for males, females and all persons between 1990 and 2006. Over this time period, there were relatively stable average rates of 24.7 suicides per 100,000 for males, 6.3 per 100,000 for females and 15.3 per 100,000 for all persons, with no significant changes in trends observed over time. The male–female gender ratio of suicide rates ranged from the lowest 3.3:1 in 1992 to its peak of 4.8:1 in 1996. On average, the age-standardised suicide rate in males was observed to be 3.9 times higher than in females.

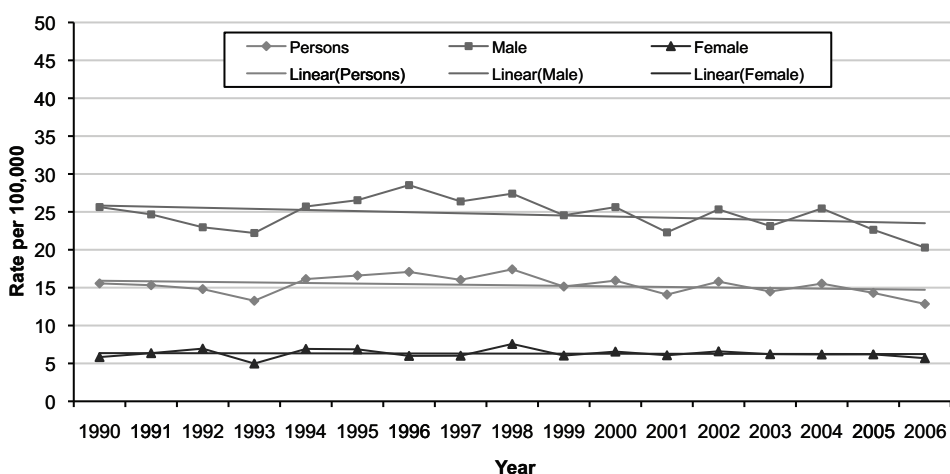


FIGURE 3

Age-standardised suicide rates by year and gender, Qld, 1990–2006.

Figure 4 shows suicide mortality rates by gender and ten-year age groups for the period between 1990 and 2006. For all persons, the highest suicide rates were observed in the 25–34 and 35–44 years age groups (23.3 and 21.6 per 100,000, respectively). There was a slight decrease in suicide rates among people aged between 45 and 64 years. This was followed by another increase in the age groups 75–84 years (18.4 per 100,000) and 85+ years (17.4 per 100,000). Suicide rates among persons older than 75 years were similar to those in the 15–24 year age group (17.9 per 100,000). In females, the highest suicide rates were observed among those aged 35 to 44 years (9.8 per 100,000), followed by age groups 25–34 (8.7 per 100,000) and 45–54 years (7.8 per 100,000). The rates increased again in the 75–84 year age group (7.1 per 100,000). In males, the peak is observed in the 85+ years group (46.6 per 100,000), followed by the age groups 25–34 (37.9 per 100,000) and 35–44 (33.4 per 100,000). The lowest rates were in people aged 5–14 years (persons: 0.7, males: 0.8, and females: 0.5 per 100,000).

The male–female suicide ratios across age groups are shown in Table 5. The highest rate ratio was observed in the age group over 85 years, with male suicide rates being almost 11 times higher than female rates. High rate ratios were also observed in the age groups 15–24, 25–34 and 75–84 years, in which male suicide rates were about 4.5 times higher than female rates. The lowest gender suicide rate ratio was found in the 5–14 year age group (1.6:1); however, this ratio was found not to be significant on the level of probability over 95%, probably due to the low number of suicide deaths in this age group.

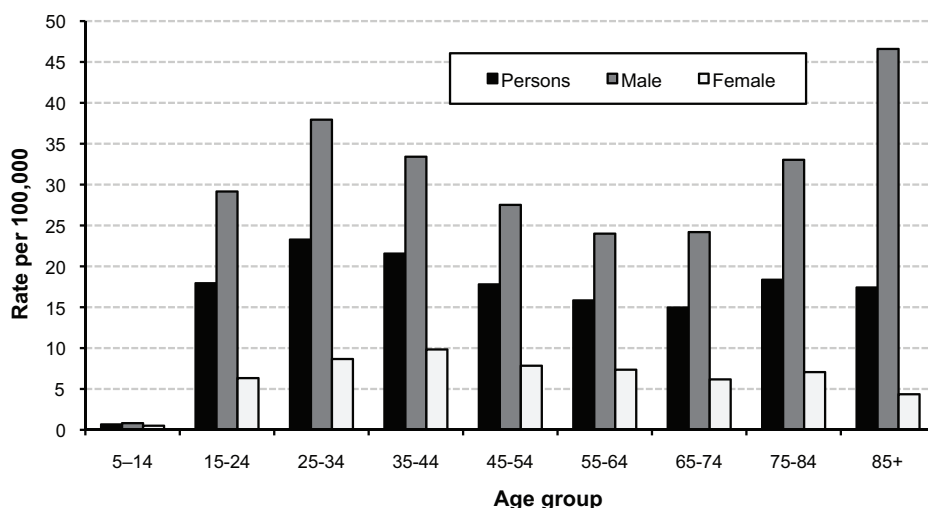


FIGURE 4

Suicide rates by gender and age group, Qld, 1990–2006.

TABLE 5

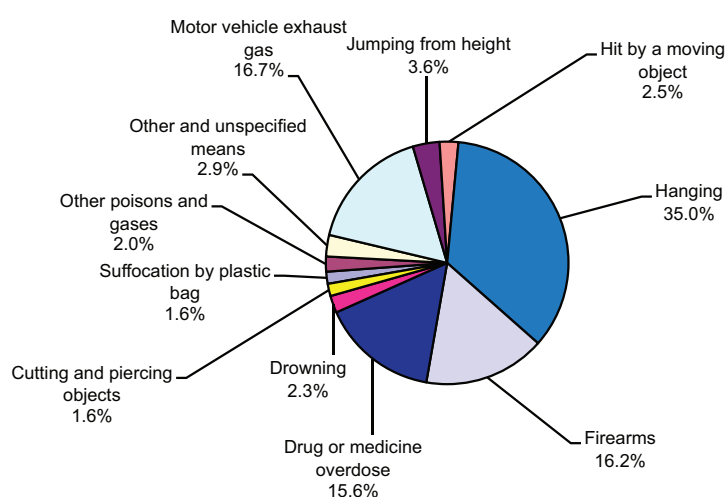
Male-to-Female Suicide Rate Ratio, Qld, 1990–2006

Age group	Male: female rate ratio	95% CI
5–14	1.6	0.9–2.8
15–24	4.6*	4.0–5.2
25–34	4.4*	3.9–4.9
35–44	3.4*	3.1–3.8
45–54	3.5*	3.1–4.0
55–64	3.3*	2.8–3.8
65–74	3.9*	3.2–4.8
75–84	4.7*	3.7–5.9
85+	10.7*	6.3–18.1

Note: * $p < .05$.

3.2 Suicide methods

As seen in Figure 5, the main methods of suicide during the observed time period were hanging (35.0%), motor vehicle exhaust gas/carbon monoxide toxicity (16.7%), firearms (16.2%) and overdoses of drugs or medicines (15.6%). Other methods accounted for a smaller percentage of all suicide deaths, ranging from 3.6% (suicide by jumping from heights) to 1.6% (suicide by cutting and piercing objects).

**FIGURE 5**

Distribution of suicide methods, Qld, 1990–2006.

Marked differences were observed in the percentages of hanging and use of firearms as the means of suicide over the considered time period. The use of firearms declined from 35.9% of cases in 1990 to 10.2% in 2006; in contrast, the prevalence of hanging increased from 17.5% in 1990 to 45.7% in 2006. This shift in suicide methods has been previously described elsewhere (De Leo et al., 2003; Klieve et al., 2009). Comparisons of suicide methods between genders also illustrate significant differences, as shown in Figure 6. The most common methods of suicide in males were hanging (37.4%), firearms (19.3%), and motor vehicle exhaust gas toxicity (17.6%). In females, the majority of suicides occurred due to poisoning by solid or liquid substances (37.6%), hanging (25.8%) and by use of other methods, such as jumping from heights or drowning (18.8%).

3.3 Suicide by ethnicity

Of the 8,903 suicides, 72.9% were of Caucasian ethnicity, 5.4% were Indigenous, 1.4% were Asian, and 1.5% were of other ethnicities (including African, Latin American, Middle-Eastern and Maori; see Figure 7). In 1,268 cases (14.2% of the total sample), no information regarding the deceased's ethnicity was recorded. An additional 4.5% of cases were of unknown ethnicity but, based on information made available through the post-mortem report, the deceased's country of birth or information obtained through The National Coroner Information System, they did not appear to be of Aboriginal or Torres Strait Islander ethnicity.

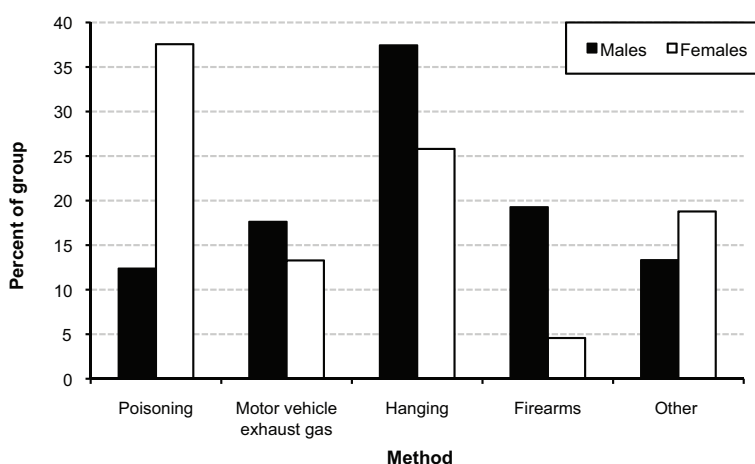


FIGURE 6

Suicide methods by gender, Qld, 1990–2006.

Overview of Suicide in Queensland (1990–2006)

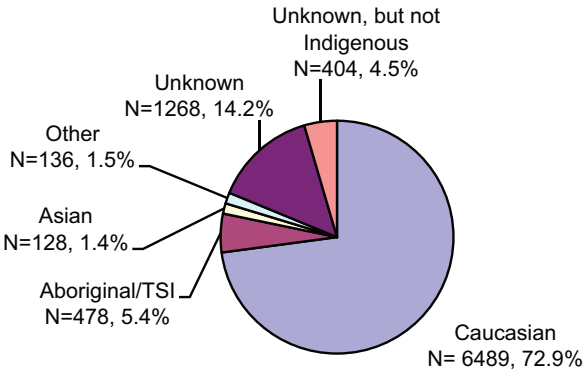


FIGURE 7
Ethnicity of suicide cases, Qld, 1990–2006.

4 | Suicide in the Indigenous Populations of Queensland (1994–2006)

This chapter presents a comparison of the trends and characteristics of suicides in the Indigenous and non-Indigenous populations (comprised of Caucasian, Asian and other ethnicities) in Queensland between 1994 and 2006. Suicide cases prior to 1994 were excluded due to a lack of reliable information regarding ethnicity.

The incidence of Indigenous suicides from 1994 to 2006 is shown in Table 6.

Between 1994 and 2006, there were a total of 425 Indigenous suicide cases (351 males and 74 females) and 6,228 non-Indigenous suicide cases (4,923 males and 1,305 females). The age distribution in Table 7 shows significant differences between Indigenous and non-Indigenous male and female suicides. There was a much

TABLE 6

Incidence of Suicide in Indigenous Populations by Year, Qld, 1994–2006

	Males	Females	Persons
1994	18	1	19
1995	31	5	36
1996	33	4	37
1997	27	6	33
1998	33	4	37
1999	21	2	23
2000	26	4	30
2001	36	9	45
2002	32	11	43
2003	18	10	28
2004	25	5	30
2005	24	5	29
2006	27	8	35
Total	351	74	425

TABLE 7

Incidence of Suicide by Ethnicity Group, Age and Gender, Qld, 1994–2006

Age group	Indigenous			Non-Indigenous			Unknown ethnicity		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
5-14	10	7	17	18	13	31	3	0	3
15-24	141	34	175	777	174	951	71	12	83
25-34	126	19	145	1,135	256	1,391	121	31	152
35-44	48	10	58	1,065	348	1,413	91	24	115
45-54	19	4	23	802	217	1,019	63	22	85
55-64	3	0	3	492	138	630	43	9	52
65-74	2	0	2	323	88	411	14	6	20
75-84	1	0	1	234	56	290	11	3	14
85+	0	0	0	72	14	86	4	1	5
Total*	351	74	425	4,923	1,305	6,228	421	108	529

Note: * 7 cases (1 Indigenous and 6 non-Indigenous) did not have information about age, but were added to the relevant gender and year totals.

smaller incidence of suicide in Indigenous persons over the age of 54 years (the different age structure of each population should be taken into account, even if this does not explain the virtual absence of suicide among elderly Indigenous people). See also previous section 'Indigenous Populations in Queensland'.

Across all ethnicities, the average age of male suicides was 41.1 years ($SD = 17.2$); in females, it was 41.6 years ($SD = 16.8$). When cases were separated by ethnicity, a lower mean age was observed in Indigenous suicides (all persons: 27.5 years, $SD = 10.2$; males: 28.0 years, $SD = 10.3$; females: 25.0 years, $SD = 9.8$) compared to non-Indigenous suicides [all persons: 42.3 years ($SD = 17.3$); males: 42.2 years ($SD = 17.4$); females: 42.6 years ($SD = 16.8$) years]. The Indigenous suicide group also displayed a smaller age range (from 10 to 75 years, median = 25 years) when compared to the group of non-Indigenous suicides (from 10 to 99 years, median = 40 years). The observed differences in mean ages between the two groups were statistically significant at a level of probability higher than 99% (performed independent t test) for all persons, and also separately for males and females.

4.1 Suicide rates by age and gender

Figure 8 illustrates age-standardised suicide rates in Indigenous and non-Indigenous populations (including cases with unknown ethnicity) between 1994

Suicide in the Indigenous Populations of Queensland (1994–2006)

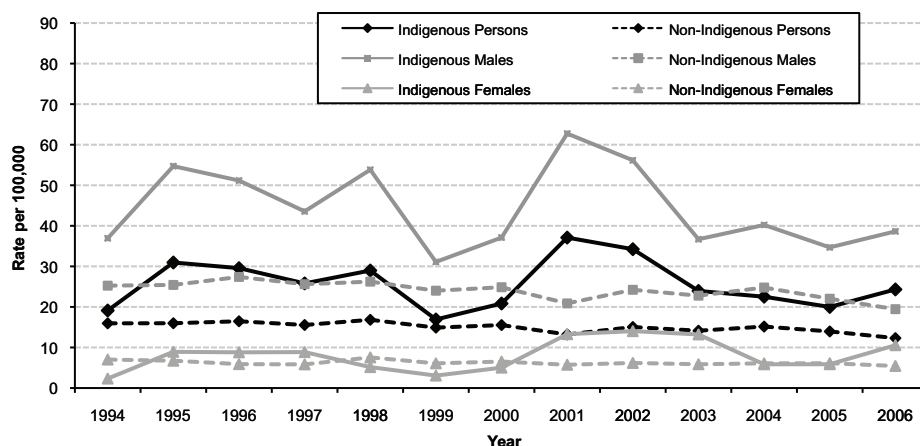


FIGURE 8

Age-standardised suicide rates, Indigenous and non-Indigenous populations, Qld, 1994–2006.

and 2006. Prior to 1994, almost half the suicide cases collated in the QSR did not have information about ethnicity; therefore, suicide rates calculated for that period would not be convincingly reflective of suicide mortality in each ethnicity group.

A relatively stable suicide rate is observed in non-Indigenous persons, with an average rate of 15.0; there is a peak in 1998 at 16.8, with the lowest value in 2006 at 12.3 per 100,000. Non-Indigenous males had an average rate of 24.1 (peak in 1996 at 27.4 and lowest in 2006 at 19.4 per 100,000); non-Indigenous females had an average rate of 6.2 suicides per 100,000 (peak in 1998 at 7.5 and lowest in 2006 at 5.4 per 100,000). In contrast, fluctuating rates are shown for Indigenous persons, with an average rate of 25.7 per 100,000; the highest recorded rate in 2001 (37.1 per 100,000) and the lowest in 1999 (16.9 per 100,000). Rates for Indigenous males ranged from 62.7 in 2001 to 31.1 in 1999, with an average of 44.4 per 100,000. Trends for Indigenous females should be interpreted with caution due to low incidence (see Table 6); however, they indicate an average rate of 8.1 per 100,000 (the highest being 14.3 in 2002 and the lowest 2.3 per 100,000 in 1994).

Comparisons of average age-standardised suicide rates between Indigenous and non-Indigenous populations from 1994 to 2006 display a rate ratio of 1.7:1 (1.8:1 for males and 1.3:1 for females).

Table 8 presents the results of generalised linear model analysis (GLM), using regression log-transformed age-standardised suicide rates and calculating exponentiated coefficients of Indigenous and non-Indigenous suicide rates from

TABLE 8

Regression of Log-Transformed Suicide Rates, Indigenous and Non-Indigenous Populations, Qld, 1994–2006

	Exp. Coef.	95% CI	p value
Indigenous			
Males	0.98	0.95–1.02	0.370
Females	1.06	0.98–1.14	0.172
Persons	0.99	0.96–1.03	0.779
Non-Indigenous			
Males	0.98	0.97–0.99	0.000
Females	0.99	0.98–0.99	0.040
Persons	0.98	0.97–0.99	0.000

1994 to 2006. The results show that there has been a significant decrease in non-Indigenous suicide over the observed time period ($p < .001$ for males and all persons, $p < .05$ for females). On the other hand, no statistically significant differences in the trends of Indigenous suicide rates, for males or females, were observed.

Gender rate ratios (male: female age-standardised suicide rate) were calculated for Indigenous and non-Indigenous populations over the period 1994–2006. Figure 9 shows that this ratio has been quite stable among non-Indigenous subjects; on average, males were 3.9 times more likely to die by suicide than females. The highest ratio was 4.6:1 in 1996 and the lowest was 3.5:1 in 1998. In contrast, the trend of gender rate ratios in the Indigenous population over the years shows a marked fluctuation, which is possibly due to the low numbers of suicides per year, particularly among females. On average, the rate ratio showed 5.5 times higher rates in males than in females, with an observed drop from a rate ratio of 15.8:1 in 1994 to 3.7:1 in 2006. In 2003, the gender rate ratio of Indigenous suicides (2.8:1) was found to be lower than that in the non-Indigenous group (3.9:1).

Figure 10 shows suicide rates by age groups in Indigenous and non-Indigenous populations. The age group 0–4 years was excluded from the total population figures due to the fact that the QSR did not include any suicides within that age group. Age groups 75–84 and 85+ years have been merged to one category due to the unavailability of segregated population data for Indigenous persons older than 75 years.

Suicide in the Indigenous Populations of Queensland (1994–2006)

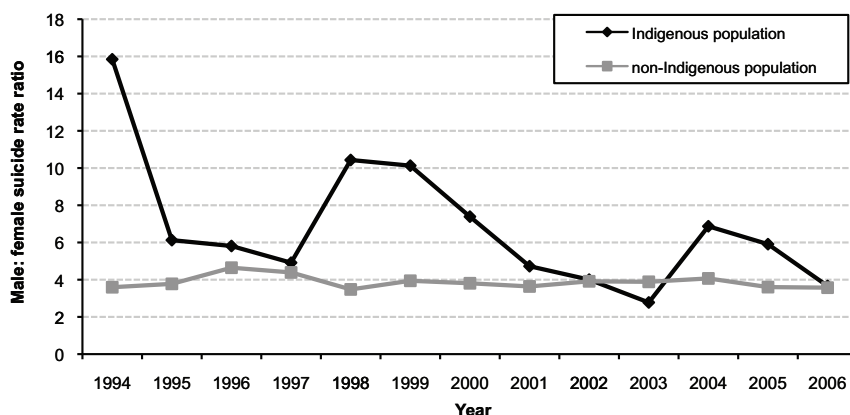


FIGURE 9

Male to female suicide rate ratio, Indigenous and non-Indigenous populations, Qld, 1994–2006.

The Indigenous population had the highest suicide rates in the 15–24 years age group (persons: 59.0, males: 94.8, females: 23.0 per 100,000) and 25–34 years age group (persons: 55.2, males: 98.6, females: 14.1 per 100,000). In the non-Indigenous population, suicide rates were highest in the 25–34 years age group for males (38.2 per 100,000) and in the 35–44 years group for females (10.6 per 100,000). In children aged 5–14 years, the Indigenous population had a rate of almost 4 suicides/100,000

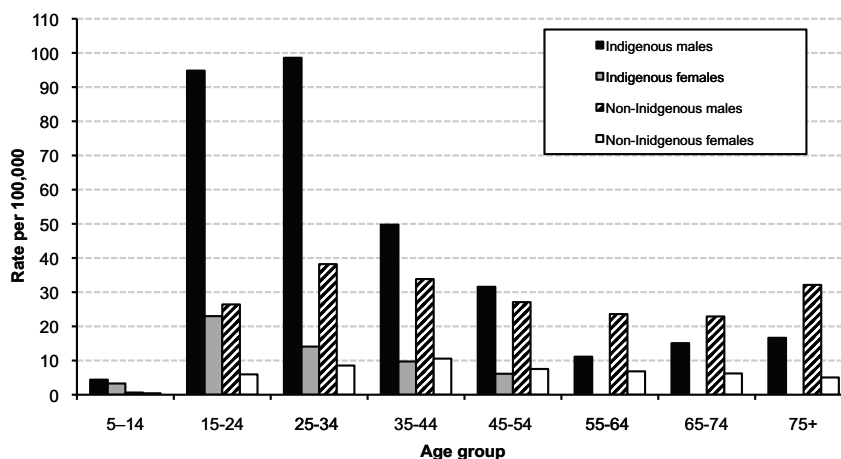


FIGURE 10

Suicide rates by age groups and gender, Indigenous and non-Indigenous populations, Qld, 1994–2006.

Suicide in Indigenous Populations of Queensland

(males: 4.4 and females: 3.3 per 100,000), while non-Indigenous had a rate of below 1 suicide death per 100,000.

Between 1994 and 2006, there were no recorded suicides of Indigenous females older than 55 years. Among Indigenous males, there were six cases aged 55 or more; thus, presented rates should be interpreted with caution due to such a small incidence. On the other hand, QSR data demonstrate an average rate of 15.3 suicide deaths per 100,000 in non-Indigenous people older than 55 years. In non-Indigenous males, suicide rates were about 3.5 times higher than in females in the ages between 55 and 74 years, and 6.4 times higher in those older than 75 years.

Table 9 illustrates that the rate of suicide among Indigenous children was 7.3 times higher than in their non-Indigenous counterparts. Indigenous females younger than 15 years had a suicide rate almost 8 times higher than non-Indigenous females, while in males this difference was 6.9-fold. Rate ratios subsequently show higher suicide rates until the age of 54 years in the Indigenous population compared to the non-Indigenous population; however, between the ages of 35 and 54 years there was only a small preponderance of Indigenous suicides. After the age of 55 years, the trend is reversed, and higher rates of non-Indigenous suicides were recorded. This is likely to be associated with the low incidence of suicides in the Indigenous group and also with differences in age distributions in the general population. It should be noted that the rate ratios in age groups over 45 years did not reach the level of significance at 95%.

TABLE 9

Suicide Rate Ratios of Indigenous to Non-Indigenous Populations by Age Group, Qld, 1994–2006

Age group	Indigenous: non-Indigenous rate ratio	95% CI
5–14	7.3*	4.1–13.0
15–24	3.6*	3.1–4.2
25–34	2.4*	2.0–2.8
35–44	1.3*	1.0–1.7
45–54	1.1	0.7–1.6
55–64	0.3	0.1–1.0
65–74	0.5	0.1–1.8
75+	0.4	0.1–3.1

Note: Statistically higher in Indigenous people ($p < .05$).

4.2 Suicide methods

Between 1994 and 2006, hanging was the predominant suicide method for both Indigenous and non-Indigenous people (Figure 11). However, there was a markedly higher percentage of hanging observed in Indigenous suicide cases; it was the method used in 86.6% of Indigenous suicides, compared with 36.3% of non-Indigenous suicides, $\chi^2(1) = 420.57$, $p < .001$. Further, there were large differences between the two populations in the choices of other suicide methods, particularly in the use of firearms: 5.9% of Indigenous vs. 13.3% of non-Indigenous cases, $\chi^2(1) = 19.75$, $p < .001$; poisoning by drugs or medicines: 2.1% of Indigenous vs. 15.2% of non-Indigenous cases, $\chi^2(1) = 66.43$, $p < .001$; and motor vehicle exhaust gas toxicity: 1.9% of Indigenous vs. 18.0% of non-Indigenous cases, $\chi^2(1) = 73.44$, $p < .001$. Suicides by jumping from heights, drowning or being hit by a moving object

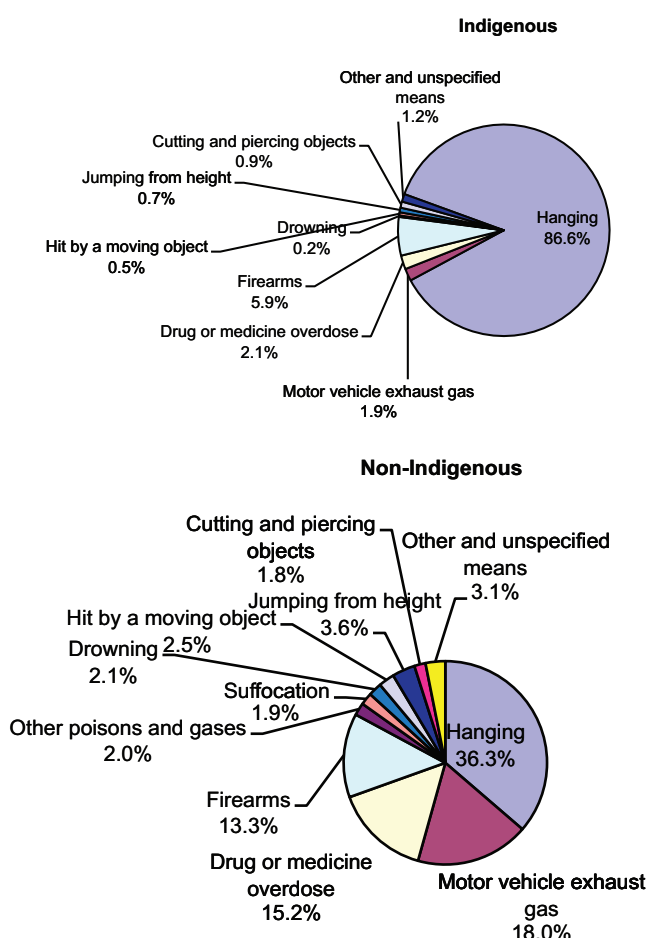


FIGURE 11

Suicide methods, Indigenous and non-Indigenous populations, Qld, 1994–2006.

were recorded in fewer than 5 suicide cases in the Indigenous group (less than 1% of the sample). In the Indigenous population, there were no suicides by suffocation with a plastic bag or by poisoning with gases other than motor vehicle exhaust gas (each recorded in about 2% of non-Indigenous suicide cases).

Figure 12 presents the distribution of suicide methods (grouped into five main categories) in the Indigenous and non-Indigenous populations by gender. A consistently higher percentage of hanging was observed in the Indigenous group compared to the non-Indigenous group: males: 86.9% vs. 38.9%; $\chi^2(1)=309.64$, $p < .001$ and females: 85.1% vs. 26.6%; $\chi^2(1)=114.89$, $p < .001$. While in the non-Indigenous group, males were significantly more likely to choose this method compared to females, $\chi^2(1)=67.58$, $p < .001$. Differences between genders were not observed in the Indigenous cases.

Further, males in both groups more often used firearms as means of suicide compared to females: Indigenous: 6.6% vs. 2.7%; non-Indigenous, 15.8% vs. 4.2%, $\chi^2(1)=119.00$, $p < .001$. On the other hand, females in both groups more frequently died by poisoning: Indigenous: 8.1% vs. 0.9%; non-Indigenous, 34.9% vs. 12.5%; $\chi^2(1)=362.91$, $p < .001$.

Figure 13 shows the distribution of hanging in Indigenous and non-Indigenous populations by age groups. Hanging was the predominant method in Indigenous suicide cases under 54 years of age, with a subsequent decline in the use of this method observed with advancing age (dropping from over 90% in cases younger

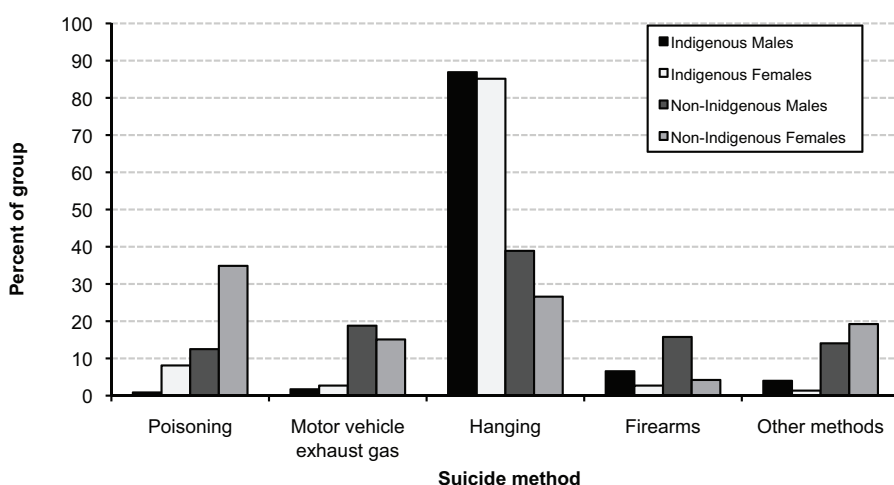


FIGURE 12

Suicide methods by gender, Indigenous and non-Indigenous populations, Qld, 1994–2006.

Suicide in the Indigenous Populations of Queensland (1994–2006)

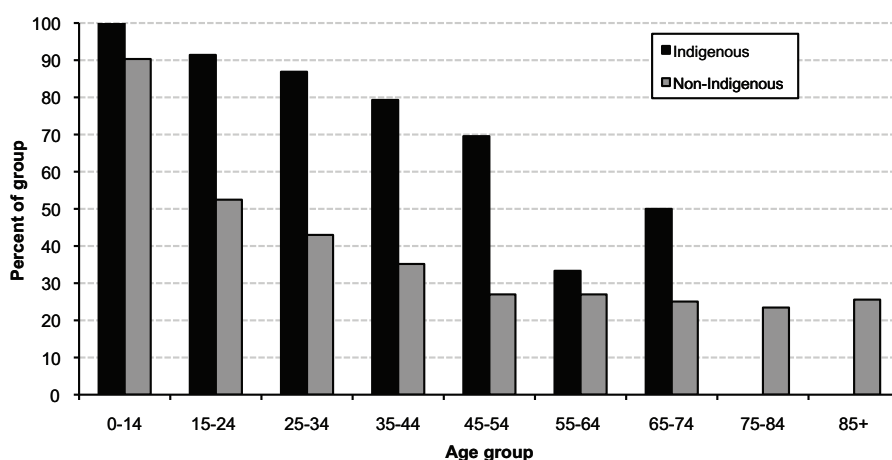


FIGURE 13

Per cent of suicides by hanging by age group, Indigenous and non-Indigenous populations, Qld, 1994–2006.

than 24 years to 33.3% in the age group 55–64 years). Similarly, a decrease in the use of hanging across age groups is shown in the non-Indigenous population; 90% of children younger than 15 years of age die by this method, around 50% of 15- to 24-year-olds, and less than 30% of cases older than 45 years. It should be noted that since there were only 3 Indigenous suicide deaths in persons aged between 45–54 years, 2 in the age group 55–64 years and one in the age group 75–84 years, the distribution of suicide methods in older Indigenous suicide cases should be interpreted with caution.

As reported previously in Section 3, Overview of Suicides in Queensland (1990–2006)⁷, there has been an increase in the percentage of suicides due to hanging since the early 1990s. Figure 14 shows the rates of hanging in Indigenous and non-Indigenous persons, males and females; however, interpretation of rates in Indigenous females should be made with caution due to the low incidence of hangings in that group (fewer than 10 per year).

Between 1994 and 2006, a higher average rate of hanging was observed in the Indigenous population, when compared to the non-Indigenous population (persons: 22.6 vs. 5.3 per 100,000; males: 37.9 vs. 9.1 per 100,000; females: 7.5 vs. 1.6 per 100,000). Results of a regression analysis (using log-transformed suicide rates), presented in Table 10, show a significantly increasing trend of hanging rates among non-Indigenous males and all persons over the period 1994 to 2006 ($p < .05$). There was also an increase in the use of hanging as a suicide method among Indigenous females; however, this trend is not statistically significant.

Suicide in Indigenous Populations of Queensland

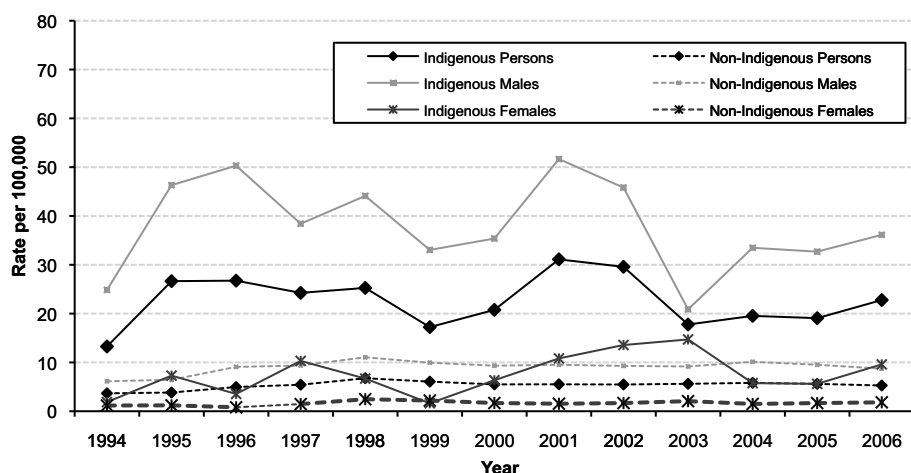


FIGURE 14

Rates of suicide by hanging by gender, Indigenous and non-Indigenous populations, Qld, 1994–2006.

TABLE 10

Regression Analysis of Log-Transformed Hanging Rates by Year, Indigenous and Non-Indigenous Populations, Qld, 1994–2006

	Exp. Coef	95% CI	p value
Indigenous			
Persons	1.00	0.97–1.04	0.933
Males	0.99	0.95–1.03	0.511
Females	1.08	0.99–1.19	0.086
Non-Indigenous			
Persons	1.02	1.00–1.05	0.031
Males	1.02	1.00–1.04	0.045
Females	1.04	0.99–1.08	0.067

4.3 Location of suicide

Figure 15 presents the locations of suicides (i.e., where the body was found) for Indigenous and non-Indigenous groups. In both groups, the majority of cases were discovered in their own residences; however, significantly more non-Indigenous persons were found at home than Indigenous persons: 68.2% vs. 56.8%, $\chi^2(1)=22.96$, $p < .001$. The second most frequent suicide location (accounting for 21.3% of all suicides, with no differences among Indigenous and non-Indigenous persons) was ‘outdoors’, which comprised of locations such as bushland, parks, railway tracks, bridges, and paddocks. The category of ‘other buildings’, including

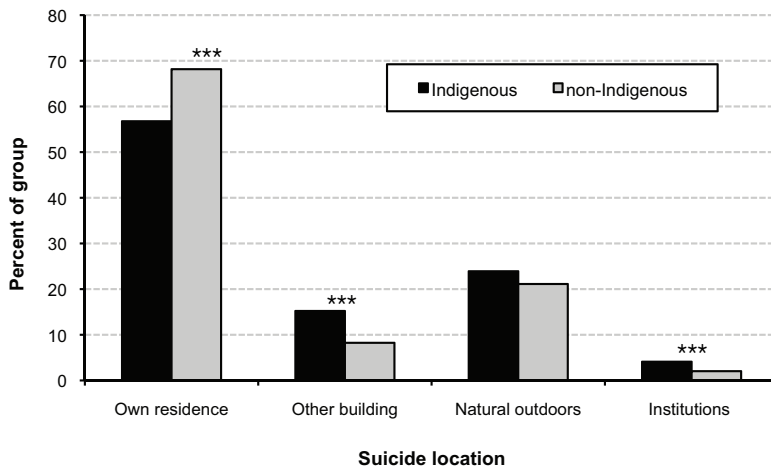


FIGURE 15

Suicide locations, Indigenous and non-Indigenous populations, Qld, 1994–2006.

Note: *** $p < .01$.

others' residences, hotels, workplaces and public places (e.g., car parks, shopping centres, schools), was more often a suicide location for Indigenous rather than non-Indigenous persons: 15.2% vs. 8.2%, $\chi^2(1)=23.79$, $\chi^2 < .001$. An additional 4.1% of Indigenous suicides occurred in institutions, compared to 2.0% of non-Indigenous suicides, $\chi^2(1)=7.88$, $p < .01$. The majority of Indigenous suicides in institutions occurred while in custody or in prisons: 3.1% of Indigenous cases compared to 0.7% of non-Indigenous cases, $\chi^2(1)=24.37$, $p < .001$.

4.4 Marital status

When analysing links between marital status and suicides in Indigenous and non-Indigenous populations, subjects with unknown marital status were excluded (82 or 20.1% of Indigenous cases, and 863 or 13.9% of non-Indigenous cases). Therefore, it should be kept in mind that the exclusion of a significant number of cases may have affected the distribution of marital statuses in the remaining sample, and led to an underreporting of suicide rates (presented in Figure 16).

The distribution of marital statuses in Indigenous and non-Indigenous suicide cases, aged older than 15 years, shows similar proportions of subjects in both groups in a relationship, either married or de facto (35.7% of Indigenous and 39.3% of non-Indigenous cases; see Table 11). The majority of Indigenous suicides (51.7%) occurred among single or never married persons, which represented a significantly higher proportion than in non-Indigenous suicides (31.5%) — persons: $\chi^2(1) = 57.23$, $p < .001$; males: $\chi^2(1) = 43.94$, $p < .001$; females: $\chi^2(1) = 12.17$, $p < .001$. On

Suicide in Indigenous Populations of Queensland

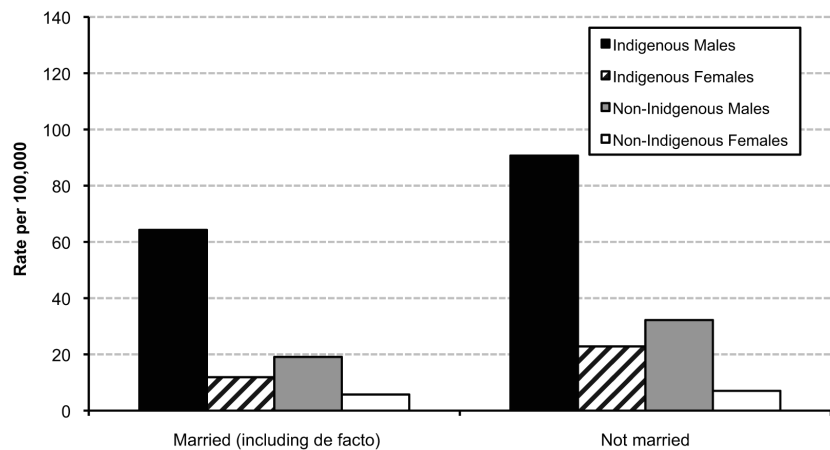


FIGURE 16
Suicide rates by marital status, Indigenous and non-Indigenous populations, Qld, 1994–2006.

TABLE 11
Marital Status of Suicide Cases, Indigenous and Non-Indigenous Populations, Qld, 1994–2006

	Indigenous			Non-Indigenous		
	Males	Females	Persons	Males	Females	Persons
Married/De facto	96	20	116	1,608	487	2,095
	35.4%	37.1%	35.7 %	38.1%	44.2%	39.3%
Never married/Single***	142	26	168	1,384	292	1,676
	52.4%	48.1%	51.7%	32.7%	26.5%	31.5%
Separated/Divorced***	31	8	39	1,093	250	1,343
	11.5%	14.8%	12.0%	25.9%	22.7%	25.2%
Widowed	2	0	2	141	73	214
	0.7%	0.0%	0.6%	3.3%	6.6%	4.0%

Note: ***p < .001 (for all persons, males and females).

the other hand, almost twice as many non-Indigenous suicide cases were separated or divorced at the time of death, compared to Indigenous — persons: 25.2% vs. 12.0%, $\chi^2(1) = 28.65$, $p < .001$; males: 25.9% vs. 11.4%, $\chi^2(1) = 28.00$, $p < .001$; females: 22.7% vs. 14.8%; NS.

Next, rates of suicide in Indigenous and non-Indigenous males and females across different marital statuses were calculated using population data obtained from the 2001 Census. For the purposes of this analysis, the category of ‘married’ includes

de facto relationships, while ‘not married’ includes people who were never married, single, separated, divorced or widowed.

Figure 16 shows suicide rates for Indigenous and non-Indigenous males and females by their marital status. In both groups, ‘not married’ suicide cases had higher rates of suicide than their married counterparts (Indigenous: 61.2 vs. 36.5 per 100,000; non-Indigenous: 19.1 vs. 12.4 per 100,000). The highest suicide rate was observed in ‘not married’ Indigenous males (90.7 per 100,000), and the lowest in ‘married’ non-Indigenous females (5.7 per 100,000).

The rate ratio between ‘not married’ and ‘married’ suicide cases in the Indigenous group was 1.7:1 (95% CI: 1.3–2.1, $p < .05$), similar to the rate ratio in non-Indigenous suicide cases (1.5:1, 95% CI: 1.4–1.6, $p < .05$). A comparison between genders in the Indigenous population shows that suicide rates in ‘married’ males were 5.4 times higher than in ‘married’ females (95% CI: 3.3–8.7, $p < .05$), and 4 times higher in ‘unmarried’ males than in ‘unmarried’ females (95% CI: 1.3–2.1, $p < .05$).

The calculation of suicide rates by marital status and age group (Figure 17) shows higher suicide rates for ‘married’ individuals when compared with ‘not married’ individuals across all age groups, apart from those aged between 15 and 24 years. Indigenous ‘married’ persons in the age group 15–24 years had a suicide rate of 88.4 per 100,000, compared to 64.1 per 100,000 of ‘not married’ Indigenous persons. In the non-Indigenous population aged 15–24 years, this difference was even more prominent, with ‘married’ individuals having 4 times higher rates of suicide than their ‘not-married’ counterparts.

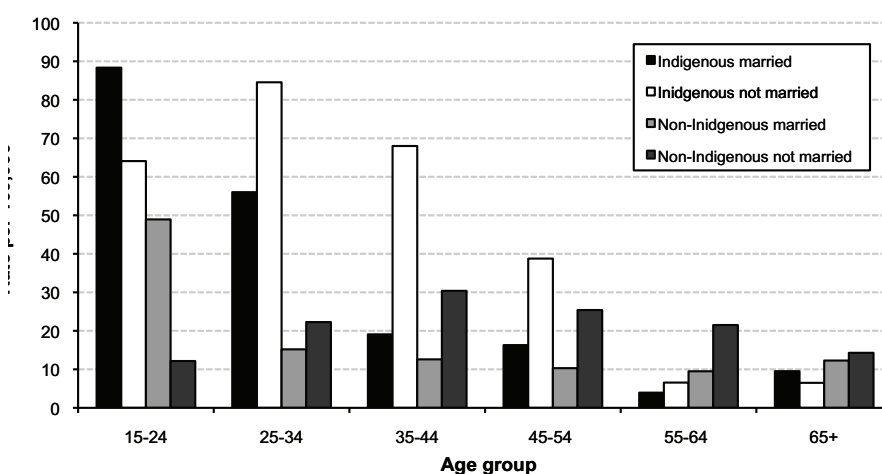


FIGURE 17

Suicide rates by marital status and age group, Indigenous and non-Indigenous populations, Qld, 1994–2006.

4.5 Employment status

Table 12 shows a comparison between Indigenous and non-Indigenous suicide cases older than 15 years by their employment status. Cases that did not include information about the person's employment status at the time of death were excluded from the analysis (65 cases or 16.0% of the Indigenous sample, and 806 or 13.0% of the non-Indigenous sample). The exclusion of a significant number of cases may have affected the distribution of employment statuses in the remaining suicide cases (Table 12) and lead to an underreporting of suicide rates (presented in Figure 18).

Significant differences were observed among the two groups. Almost half the Indigenous suicide cases were unemployed at the time of their death, which was almost twice more than in the non-Indigenous cases; persons: $\chi^2(1)=95.96$, $p < .001$; males: $\chi^2(1)=86.86$, $p < .001$; females: $\chi^2(1)=7.47$, $p < .01$. Accordingly, significantly fewer Indigenous suicide cases were employed — persons: $\chi^2(1)=8.11$, $p < .01$; males: $\chi^2(1) = 12.89$, $p < .001$; or not registered as being in the workforce, which included students, stay-at-home mums, persons in institutional care, retirees or pensioners — persons: $\chi^2(1) = 39.63$, $p < .001$; males: $\chi^2(1)=29.65$, $p < .001$; females: $\chi^2(1) = 7.30$, $p < .01$.

Rates of suicide were calculated using the distribution of employment statuses in Indigenous and non-Indigenous populations obtained from 2001 Census data. Figure 18 shows significantly higher suicide rates in unemployed persons, when compared with employed persons, across both ethnicity groups and genders; rate ratios range from 5.0:1 in Indigenous females (95% CI: 2.6–9.4, $p < .05$), to 9.4:1

TABLE 12

Percentage of Suicides by Employment Status and Gender, Indigenous and Non-Indigenous Populations, Qld, 1994–2006

	Indigenous			Non-Indigenous		
	Males	Females	Persons	Males	Females	Persons
Employed**	99	18	117	1,949	315	2,264
	34.7%	31.6%	34.2%	45.7%	28.2%	42.0%
Unemployed***	149	20	169	1,136	224	1,360
	52.3%	35.1%	49.4%	26.6%	20.1%	25.3%
Not in the workforce**	37	1	56	1,183	587	1,761
	13.0%	33.3%	16.4%	27.7%	51.7%	32.7%

Note: ** $p < .01$, *** $p < .001$ (for all persons).

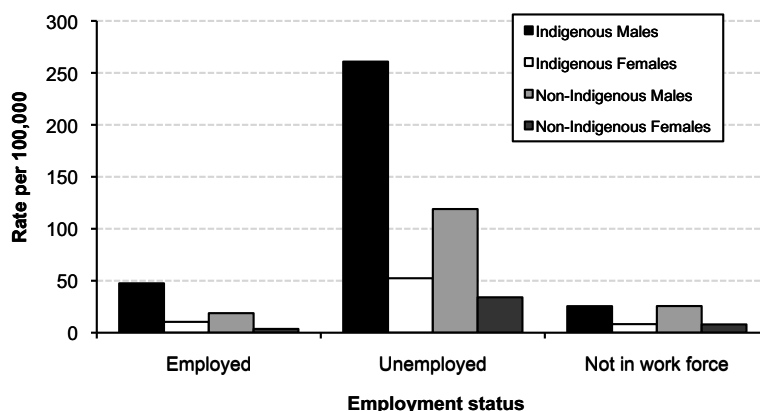


FIGURE 18

Suicide rates by employment status, Indigenous and non-Indigenous populations, Qld, 1994–2006.

in non-Indigenous females (95% CI: 7.9–11.0, $p < .05$). Non-Indigenous males had a higher suicide rate ratio of unemployed compared with employed (6.3:1, 95% CI: 5.8–6.7, $p < .05$) than Indigenous males (5.5:1, 95% CI: 2.6–9.4, $p < .05$). Of particular significance is the suicide rate of 260.8 per 100,000 in unemployed Indigenous males. Suicide rates in the ‘not in the workforce’ group were almost identical between Indigenous and non-Indigenous cases (25.6 per 100,000 in males and around 8.0 per 100,000 in females).

4.6 Physical illness

The majority of information presented in the following sections was obtained from psychological autopsies and therefore relies on the accuracy of the next-of-kin reports. In some cases, enquiries with health services provided additional details on the history of the deceased’s physical and mental illnesses. Where available, results of toxicology reports supplemented information on the deceased’s use of drugs and alcohol.

The presence and types of physical illnesses were analysed in a sample of 425 Indigenous and 6,228 non-Indigenous suicide cases. Figure 19 illustrates that 16.2% of Indigenous suicides recorded at least one condition (21.6% of females and 15.1% of males). Of those, 21.7% had two or more physical illnesses. On the other hand, almost a third of non-Indigenous suicide cases reported at least one illness (31.8%), which was on average about twice as frequently than in the Indigenous group — persons: $\chi^2(1) = 45.85$, $p < .001$; males: $\chi^2(1) = 37.25$, $p < .001$; females: $\chi^2(1) = 7.31$, $p < .01$.

Suicide in Indigenous Populations of Queensland

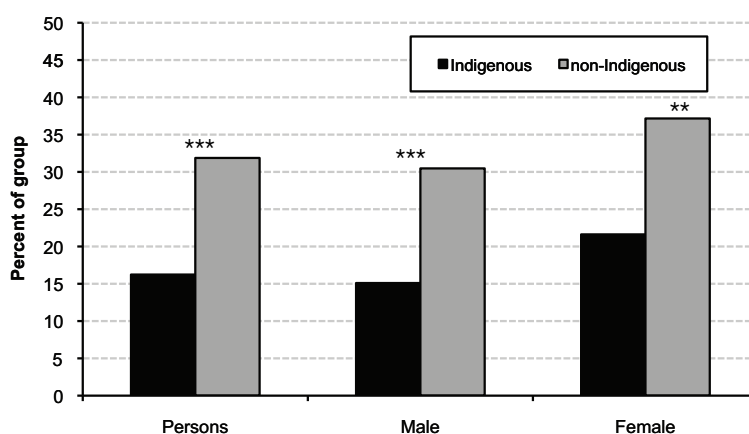


FIGURE 19

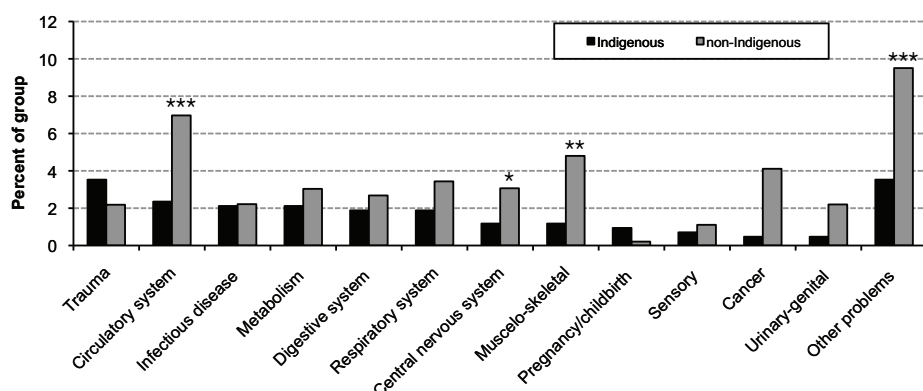
Presence of at least one reported physical illness, Indigenous and non-Indigenous suicide cases, Qld, 1994-2006.

Note: *** $p < .001$, ** $p < .01$.

Figure 20 presents the results of a more detailed analysis of the physical illnesses reported in both populations. The most frequently reported conditions in Indigenous suicides were those classified as general/other illnesses, which included chronic pain, sleep disorders, high blood pressure, and other or unspecified disabilities, not included in other categories (3.5%, representing a quarter of all Indigenous suicide cases with any reported physical illness prior to death). An additional 3.5% of Indigenous suicides had suffered cuts, fractures or other minor injuries (trauma) near death. Further, around 2% of cases had metabolic/nutritional disorders (most commonly diabetes), circulatory system disorders (heart or artery problems), digestive system disorders (bowel or liver problems), respiratory disorders or infectious diseases (most commonly hepatitis).

Compared to Indigenous suicide cases, non-Indigenous cases had significantly more disorders of the central nervous system, $\chi^2(1) = 4.97$, $p < .05$; circulatory disorders, $\chi^2(1) = 13.61$, $p < .001$; musculoskeletal disorders, $\chi^2(1) = 11.96$, $p < .01$; and other general or unspecified health problems, $\chi^2(1) = 17.74$, $p < .001$.

In a sample of those identified as having at least one physical illness at the time of death, 68.1% of the Indigenous suicide cases had been treated by a medical professional in the three months prior to death, which was comparable with non-Indigenous suicide cases (69.1%).

**FIGURE 20**

Presence of specific physical illnesses, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

4.7 Mental illness

The presence and types of mental illnesses and treatment-seeking patterns were analysed in a sample of 425 Indigenous and 6,228 non-Indigenous suicide cases, using the available data collated through the psychological autopsy questionnaires. Figure 21 shows that 87 (20.5%) Indigenous suicide cases had at least one reported mental illness at the time of death, compared with 2,514 (40.4%) of non-Indigenous suicide cases, $\chi^2(1) = 66.14$, $p < .001$. Similar differences were observed separately for males, 36.2% vs. 19.4%, $\chi^2(1) = 40.64$, $p < .001$; and females, 56.2% vs. 25.7%, $\chi^2(1) = 26.26$, $p < .001$. Among the Indigenous suicide cases with a reported history of mental illness, 70 (80.5%) had one, and 17 (19.5%) reported two or more illnesses. Among the non-Indigenous group with identified mental illnesses, 2,114 or 84.1% had one diagnosis, and 400 or 15.9% had two or more diagnoses.

Unipolar depression was the most commonly reported mental illness in both groups. It was observed in 6.6% of Indigenous suicides and about 4-times more often in non-Indigenous suicide cases, $\chi^2(1) = 66.14$, $p < .001$. A similar discrepancy was also observed separately for males: 6.0% of Indigenous vs. 23.9% of non-Indigenous, $\chi^2(1) = 59.97$, $p < .001$; and females: 9.5% of Indigenous vs. 38.2% of non-Indigenous, $\chi^2(1) = 23.97$, $p < .001$. The second most frequent diagnoses were psychotic disorders. These were reported in 5.6% of Indigenous suicides, a proportion not different from that in non-Indigenous cases. An additional 5.2% of Indigenous cases had a diagnosis of substance abuse disorder, which was almost twice that of non-Indigenous cases, 2.9%; $\chi^2(1) = 7.06$, $p < .01$. Abuse of alcohol and/or drugs was identified in 5.4% of Indigenous males, compared with 2.7% of

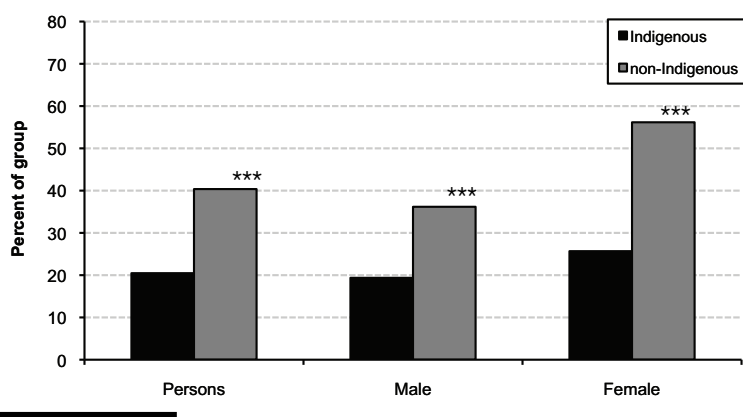


FIGURE 21

Presence of at least one reported mental illness, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: *** $p < .001$.

non-Indigenous males, $\chi^2(1) = 8.61$, $p < .01$; in females, the difference was not statistically significant (4.1% vs. 3.6%). Similar percentages in both groups had a diagnosis of ‘other or vague mental illness’ (around 5.2%), which included bipolar disorders, dementia, developmental disorders, eating disorders, dissociative disorders, adjustment disorders, conduct disorders, sexual disorders, and records of some mental illnesses, yet unknown (all of these were recorded in less than 0.5% of Indigenous and non-Indigenous group). Personality disorders were reported in 1.2% of Indigenous and 1.4% of non-Indigenous cases, and anxiety disorders were diagnosed in 0.9% of Indigenous and 2.1% of non-Indigenous cases. It should be noted that the computation of percentages of distinct mental illness (shown in Figure 22) exceeds the reported percentage of Indigenous and non-Indigenous persons with diagnosed mental illnesses (20.5% and 40.4%, respectively), due to the above-mentioned number of cases with multiple mental illnesses.

4.7.1 Contacts with mental health professionals

Figure 23 shows the percentages of suicide cases in contact with mental health services prior to death. On average, 23.3% of Indigenous persons had received treatment from a mental health professional in their lifetime, compared to 42.3% of non-Indigenous, $\chi^2(1) = 59.61$, $p < .01$. Further, 10.1% of non-Indigenous cases were seen by a mental health professional in last three months prior to suicide, compared to 25.6% of non-Indigenous cases, $\chi^2(1) = 51.45$, $p < .001$. The highest proportion of mental health service contacts was found in non-Indigenous females (58.6% in lifetime and 36.5% in the three months prior to suicide). On the other hand, Indigenous males had the lowest frequency of reported contact with these

Suicide in the Indigenous Populations of Queensland (1994–2006)

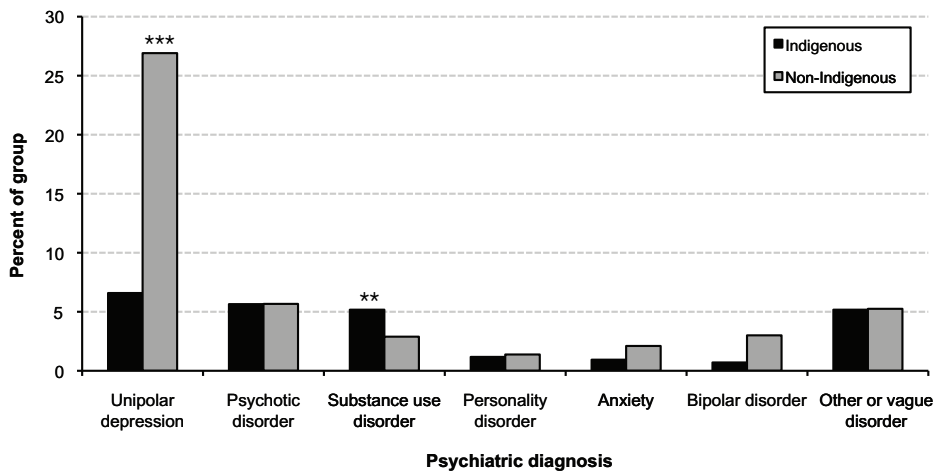


FIGURE 22

Diagnosed mental illnesses, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: ** $p < .01$, *** $p < .001$.

services in their lifetime (22.5%), and Indigenous females were the least likely to have had contact in the three months prior to suicide (8.1%). In addition, while non-Indigenous females more frequently received treatment for mental illnesses than non-Indigenous males both during their lifetime, $\chi^2(1) = 179.22$, $p < .001$, and in the three months prior to suicide, $\chi^2(1) = 102.30$, $p < .001$, there were no significant differences between genders in the Indigenous suicide cases.

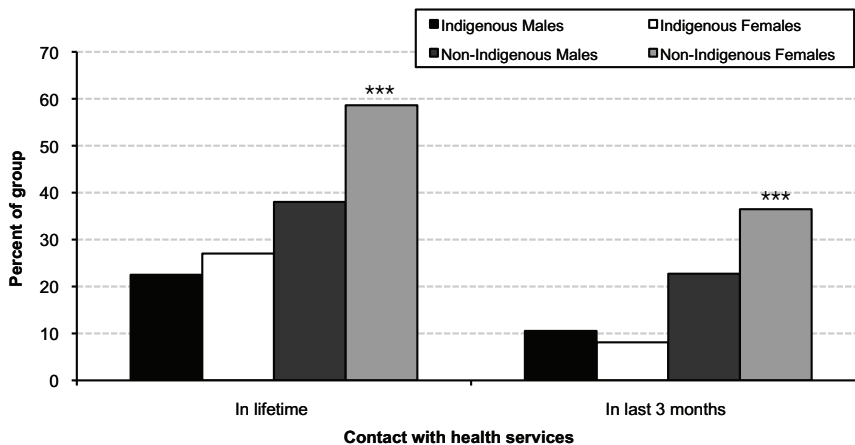


FIGURE 23

Contacts with mental health services during lifetime and in the three months prior to death, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: *** $p < .001$ (for all persons).

An analysis of the types of mental health services contacted was conducted on a sample of suicide cases, who were identified to have ever received treatment by a mental health professional ($n = 99$ Indigenous cases; $n = 2,637$ non-Indigenous cases). As shown in Figure 24, the most frequent source of mental health care for Indigenous people was hospitalisation in psychiatric wards (in-patient care). This was reported in almost half the Indigenous suicide cases, compared with 30.7% of non-Indigenous cases, $\chi^2(1)=12.52$, $p < .001$. In contrast, non-Indigenous suicide cases were more likely than Indigenous cases to have received treatment from a general practitioner, 55.3% vs. 37.4%; $\chi^2(1)=12.42$, $p < .001$. Similar proportions of Indigenous and non-Indigenous cases received treatment for mental illnesses as outpatients in a mental health facility (36.2% and 33.3%, respectively) and from other services, such as counselling groups or telephone help-lines (around 20%).

A comparison of mental health service contact patterns between genders showed that there were no differences between male and female suicide cases from both groups regarding sources of mental health treatment.

4.8 Previous suicidal behaviour

Table 13 shows a comparison of the histories of suicidal behaviours in the Indigenous and non-Indigenous groups. On average, 43.3% of Indigenous persons had communicated suicidal intent in their lifetime, with 39.1% communicating intent in the 12 months prior to death. These percentages are comparable to those

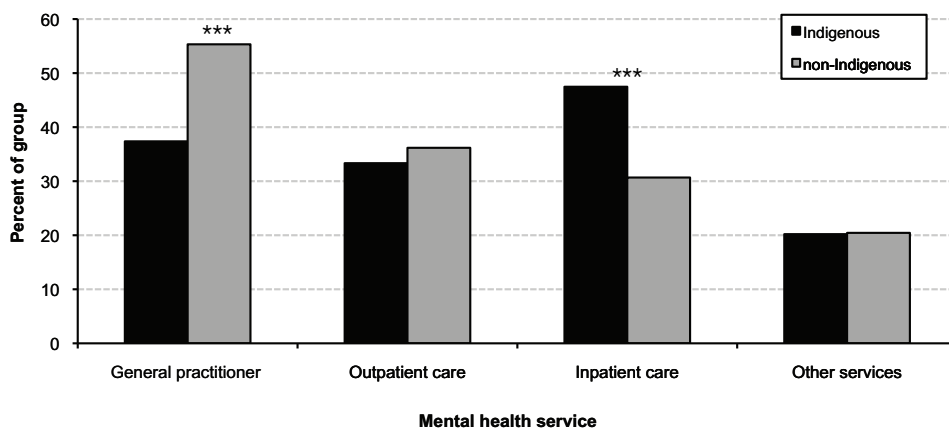


FIGURE 24

Types of mental health services contacted prior to death, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: *** $p < .001$.

TABLE 13

Communication of Suicidal Intent, Prior Suicide Attempt(s) and Presence of a Suicide Note, Indigenous and Non-Indigenous Suicide Cases, Qld, 1994–2006

	Indigenous		Non-Indigenous	
	Males	Females	Males	Females
Communication of suicidal intent:				
Lifetime	153 (43.6%)	31 (41.9%)	2032 (41.3%)	570 (43.7%)
12 months prior to suicide	137 (39.0%)	29 (39.2%)	1829 (37.3%)	505 (38.7%)
Prior suicide attempt(s)				
Lifetime	85 (24.2%)	22 (29.7%)	1240 (25.2%)	563 (43.1%)
12 months prior to suicide	53 (15.1%)	15 (20.3%)	821 (16.7%)	384 (29.4%)
Suicide note	43 (12.3%)	15 (20.3%)	1858 (37.7%)	590 (45.2%)

in non-Indigenous persons (41.8% and 37.5%, respectively). There were no differences between percentages of male and female suicides in both groups who had communicated suicidal intent either during their lifetime or in the 12 months prior to death.

Around a quarter of Indigenous suicide cases had a history of suicide attempts (25.2% in their lifetime and 16.0% in the 12 months prior to death), a percentage similar to that in non-Indigenous suicide cases (28.9% during their lifetime and 19.3% in the last 12 months). However, a separate analysis of these percentages by gender showed that significantly more non-Indigenous females had a history of suicide attempts during their lifetime than their Indigenous counterparts, 43.1% vs. 29.7%, $\chi^2(1) = 5.16$, $p < .05$.

In the non-Indigenous group, a greater percentage of females than males attempted suicide either in their lifetime, 43.1% vs. 25.2%, $\chi^2(1) = 161.66$, $p < .001$; or in the 12 months prior to death, 29.4% vs. 16.7%, $\chi^2(1) = 107.44$, $p < .001$. In the Indigenous group, no differences between genders were observed. Among subjects with a history of suicide attempt(s), significantly fewer Indigenous persons received medical treatment after their most recent attempt, 33.6% vs. 49.8% of non-Indigenous cases with a history of suicide attempt(s), $\chi^2(1) = 10.48$, $p < .01$.

There was also a marked difference between the two groups in the percentage of individuals who left a suicide note; 13.6% of Indigenous cases and 39.3% of non-Indigenous, $\chi^2(1) = 111.56$, $p < .001$. In both groups, more females than males left a suicide note, yet this difference was found to be significant only among non-Indigenous subjects, 45.2% females vs. 37.7% males, $\chi^2(1) = 24.12$, $p < .001$.

4.9 Alcohol use

For the purposes of this analysis, the term ‘problematic drinking’ refers to drinking behaviour that was considered by the informant to have caused problems to the deceased or those around them. These problems could be of a violent, non-violent or unspecified nature.

Over a third of the Indigenous suicide cases (all persons: 39.8%; males: 41.3%, and females: 32.4%) had a reported history of problematic drinking. This frequency is significantly higher than that seen in non-Indigenous suicides — persons: 16.9%; $\chi^2(2) = 139.67$, $p < .001$; males: 17.7%; $\chi^2(2) = 118.13$, $p < .001$; females: 14.4%; $\chi^2(2) = 19.79$, $p < .001$.

Figure 25 presents an analysis of suicide cases with reported problematic alcohol use by age group. Indigenous suicide cases with problematic alcohol use were significantly younger than the non-Indigenous suicide cases, $\chi^2(8) = 103.54$, $p < .001$; 76.9% of Indigenous cases with ‘problematic drinking habits’ were younger than 34 years, compared to 42.5% of non-Indigenous cases, $\chi^2(1) = 69.22$, $p < .001$.

Levels of alcohol found in the blood at the time of death are presented in Figure 26. These were obtained from toxicology reports for the period 1998–2006 on a sample of 3,880 suicides (216 Indigenous and 3,664 non-Indigenous cases) with available toxicology results. No level of alcohol was present in the blood of 59.6% of non-Indigenous suicide cases and in 33.5% of Indigenous cases, $\chi^2(1) = 55.29$, $p < .001$.

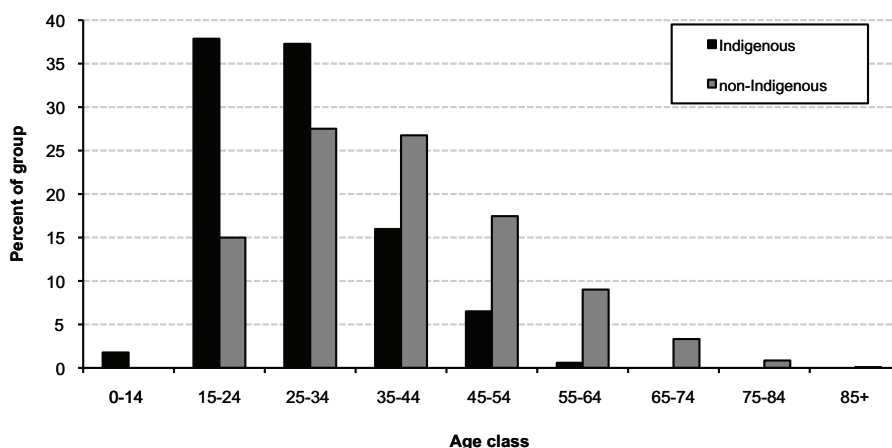


FIGURE 25

Problematic alcohol use by age group, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: significant differences in age distributions between Indigenous and non-Indigenous group, $p < .001$.

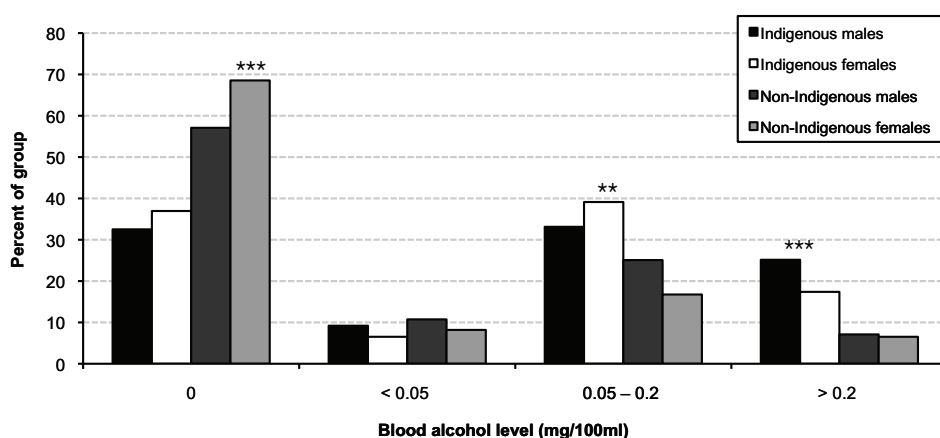


FIGURE 26

Blood-alcohol level at death by gender, Indigenous and non-Indigenous suicide cases, Qld, 1998–2006.

Note: ** $p < .01$, *** $p < .001$ (for all persons).

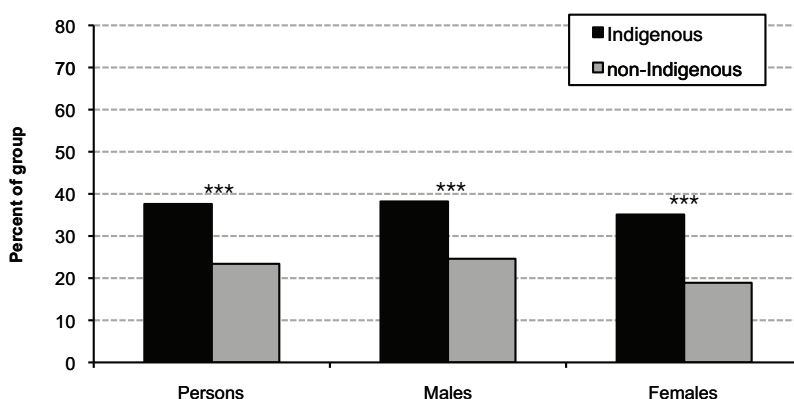
These differences were also observed separately for males, 57.1% of non-Indigenous vs. 32.5% of Indigenous cases, $\chi^2(1) = 37.66$, $p < .001$; and females, 68.5% of non-Indigenous vs. 37.0% of Indigenous cases, $\chi^2(1) = 20.03$, $p < .001$.

Further, a significantly higher number of Indigenous suicides (57.9%) were found to have an alcohol blood level exceeding 0.05 mg/100ml, compared to 30.2% of non-Indigenous suicides — persons: $\chi^2(1) = 69.92$, $p < .001$; males: $\chi^2(1) = 47.00$, $p < .001$; females: $\chi^2(1) = 26.78$, $p < .001$. Levels higher than 0.2 mg/100ml (4-times in excess of the legal driving limit) were found in almost a quarter of Indigenous suicides (23.4%) and 7.0% of non-Indigenous suicides — persons: $\chi^2(1) = 73.75$, $p < .001$; males: $\chi^2(1) = 67.83$, $p < .001$; females: $\chi^2(1) = 8.07$, NS.

4.10 Illicit drug use

An analysis of illicit drug use combines the information from psychological autopsies and toxicology reports. The QSR differentiates between regular and occasional use, past users and those with unknown frequency of use. However, for the purposes of this analysis, drug use frequency was aggregated and compared with those who had no evidence of illicit drug use.

Figure 27 demonstrates that more than a third of Indigenous suicides (37.6%) reported either current or past drug use, compared with 23.4% of non-Indigenous suicides, $\chi^2(2) = 44.39$, $p < .001$. Similar differences were observed separately in males, $\chi^2(2) = 31.73$, $p < .001$, and females, $\chi^2(2) = 13.17$, $p < .001$.

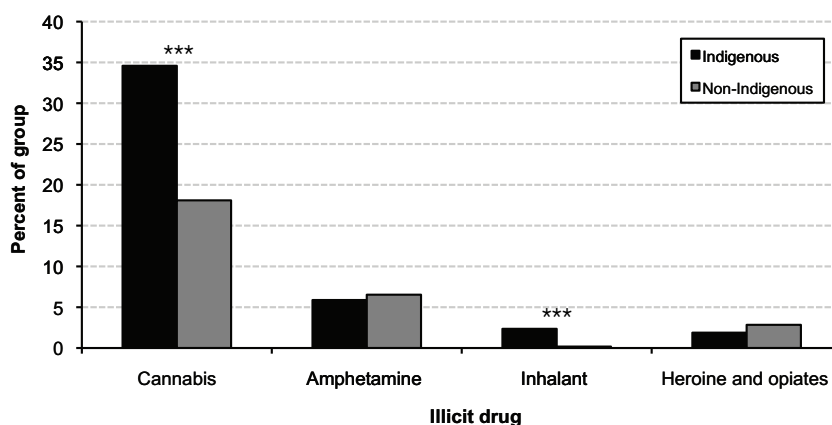
**FIGURE 27**

Illicit drug use, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: *** $p < .001$.

As can be seen in Figure 28, cannabis was the most frequently reported illicit drug in the Indigenous suicide sample (34.6% of persons, 35.0% of males and 32.4% of females). This was more than twice as frequent as found among non-Indigenous persons, 18.1%, $\chi^2(1) = 69.90$, $p < .001$; males, 19.6%, $\chi^2(1) = 47.39$, $p < .001$; and females, 12.3%; $\chi^2(1) = 24.64$, $p < .001$. While cannabis use was more frequently reported in male than female non-Indigenous suicide cases, $\chi^2(1) = 37.30$, $p < .001$, there were no gender differences observed in the Indigenous group.

Amphetamines were the second most commonly reported drugs in analysed suicide cases; they were recorded in 5.9% of Indigenous and 6.5% of non-Indigenous suicides. Inhalants (e.g., petrol or paint sniffing) were reported in 2.4% of Indigenous cases [compared with 0.2% of non-Indigenous cases, $\chi^2(1) = 59.89$, $p < .001$. Despite the relatively low frequency of these cases (10 Indigenous and 11 non-Indigenous persons), a comparison in the abuse of inhalants showed an almost 14-times higher prevalence in Indigenous than in non-Indigenous suicides. An additional 1.8% of Indigenous cases had a history of heroin or other opiate use, compared with 2.8% of non-Indigenous cases. Use of 'other or unspecified drugs' was recorded in 2.6% of Indigenous and 1.8% of non-Indigenous suicide cases. Use of hallucinogens, steroids, cocaine and abuse of prescription drugs were excluded from analysis due to their low frequency in the Indigenous group (each present in less than 0.5% of cases).

**FIGURE 28**

Use of specific illicit drugs, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: *** $p < .001$.

4.11 Medication identified in toxicology reports

Additional analysis was undertaken on the medications identified from blood, urine or liver samples for the period 1998–2006 (a sample of 216 Indigenous and 3,664 non-Indigenous suicide cases with available toxicology results). When interpreting these results, it is important to note that the presence of some substances may be a reflection of their intake as part of the suicide method used (e.g., in poisonings with medications, gases or other substances) rather than the deceased's habitual usage. Further, several drugs were excluded from analysis on the basis of their low incidence in the Indigenous group. These medications included antibiotics, tranquilisers, anti-diabetics (no cases), barbiturates, anti-inflammatory agents and anti-arrhythmics (each found in one case), anaesthetics, anti-cholinergic and anti-histamines (each found in two cases). A group of miscellaneous medications, created to encompass substances not included in any other category, was also excluded due to its low frequency in the Indigenous sample of suicides (three cases).

Figure 29 shows that the most common substances found in the toxicology reports of Indigenous suicide cases were benzodiazepines, 7.4% vs. 27.0% of non-Indigenous cases, $\chi^2(1) = 40.94$, $p < .001$, and antidepressants, 4.6% vs. 19.7% of non-Indigenous cases, $\chi^2(1) = 30.13$, $p < .001$. An additional 1.9% of Indigenous cases had a recorded use of anti-psychotics, compared to 4.4% of non-Indigenous cases. Further significant differences were observed in the use of analgesics, 4.2% of Indigenous cases vs. 11.5% of non-Indigenous, $\chi^2(1) = 11.16$, $p < .01$.

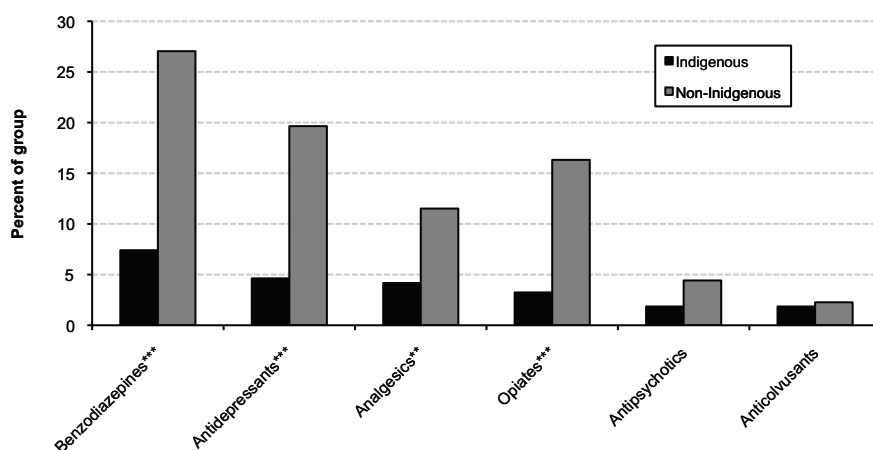


FIGURE 29

Medications identified in toxicology reports, Indigenous and non-Indigenous suicide cases, Qld, 1998–2006.

Note: ** $p < .01$, *** $p < .001$.

Additionally, 7 (3.2%) Indigenous suicide cases recorded the presence of opiates in their toxicology report compared with 16.3% of non-Indigenous cases, $\chi^2(1) = 26.52$, $p < .001$. However, it should be noted that traces of these substances can be indicative of their use either for medical reasons (e.g., alleviating pain) or as a drug (e.g., heroin).

4.12 Recent life events

As can be seen in Figure 30, two-thirds of the entire sample (both Indigenous and non-Indigenous cases) had records of being exposed to at least one recent stressful life event prior to suicide, with no significant differences observed across age or gender. The most frequent events preceding their deaths were relationship problems (either conflict with a partner or relationship breakdown/separation), which were reported in 31.1 % of Indigenous and 29.6% of non-Indigenous suicide cases. However, a more detailed analysis showed that Indigenous cases were significantly more likely than non-Indigenous cases to have reported a relationship conflict (i.e., argument with a partner) prior to death, 17.4% of Indigenous group vs. 9.4% of non-Indigenous; $\chi^2(1) = 28.36$, $p < .001$; and non-Indigenous suicide cases had experienced more relationship separations than Indigenous cases, 20.2% vs. 13.6%; $\chi^2(1) = 10.67$, $p < .001$. The second most common life event reported in Indigenous suicides were conflicts, either with family members (familial conflict) or other persons, such as friends, neighbours and colleagues (interpersonal conflict), 13.9% vs. 8.2% of non-Indigenous, $\chi^2(1) = 16.73$, $p < .001$. Further

frequent life events in Indigenous suicide cases, which were found to be significantly more common than in non-Indigenous suicides, were pending legal matters, 11.5% vs. 7.5%, $\chi^2(1) = 9.12$, $p < .01$, and bereavement/loss of a significant other, 11.1% vs. 8%, $\chi^2(1) = 5.02$, $p < .05$.

On the other hand, stressful life events, which were more frequently reported in non-Indigenous than Indigenous suicide cases, included financial problems, 8.3% vs. 3.1%, $\chi^2(1) = 15.00$, $p < .001$, recent unemployment or threat of losing a job, 6.0% vs. 2.6%, $\chi^2(1) = 8.64$, $p < .01$, work-or school-related problems, 5.6% vs. 2.8%, $\chi^2(1) = 5.99$, $p < .05$, and physical or mental illnesses, 17.6% vs. 7.3%, $\chi^2(1) = 30.24$, $p < .001$. ‘Other life events’ — for example illness of a family member, recent moving of location, imprisonment, damage to material possessions — were also more commonly reported in non-Indigenous cases, 15.6% vs. 11.8%, $\chi^2(1) = 4.52$, $p < .05$.

A small percentage of Indigenous suicide cases also recorded an experience of childhood trauma (1.2% vs. 0.8% of non-Indigenous cases), sexual abuse (0.9% vs. 0.6% of non-Indigenous cases) or problems with custody of their children (1.6% vs. 2.4% of non-Indigenous cases).

4.12.1 Relationship, familial and interpersonal conflicts

The following sections present further analysis of the most common stressful life events found to precede Indigenous suicides: conflict with partners (relationship conflict), family members (familial conflict) or other persons (interpersonal

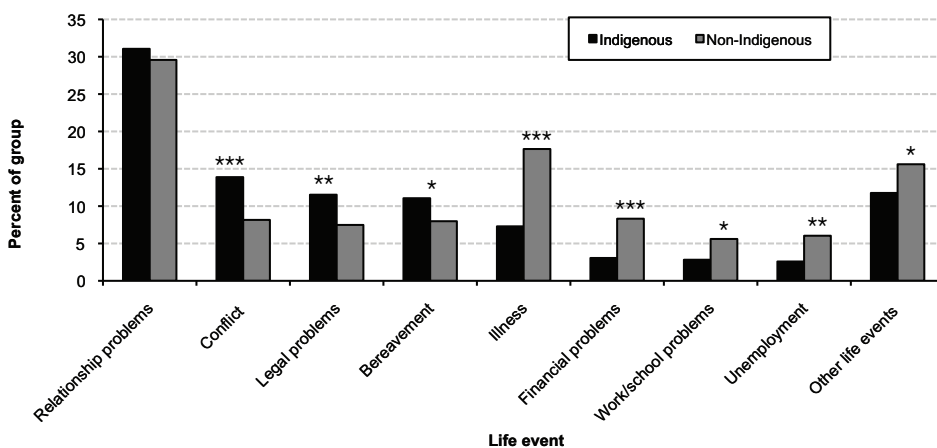


FIGURE 30

Recent life events, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

conflict); pending legal matters and criminal history; and loss of significant persons (bereavement), with a particular focus on exposure to suicide in the social network.

When compared to non-Indigenous suicides, Indigenous suicide cases more frequently reported all three types of conflict around the time of death — relationship: $\chi^2(1) = 28.36, p < .001$; familial: $\chi^2(1) = 11.05, p < .001$; interpersonal: $\chi^2(1) = 5.03, p < .05$. This trend was also observed separately for males and females ($p < .05$); see Table 14. The only significant difference between males and females was observed in non-Indigenous females, who experienced more interpersonal conflicts prior to death than non-Indigenous males, $\chi^2(1) = 7.84, p < .01$.

4.12.2 Criminal history and pending legal matters

Figure 31 indicates that criminal history was recorded in 32.5% of the Indigenous suicide cases, which was more than twice that recorded in non-Indigenous cases, 15.8%, $\chi^2(1) = 78.45, p < .001$. In both groups, males were about 2.5 times more likely to have a criminal history than females — Indigenous cases: 35.9% of males and 16.2% of females, $\chi^2(1) = 10.80, p < .01$; non-Indigenous cases: 18.2% of males and 7.0% of females, $\chi^2(1) = 95.55, p < .001$].

The types of criminal offences were analysed in a sample of suicide cases with either current or past criminal history (139 Indigenous and 987 non-Indigenous suicide cases). Figure 32 shows a similar distribution of types of offences among Indigenous and non-Indigenous cases. The most frequent offences were: domestic violence (19.6% of Indigenous and 18.0% of non-Indigenous cases); offences against other persons, including murder, manslaughter, fighting, and threatening (8.0% of Indigenous and 9.5% of non-Indigenous cases); sexual assaults, including those of a child (7.2% of Indigenous and 11.3% of non-Indigenous cases); traffic-related offences, such as drink-driving, accidents and traffic fines (5.8% of Indigenous and

TABLE 14
Type of Conflicts Prior to Death, Indigenous and Non-Indigenous Suicide Cases, Qld, 1994-2006

Type of conflict	Indigenous			Non-Indigenous		
	Males	Females	Persons	Males	Females	Persons
Relationship***	74 (17.4%)	60 (17.1%)	14 (18.9%)	587 (9.4%)	460 (9.3%)	127 (9.7%)
Familial***	39 (9.2%)	28 (8.0%)	11 (14.9%)	333 (5.4%)	243 (4.9%)	90 (6.9%)
Interpersonal***	20 (4.7%)	17 (4.8%)	3 (4.0%)	175 (2.8%)	142 (2.9%)	33 (2.5%)

Note: *** $p < .001$ (for all persons).

Suicide in the Indigenous Populations of Queensland (1994–2006)

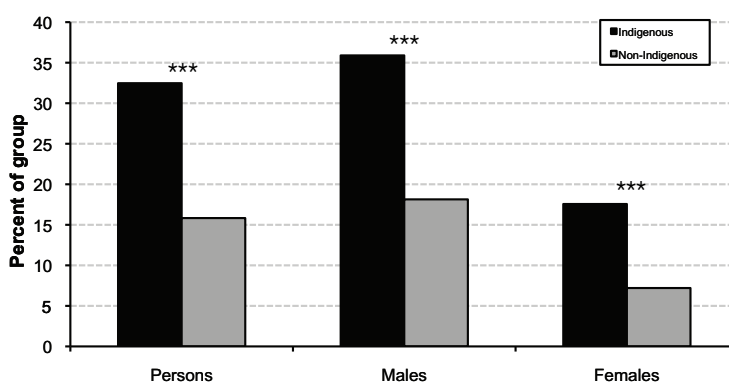


FIGURE 31

Record of criminal history, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: *** $p < .001$.

13.9% of non-Indigenous cases, $\chi^2(1) = 7.05$, $p < .01$); theft or robbery (5.1% of Indigenous and 4.8% of non-Indigenous cases), and drug-related offences, such as possession or trafficking of illegal substances (4.3% of Indigenous and 5.9% of non-Indigenous cases). Further, 12.3% of Indigenous suicide cases had a record of multiple offences (compared with 8.2% of non-Indigenous cases), and 9.4% had committed other types of crime, such as offences against property or disorderly conducts in public (compared with 6.0% of non-Indigenous cases). Only three Indigenous suicides cases (2.2%) contained information on criminal offences related to financial matters (bankruptcy, outstanding debts, and repossession of goods). These types of criminal offences were more common among non-Indigenous suicide cases (5.4%); however, small numbers prevented comparative statistical analysis. An additional 26.1% of Indigenous suicide cases reported a criminal history but included no information on the type of offences committed. This was also observed in 18.0% of non-Indigenous cases with a criminal history.

Pending legal issues prior to death were more frequently reported in Indigenous than in non-Indigenous suicide cases. This trend was observed for all persons, 11.5% vs. 7.5%; $\chi^2(1) = 9.12$, $p < .01$, and males, 13.7% vs. 8.4%, $\chi^2(1) = 11.59$, $p < .01$ (Figure 33). Only one Indigenous female had a record of current legal matters listed as a stressful life event prior to death. The age distribution of Indigenous and non-Indigenous persons with pending legal matters shows significant differences, $\chi^2(8) = 40.04$, $p < .001$; 49.0% of the Indigenous persons were younger than 24 years at their death, compared with 17.2% of non-Indigenous persons in the same age group.

Suicide in Indigenous Populations of Queensland

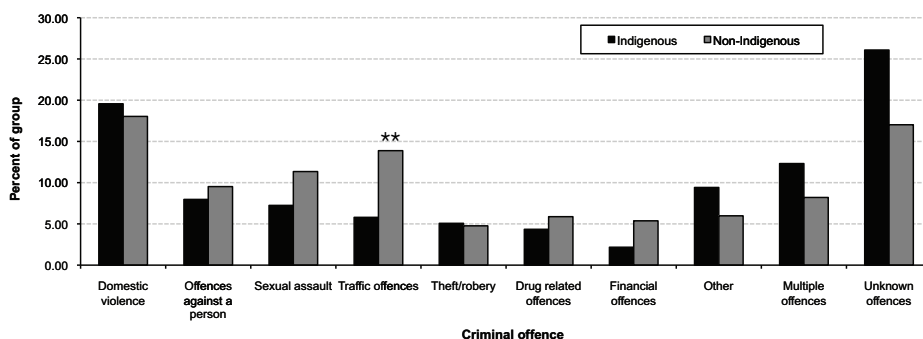


FIGURE 32

Types of criminal offences, Indigenous and non-Indigenous suicide cases with a criminal history, Qld, 1994–2006.

Note: ** $p < .01$.

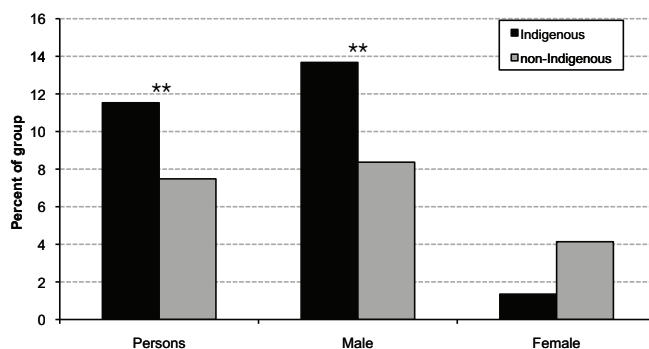


FIGURE 33

Pending legal matters prior to death, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: ** $p < .01$.

4.12.3 Bereavement

Figure 34 shows the proportion of Indigenous and non-Indigenous suicide cases that had recently lost a significant person. As discussed earlier, bereavement/loss of a significant person was more common among Indigenous suicide cases, compared to non-Indigenous cases. This was observed for all persons, 11.5% vs. 8.0%, $\chi^2(1) = 5.03$, $p < .05$, and males, 11.7% vs. 7.5%; $\chi^2(1) = 8.01$, $p < .01$; however, there was a slightly higher percentage of bereaved non-Indigenous females (9.8% vs. 8.1%).

Differences between the two groups of suicide cases were observed in relation to the loss of a family member other than a spouse, 7.5% of Indigenous vs. 3.7% of non-Indigenous cases: $\chi^2(1) = 15.11$, $p < .001$. On average, 2.2% of both Indigenous

Suicide in the Indigenous Populations of Queensland (1994–2006)

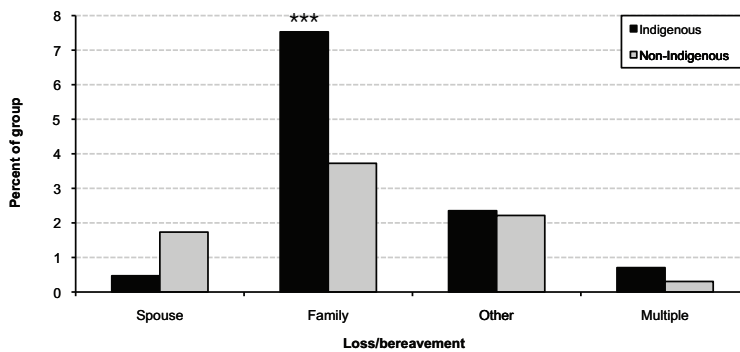


FIGURE 34

Bereavement, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: *** $p < .01$.

and non-Indigenous suicide cases had experienced loss of people, such as friends, neighbours and colleagues.

The frequency of Indigenous cases experiencing the loss of a spouse (two cases or 0.5%) or multiple persons (three cases or 0.7%) did not allow the calculation of statistical probabilities of observed differences; however, results suggest that losing a spouse was more common in the non-Indigenous group of suicides (1.7%), while loss of multiple people was more frequent among the Indigenous suicides (0.3%). Also, the age-distribution of Indigenous and non-Indigenous bereaved persons was significantly different, $\chi^2(8) = 43.04$, $p < .001$; 31.9% of bereaved non-Indigenous suicide cases were older than 55 years, while 78.8% of bereaved Indigenous cases persons were younger than 34 years.

4.12.4 Exposure to suicide in the social group

Figure 35 presents the proportion of Indigenous and non-Indigenous suicide cases who reported exposure to the suicide of a direct relative, friend, other relative, or exposure to multiple suicides. Among the Indigenous cases, 16.7% had experienced a suicide event in their social network, compared to 8.8% of non-Indigenous cases, $\chi^2(1) = 29.97$, $p < .001$. Similar differences were also observed separately for males, $\chi^2(1) = 21.54$, $p < .001$, and females $\chi^2(1) = 9.10$, $p < .001$. Of these 71 Indigenous suicides, 46.5% had experienced the suicide of a direct relative, 40.8% the suicide of another relative or a friend, and 12.7% had experienced the suicide of more than one person (compared to 50.6%, 40.9% and 8.4%, respectively, in non-Indigenous cases). Some significant differences between genders were observed; more non-Indigenous males than females had lost a friend or other relative, 3.8% vs. 2.7%: $\chi^2(1) = 3.86$, $p < .05$, and more than twice as many Indigenous females had

Suicide in Indigenous Populations of Queensland

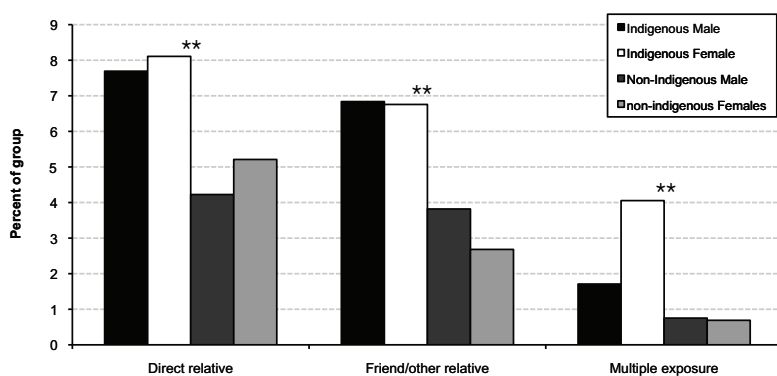


FIGURE 35

Exposure to suicide in social group, Indigenous and non-Indigenous suicide cases, Qld, 1994–2006.

Note: ** $p < .01$ (for all persons).

experienced multiple suicide deaths compared to Indigenous males (4.1% vs. 1.7%). However, this difference was not found to be significant, likely due to the low frequency of Indigenous females in this group (three cases).

4.13 Key factors distinguishing between Indigenous and non-Indigenous suicides: Logistic regression analysis

Logistic regression analysis was used to model the factors that distinguish between Indigenous and non-Indigenous suicide cases for the period between 1994 and 2006. Variables were entered using main effects analysis.

A total of 6,653 suicides were analysed, which included all ‘probable’ or ‘beyond reasonable doubt’ Indigenous ($n = 425$) and non-Indigenous ($n = 6,228$) cases. Predictor variables included: gender (male/female); age; employment status (employed, unemployed, not in the labour force or unknown); relationship status (married, separated/divorced, widowed, single or unknown); use of hanging as a suicide method (yes/no); problems with alcohol (yes, no or unknown); suicide in the social group (yes/no); presence of a suicide note (yes/no); life events preceding death (relationship conflict, bereavement, financial problems or work/school issues); history of criminal offences (yes/no); diagnosis of unipolar depression (yes/no); diagnosis of substance use disorder (yes/no); presence of one or more physical illness (yes/no); and recent treatment from a mental health professional (yes/no).

Results of the final model (shown in Table 15) suggest that the included predictors were able to reliably distinguish between Indigenous and non-Indigenous suicides, $\chi^2(26) = 895.16$, $n = 6,653$, $p < .001$. McFadden's Rho found that this model offered substantially more explanation than the intercept-only model (McFadden pseudo $R^2 = 0.283$, Adjusted McFadden $RhoR^2 = 0.267$).

This model indicated that Indigenous suicides more frequently occurred among younger persons ($p < .001$), and people whose marital status was unknown ($p < .01$). Indigenous suicides were less likely to be separated or divorced ($p < .05$), compared with non-Indigenous cases. Further, Indigenous suicide cases were more likely to use hanging as a suicide method ($p < .001$), have an alcohol problem ($p < .001$), substance abuse disorder ($p < .05$) and criminal history ($p < .001$) than non-Indigenous suicide cases. Furthermore, Indigenous cases had significantly greater odds of being exposed to suicide in their social group ($p < .05$) than non-Indigenous cases. Regarding stressful life events experienced prior to death, Indigenous cases had lower odds of reporting financial ($p < .001$) or work/school-related problems ($p < .05$). Compared with non-Indigenous suicides, Indigenous cases were less likely to have a diagnosis of unipolar depression ($p < .001$) or a physical illnesses ($p < .05$); they less often received treatment for a mental illnesses ($p < .001$) or left a suicide note ($p < .001$).

4.14 Suicide cases with unknown ethnicity: Predicted suicide rates of Indigenous population

As previously explained, between 1990 and 2006, 14.2% of cases in the QSR were coded as 'unknown' ethnicity. This is particularly problematic for the period prior to 1994, when almost half of the cases do not have a recorded ethnicity. Consequently, it is likely that a large number of Indigenous cases have been under-reported. Canonical discriminant analysis was used to gain an understanding of the possible size of this under-reporting.

Methodological approach

Canonical discriminant analysis is commonly used to predict group membership from a range of discriminating factors. It involves two steps: first, this analysis determines the dominant gradients of variation between naturally occurring groups (e.g., the discriminating functions); second, on the basis of these results, group membership is predicted (McGarigal et al., 2000; Tabachnick & Fidell, 2001).

In this analysis, the three groups investigated were Indigenous, non-Indigenous (comprised of Caucasian, Asian and other ethnicities) and unknown ethnicities. All predictors were entered simultaneously using direct canonical discriminant analysis to assess the combined effect of a large number of variables rather than the discriminating power of any one single indicator (Hair et al., 1992). As the total

TABLE 15

Results of Logistic Regression Analysis: Characteristics of Indigenous and Non-Indigenous Suicide Cases, Qld, 1994–2006

		Odds ratio	Std. error	95% confidence interval	
				Low	High
Gender	Male	0.74	0.12	0.55	1.01
	Female	1			
Age		0.98***	0.01	0.96	0.99
Employment status	Employed	0.74	0.13	0.52	1.04
	Unemployed	1.16	0.20	0.83	1.63
	Unknown	1.03	0.21	0.68	1.54
	Not in labour force	1			
Relationship status	Married	0.94	0.15	0.69	1.28
	Separated/divorced	0.62*	0.13	0.42	0.94
	Widowed	0.75	0.57	0.17	3.34
	Unknown	1.60**	0.28	1.13	2.25
	Single	1			
Hanging	Yes	7.61***	1.16	5.64	10.26
	No	1			
Alcohol problem	Yes	2.82***	0.41	2.12	3.75
	Unknown	1.01	0.16	0.74	1.37
	No	1			
Suicide in the social group	Yes	1.51*	0.25	1.08	2.10
	No	1.23	0.30	0.76	1.99
Suicide note	Yes	0.35***	0.05	0.26	0.47
	No	1			
Relationship conflict	Yes	1.16	0.19	0.84	1.61
	No	1			
Bereavement	Yes	1.33	0.26	0.90	1.95
	No	1			
Financial problems	Yes	0.37***	0.11	0.20	0.66
	No	1			
Work/school problems	Yes	0.51*	0.16	0.27	0.96
	No	1.00			
History of criminal offences	Yes	1.50***	0.19	1.17	1.93
	No	1			
Unipolar depression	Yes	0.30***	0.07	0.19	0.46
	No	1			
Substance use disorder	Yes	1.88*	0.53	1.08	3.28
	No	1			
Presence of one of more physical illnesses	Yes	0.74*	0.11	0.54	0.99
	No	1			
Treatment for mental illness in last 3 months	Yes	0.45***	0.09	0.30	0.68
	Unknown	0.89	0.12	0.69	1.16
	No	1			

Note: Reference category is 'non-Indigenous suicides'.

* $p < .05$, ** $p < .01$, *** $p < .001$

sample size in the smallest group (Indigenous) was larger than the number of predictors, prior probabilities based on the total sample were used (as opposed to those based on the unique sample size of each group). The significance of the discriminant functions and the total model was assessed using the Wilks Lambda statistic and the loading matrix of variables within each eigen factor. The classification results were assessed using cross-validation, jack knife classification, and Bayesian posterior probabilities.

A direct discriminant analysis was performed using a wide range of variables found in the QSR. These predictors included: age at the time of death; use of hanging as a suicide method; presence of physical illness(es); presence of mental illness; unipolar depression; relationship problems; unemployment; work or school problems; financial problems; conflict (with friends or family), and pending legal problems.

Results

All the variables entered into the canonical analysis were found to be significant and load on two underlying functions. The loading of specific variables on the canonical discriminant function can be seen in Table 16. The highest loading of variables on function one included age (+) and hanging (–). Majority of variables on function two were negatively scored, with the highest loadings being: presence of mental illness(es), relationship problems, number of physical illness(es) prior to death, and unemployment. Variable of diagnosis of unipolar depression was positively scored on function 2. Using function 1 as the primary discriminating factor, these results indicate that Indigenous suicide cases were likely to be younger and more often used hanging as a suicide method.

TABLE 16
Canonical Structure

Predictors	Function 1 (62%)	Function 2 (38%)
Age	0.290	
Hanging	-0.907	
Number of physical illness(es)		-0.356
Presence of mental illness(es)		-0.533
Unipolar depression		0.268
Relationship problems		-0.455
Unemployment		-0.354
Work/school problems		-0.309
Financial problems		-0.371
Conflicts (interpersonal or familial)		-0.250
Legal issues		-0.233

The results in Table 17 show that both functions were significant in explaining differences between Indigenous and non-Indigenous suicides (Wilks Lambda 0.882, $df=22$, $p<.001$), with the first discriminant function accounting for 62% (0.6233) and the second for 38% (0.3767) of the total variance.

The discriminating functions were then used to predict the proportion of suicide cases with unknown ethnicity who may have been Indigenous (Table 18). Cases were classified according to the group from which they had the highest score, using prior probabilities, and cross-validated using the jack knife procedure. The cases eventually selected were chosen on the basis of possessing a posterior probability

TABLE 17
Results of the Canonical Discriminant Analysis

	Function 1	Function 2
Canonical correlation	0.2736	0.2159
Eigenvalue	0.0809	0.0489
Variance — Proportional	0.6223	0.3767
Variance — Cumulative	0.6233	1
Wilks Lambda	0.8820	0.9534
F	52.35	43.47
df 1	22	10
df 2	18000.0	8890
Prob > F	0.0000e	0.0000e

TABLE 18
Predicted Group Membership Based on Canonical Discriminant Analysis

Actual group	Predicted group			
	Indigenous	Non-Indigenous	Unknown	Unclassified
Indigenous	389	31	58	0
(Number and average posterior probability)	0.6472	0.5466	0.5273	
Non-Indigenous	2,088	2,369	2,699	1
(Number and average posterior probability)	0.5934	0.5650	0.5285	
Unknown	284	172	812	0
(Number and average posterior probability)	0.5953	0.5351	0.5440	
Total	2,761	2,572	3,569	1
(Number and average posterior probability)	0.6012	0.5628	0.5320	
Prior probabilities	0.3333	0.3333	0.3333	

equal to or above a certain critical value (average posterior probability). This means that, while 284 of the cases with unknown ethnicity were predicted as being Indigenous using the discriminating functions discussed above, only those with a posterior probability equal to or above 0.5953 were selected. This left a total of 185 ‘unknown’ cases (159 males and 26 females) between the years 1990 and 2006 predicted to be of Indigenous ethnicity.

Figure 36 shows the suicide rates of Indigenous persons, males and females, based on the number of cases with recorded ethnicity (‘known rates’), and the rates calculated after the addition of the 185 cases previously classified as ‘unknown’ ethnicity (‘predicted rates’). It should be noted that the average rates described below differ from those described in the chapter ‘Suicide in the Indigenous Populations of Queensland, 1994–2006’, as we present suicide rates for the period 1990–2006 here. Due to large numbers of cases with unknown ethnicity prior to year 1994, and the subsequent likely under-reporting of Indigenous suicides, the expansion of the time frame led to the average suicide rate decreasing from 26.5 per 100,000 (1994–2006) to 23.3 per 100,000 (1990–2006).

After the inclusion of 185 cases with predicted Indigenous ethnicity, Indigenous suicide rates increased from an average of 22.6 to 31.8 per 100,000 (males: increase from 39.4 to 55.6; females: increase from 6.8 to 9.3 per 100,000). The highest discrepancy is observed in the years prior to 1994, as in these years there was the greatest percentage of cases with unknown ethnicity. Another increase in suicide rates is observed between the years 1996 and 2000. As shown in Figure 13, there were also the highest rates of suicides by hanging in both Indigenous and non-

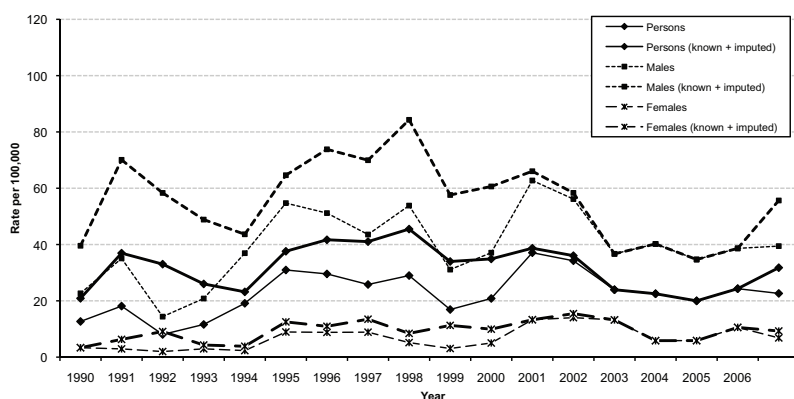


FIGURE 36

Crude suicide rates (known and predicted) for Indigenous persons, males and females, Qld, 1990–2006.

Suicide in Indigenous Populations of Queensland

Indigenous cases within this time period. Consequently, the greater prevalence of this method (shown to be one of the key factors discriminating Indigenous suicide cases from other groups) could in fact inflate the predicted suicide rates among the Indigenous population. After 2001, the difference between 'real' and 'predicted' Indigenous suicide rates was minimal due to the very low number of cases with unknown ethnicity in this period. This suggests that the calculation of Indigenous suicide rates in recent years has been the most reliable.

5 | Discussion

The *National Mental Health Policy 2008* (Australian Government, 2009a), which provides a strategic vision for mental health reform in Australia, recognises issues that impact specifically on the wellbeing of Aboriginals and Torres Strait Islanders, such as grief, suicide and self-harm, loss and trauma. In line with these identified target areas, which aim to reduce rates of suicides in Indigenous Australians, this report seeks to provide information on a number of elements that have characterised the fatal suicidal behaviour of Indigenous people in Queensland since the early 1990s.

After reviewing the available literature on research findings from both Australian and international sources on Indigenous suicide, we have presented the key characteristics of Indigenous fatal suicidal behaviour between 1994 and 2006 by using the most comprehensive and extensive dataset of suicide mortality available in Queensland (the QSR). Data were obtained through the Queensland Office of the State Coroner and crosschecked with the information available through the NCIS. Notwithstanding the methodological limitations described below, this material offers the potential to inform developments and future directions in suicide prevention initiatives targeting Indigenous populations.

5.1 Methodological considerations

Suicide has long been recognised as one of the world's most important public health problems; yearly, it accounts for almost half the violent deaths worldwide, and places a considerable emotional, social and economic burden on individuals and societies (WHO, 2004). However, misclassifications and consequential under-reporting of suicide mortality data still hinder a comprehensive understanding of the extent of this problem (Andriessen, 2006). In Australia, variations in coronial practices between states and territories, and changes in policy approaches, have affected the reliability of suicide rates (De Leo, 2007; Walker et al., 2008). In Queensland, since 2002, growing discrepancies have been observed in suicide data published by the ABS and those collated in the QSR (De Leo, 2007; De Leo et al., 2006). Further, understanding of the nature and magnitude of suicidal behaviours among the Indigenous population is limited by the absence of reliable epidemiological morbidity and mortality data (Elliot-Farrelly, 2004; Harrison & Moller, 1994; Reser, 1991; Tatz, 2001).

The misclassification and under-reporting of Indigenous status in routine statistical collections have been widely acknowledged (Pink & Allbon, 2008). The ABS uses the following operational definition of Indigenous status: 'Indigenous status indicates whether or not a person identifies as being of Aboriginal or Torres Strait Islander origin', with the term 'origin' relating to an individual's descent and for some, but not all, their cultural identity (McLennan, 1999, p. 35). Additionally, the Australian Standard Classification of Cultural and Ethnic Groups (2005) considers ethnicity to be a multidimensional concept based on a number of distinguishing characteristics; it uses a self-perception approach, allowing individuals to determine for themselves the affinity they feel towards a particular ethnic group (an idea in opposition to the western orientation towards genetics). As a result, the estimation of both population figures, and mortality data of individuals of Indigenous origin, is 'subjective' and based on the principle of self-attributed identification with an ethnic group. While estimates of the size of the Indigenous population have improved through better Census counts, amelioration of data on Indigenous mortality has been slow and affected by difficulties due to incompleteness of birth and death records across jurisdictions (Pink & Allbon, 2008), and the remoteness of many communities (Cantor & Neulinger, 2000). In Queensland, the introduction of mandatory identification of Indigenous status on death notification forms in 1998 has led to growing numbers of Indigenous deaths recorded (Pink & Allbon, 2008). The degree of incompleteness, calculated by dividing the number of Indigenous deaths registered in a certain time period by the number of projected Indigenous deaths for the same period, varies among states and territories, with an average of 56% for the whole of Australia and 52% for Queensland (Pink & Allbon, 2008).

While providing results derived from the most extensive dataset of Indigenous suicides to date in Australia, this report is inevitably affected by limitations arising from the above-mentioned data quality issues. Specifically, one of the problems encountered was a substantial number of missing data on several variables, due to the lack of either one or more sources of data (i.e., psychological autopsy, post-mortem or toxicology report). Missing information impacted on the statistical analysis by reducing sample sizes and, in particular, by limiting the choice of variables when conducting multivariate analyses. As illustrated in previous sections, the proportion of suicide cases with no record of the deceased's ethnicity in the QSR was highest in the years 1990–1993. To avoid this constraint, descriptive analyses, which compared characteristics of suicides in Indigenous and non-Indigenous populations, were performed using only cases with known ethnicity between the years 1994 and 2006.

QSR data analysis is also constrained by the limited reliability of collated information about the circumstances leading up to the suicide death, particularly about the deceased's medical and psychiatric histories. In some cases, information on individuals' history of mental illnesses and received treatments were obtained by police officers' contacts with general practitioners or mental health professionals; however, their reliability was based mostly on the strength of the relationship between the deceased and the informant(s). When considering the quality of information regarding the mental health of suicide cases, the relationship between observed symptoms of mental illness and their definite diagnosis is particularly indistinct. Consequently, cases with no information regarding certain illnesses or life events may indicate the informants' lack of awareness on that particular detail of the deceased's life, not necessarily denote their absence. As such, this study carries a considerable likelihood of producing an under-evaluation of risk factors and dynamics leading to suicide, though this is suspected to affect both Indigenous and non-Indigenous subjects in similar ways. A recommended response to this limitation is to call for more comprehensive police investigations and recording of the specific factors associated with suicide deaths (Konsky & Dundas, 2000).

Finally, it should be noted that while the results presented in this report enhance the understanding of the epidemiology and key characteristics relating to Indigenous suicides, a socio-historical context is crucial for a comprehensive understanding of this problem (Hunter, 1991). Some authors have suggested the need for an 'Aboriginal suicidology', grounded on the observed distinctiveness in suicidal behaviours among Indigenous populations and also within different Indigenous communities and groups with diverse cultural backgrounds (Elliot-Farrelly, 2004; Hunter et al., 2001; Tatz, 2001). This indicates that Indigenous suicide is influenced by a complex set of factors, many of which are unique to their history of dispossession, discrimination, resilience and socio-economic capital (Steering Committee for the Review of Government Service Provision [SCRGPS], 2007). Undoubtedly, great cultural sensitivity should be applied when designing effective suicide prevention strategies to tackle social issues of such importance and magnitude. However, these can only emerge when based on (more) reliable suicide mortality data.

5.2 Suicide rates in the Indigenous population

The prevalence of suicide in Indigenous communities has been shown to be significantly higher than that of non-Indigenous populations; yet Indigenous understandings and definitions of suicide and self-harming behaviours remain under-researched, undervalued and under-utilised.

Suicide Prevention Australia, Position Statement, April 2008

Aligned with previous studies on Indigenous suicide (e.g., Elliot-Farrelly, 2004; Leenaars, 2006), analyses of Indigenous and non-Indigenous suicide rates in Queensland between 1994 and 2006 illustrates several significant differences between the two groups.

First, the comparison of suicide rates (age-standardised by the Australian standard population in 2001) between Indigenous and non-Indigenous populations showed a substantially higher rate of suicide among Indigenous people. Indigenous rates also displayed greater fluctuations over the studied time period when evaluated against non-Indigenous rates. The latter had an average rate of 15 suicide deaths per 100,000 (ranging between 16.8 in 1998 and 12.3 in 2006), while the Indigenous population presented an average of 25.7 suicides per 100,000 population (ranging between 19.2 in 1994 and 37.1 in 2001). On average, Indigenous persons had a 1.7-times higher rate of suicide than non-Indigenous persons; Indigenous males had a 1.8-times higher rate than non-Indigenous males. Due to the small frequency of female Indigenous suicides (on average less than 10 per year, with peaks of 11 in 2002 and 10 in 2003), interpretation and comparison of female suicide rates should be undertaken with caution. Nevertheless, on average, Indigenous females had 1.3-times higher suicide mortality when compared to non-Indigenous females. While rates of suicide for non-Indigenous persons, males and females showed a significant decrease over the years, no significant changes were observed in the trends of Indigenous suicides (see Table 8).

As discussed previously, issues of data completeness concerning ethnicity affect the accuracy of assessments of trends in suicide rates. Between 1994 and 2006, there was an average of 7.9% of cases with unknown ethnicity, which suggests an under-reporting of rates in both Indigenous and non-Indigenous populations. Nevertheless, results from the QSR show consistency with some previous reports on temporal changes in the epidemiology of Indigenous suicides; for example, Hunter et al. (1999) observed a nearly four-fold increase between 1992 and 1996. An older study on South Australian Aboriginal suicide rates reported an even more dramatic increase, from 10.1 in 1981 to 105.3 per 100,000 in 1998 (Clayton & Czechowicz, 1991). In New Zealand and Canada, Indigenous youth suicide rates are, respectively, 1.5 and 5 times higher than non-Indigenous rates (Beautrais, 2003; Chandler et al., 2003; Clarke et al., 2008). While a precise distinction between the impact of enhanced recording of Indigenous mortality and a genuine increase in the incidence of suicidal deaths is not feasible, the most recent records of ethnicity seem to be reliable enough to produce a credible trend analysis.

Differences between Indigenous and non-Indigenous suicide mortality rates are even more evident when different age groups are analysed. Following the different age distributions in Indigenous and non-Indigenous Australians in the general population, Indigenous suicide cases were much younger, with a median age of 25 years, compared with 40 years in non-Indigenous cases. In the Indigenous group, almost 80% of suicides occurred among those younger than 35 years of age, compared with 38.6% in the non-Indigenous group. Results showed that, among Indigenous children under the age of 15, suicide rates were more than 7 times higher than in non-Indigenous children. Further, between the ages of 15 and 34 years, the rates remained significantly higher in both males and females; Indigenous suicides occurred about 3 times more often than in the non-Indigenous population of the same age. Suicide rates in the Indigenous population over the age of 55 years were, on average, about half that of the non-Indigenous population. However, this may be partly due to the fact that only six male and no female Indigenous suicides older than 55 years at the time of their death were listed in the QSR. The finding that younger Indigenous males have the highest suicide rates is consistent with much previous research on Australian and overseas Indigenous populations (e.g., Beautrais, 2003; Devanesen et al., 1986; Hunter, 1991), particularly with findings reported in *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples* (Pink & Allbon, 2008). This report found that, during the period 2001–2005, Indigenous suicide rates in Queensland for the < 34 years age group were 3 times higher than in the general population for males, and 5 times higher for females (Pink & Allbon, 2008). This makes suicide the leading cause of external death in Indigenous Australians (De Leo et al., 2006; Elliott-Farrelly, 2004; Helps & Harrison, 2004; Hunter & Milroy, 2006).

Further analysis of the differences in suicide rates between genders showed an interesting pattern. On average, there were much higher rates found in Indigenous males than females (5.5:1) compared with the non-Indigenous group (3.9:1). However, as shown in Figure 9, the rate ratio in Indigenous suicides demonstrated marked fluctuations over the years, with the lowest ratio found in the period after 2001. We have argued before that the accuracy of reporting ethnicity in the QSR has radically improved since 1994 and has been most precise from 2001 onwards. Therefore, it is possible that in the years prior to 2001 the much higher rate in Indigenous males, when compared to Indigenous females, could reflect a poorer reporting of ethnicity among Indigenous females than males. The observed higher incidence of female suicides for the period 2001–2006 (compared with 1994–2000, see Table 6) seems to support this hypothesis. On the other hand, it is also possible that the patterns of suicidal behaviours in the Indigenous population have indeed changed over the last decades; the incidence of female suicide may have increased

to a level where it is now comparable to the gender ratio in non-Indigenous suicide, perhaps in concomitance with some decline in Indigenous male suicide rates.

To explore the extent of the potential under-reporting of Indigenous suicide deaths, a canonical discriminant analysis was performed using a wide range of variables from the QSR. This method was able to identify a further 185 (probable) Indigenous suicides among cases with no reported ethnicity, particularly through their predominant use of hanging and younger age. When including cases with 'predicted ethnicity, the average suicide rate of Indigenous people between 1990 and 2006 was 31.8 per 100,000. This increased the average rate by 1.4 times both in males and females.

5.3 Key characteristic of Indigenous suicides

5.3.1 Choice of suicide methods

Marked dissimilarities between Indigenous and non-Indigenous people were also observed in the selection of suicide methods. From 1994 to 2006, hanging was the predominant method across all ethnicities in Queensland (38.9%); yet it was significantly more common in Indigenous deaths, where it was used in 86.6% of all suicides. Similar percentages of Indigenous males and females used hanging as a means of suicide; in non-Indigenous suicide cases, this method was more frequent among males than females. Hanging has been observed to be increasing as a suicide method both in Australia (De Leo et al., 2003; Klieve et al., 2009) and internationally (Gunnell et al., 2005). However, the results of the regression analysis in Table 10 demonstrated that the use of this method in Indigenous suicides remained relatively stable across the time period 1994–2006. However, when rates of hanging were analysed for the period 1990 to 2006, the trend did show a significant increase in both Indigenous and non-Indigenous suicide cases ($p < .01$).

It has long been recognised that different methods of suicide characterise different cultures (e.g., Ajdacic-Gross et al., 2008; Stack & Wasserman, 2005). This has led some authors to hypothesise that the predominant use of hanging in Indigenous Australians may reflect their history of colonial oppression (Hunter et al., 2001; Tatz, 2001). Furthermore, the abolition of capital punishment by hanging may have removed the stigma associated with this form of death, making it a more acceptable option for suicide (Cantor & Baume, 1998; Pounder, 1993). In Australia, recent media portrayals of hangings in custody might have additionally reinforced hanging as the preferred method of suicide in the Indigenous population (Cantor & Baume, 1998; Cantor & Neulinger, 2000). On the other hand, it can also be assumed that the physical accessibility of a particular method plays a fundamental role when selecting a means of suicide (Hawton, 2007; Linn & Lu, 2006). While many other

suicide methods need certain prerequisites for their execution (such as death by firearm, overdose of drugs or medicine, motor vehicle exhaust gas poisoning, jumping from heights — all of which comprise less than 10% of Indigenous suicide deaths), hanging does not require extensive preparation and can be quickly acted out in an impulsive way. When compared with other suicide methods, hanging is considered to be one of the more lethal; reported case fatalities following attempted suicide by hanging range from 70% (Gunnell et al., 2005) to 83% (Elnour & Harrison, 2008). However, little research to date has examined hanging (Gunnell et al., 2005; Kosky & Dundas, 2000). There are also limited opportunities to prevent these deaths by restricting access to means, which prompts the need for greater understanding of the links between availability and acceptability in Indigenous and non-Indigenous suicides.

Another characteristic of Indigenous suicide was observed by comparing the locations of where the suicidal act occurred. The majority of Indigenous suicides occurred within the deceased's own home, yet this was still a smaller percentage than non-Indigenous suicides (56.8% vs. 68.2%). On the other hand, almost twice as many Indigenous than non-Indigenous deaths occurred in other buildings, such as other people's residences, motels, workplaces or public places (i.e., shopping centres). These differences might be due to the fact that many Indigenous people live in communities with close ties between relatives and other members and where access to other people's premises or communal facilities is easier and more frequent.

Further, it was found that a significantly higher percentage of Indigenous suicides occurred while in police custody or in prison (3.1% vs. 0.7% of non-Indigenous cases). This observation follows public concerns regarding Indigenous deaths in custody. In 1987, the Royal Commission into Aboriginal Deaths in Custody (RCIADIC) was established to investigate the deaths of 99 Aboriginal persons in police or prison custody that had occurred between January 1980 and May 1989. The investigation, and a few subsequent reports, demonstrated that, while Indigenous people are indeed over-represented in Australia's criminal justice system, their suicide rates in custody are similar to non-Aboriginal inmates and detainees (Collins & Muzzamil, 2003; Joudo, 2006). While the QSR data do not enable differentiations between police and prison custody, or the calculation of rates of suicide dates in custodial settings over time, several Australian and international studies have confirmed a greater prevalence of mental illness (Butler et al., 2007) and elevated suicide rates in prisoners compared with the general population (e.g., Dalton, 1999; Fazel et al., 2008). This calls for greater emphasis on better recognition and monitoring of risks for suicidal behaviours in Indigenous persons in police custody or prison.

Following an assessment of trends against key demographic indicators, method selection and suicide location in Indigenous versus non-Indigenous suicide cases of Queensland, the following section looks at the role of specific factors, associated with these deaths. An exploration of the presence of physical and mental illnesses, key life events, including prior exposure to suicide, employment and legal factors, provides a valuable framework from which strategies to address suicides in Indigenous communities can be developed.

5.3.2 Marital and employment status

Numerous studies have identified marital and employment statuses as significant predictors of an individual's suicide risk, with considerably increased suicide rates among single, divorced or widowed persons and the unemployed (e.g., Bernal et al., 2007; Borges et al., 2008; Pirkis et al., 2000). These associations appear to be stronger in younger people (Agerbo et al., 2006; Wyder et al., 2009). For calculations and comparisons of suicide rates by marital and employment statuses in Indigenous and non-Indigenous suicide cases, data from the QSR were assessed against the population distributions of these statuses derived from the 2001 Census data.

In line with the overall higher suicide rates in Indigenous people compared with non-Indigenous people, elevated rates were observed for both married (2.9-fold) and non-married (3.2-fold) Indigenous persons. Further, in both populations, suicide rates were observed to be notably higher among the 'not married', compared with those who were married or in a de facto relationship — a result aligned with past research findings listed above. In the non-Indigenous cases, this difference was more pronounced in males than females; in Indigenous cases, the results showed that being in a relationship was a more pertinent protective factor in females than in males.

Both poor labour force participation and lower employment rates have long been acknowledged as one of the key indicators of disadvantage in Indigenous Australians (SCRGPS, 2007). For example, in 2001, 54% of Indigenous persons between the ages of 15 and 64 years and registered to be in the workforce (i.e., excluding students, retirees, disabled and institutionalised persons) had been employed, compared more than 90% of non-Indigenous persons. When including participation in the Community Development Employment Project (CDEP), the percentage of employed Indigenous people increased to 80%. While the CDEP, or the 'work-for-the-dole', scheme is counted as a form of employment, it carries a significant number of problems, discussed in the report *CDEP: Help or Hindrance?* (Hudson, 2008). The employment of Indigenous people has been increasing over the last decade; however, in 2006, only 34% of the Indigenous population aged 15–64 years were employed, compared with 67% of the non-Indigenous population

(ABS Census, 2006). In 2004–2005, the national unemployment rate for Indigenous people was about three times that of non-Indigenous people (Trewin, 2006).

In the sample of Indigenous suicides from the QSR who were older than 15 years at the time of their death, around a third of the cases were recorded as being employed (full-time, part-time or participating in the CDEP scheme), compared with 41.7% of the non-Indigenous sample. In both groups, females were less likely to be employed. A greater percentage of Indigenous suicide cases were not in the workforce, which is partly due to the differences in age distribution and the fact that more Indigenous suicides occur in younger age groups. When calculating the suicide rates in both groups by employment status, the most outstanding result is a suicide rate of 260.8 per 100,000 in unemployed Indigenous males. Hence, this subgroup of the Indigenous population is particularly vulnerable to the risk of suicide and it is vital to develop appropriate suicide preventative measures to tackle this issue.

5.3.3 Health indicators

Our results showed that almost twice as many suicide cases in the non-Indigenous group recorded at least one physical illness (31.8%), compared with 16.2% of the Indigenous group. These findings are interesting given the numerous observations on the poorer health of Indigenous Australians across their whole lifespan and a greater burden of ill-health, compared with those of the general population (Cunningham, 2005; Pink & Allbon, 2008; SCRGPS, 2007; Zhao et al., 2004). Non-communicable diseases, including chronic illnesses such as cardiovascular diseases, diabetes, mental illnesses and respiratory diseases, have been reported to be responsible for 70% of the observed difference in the burden of disease between the Indigenous and non-Indigenous populations (Vos et al., 2007); see Figure 37. Much of this health gap has been associated with the impact of key environmental influences and disadvantages across a range of socioeconomic dimensions, such as access to clean water, functional sewerage, appropriate housing conditions and more common exposures to certain health risks such as smoking, poor nutrition, alcohol misuse, overcrowded living conditions and violence (SCRGPS, 2007; Vos et al., 2007). The Australian Medical Association found that Indigenous people have significantly less access to health services and resources; in 2005, it was estimated that Indigenous health care expenditure was underfunded by over \$400 million per year (Reath, 2005). Additionally, there is evidence to indicate a deficit in Indigenous health care staff and services (particularly in remote areas), which implies the need for a continued emphasis on the recruitment and training of Indigenous health workers (House of Representatives Standing Committee on Family and Community Affairs, 2000).

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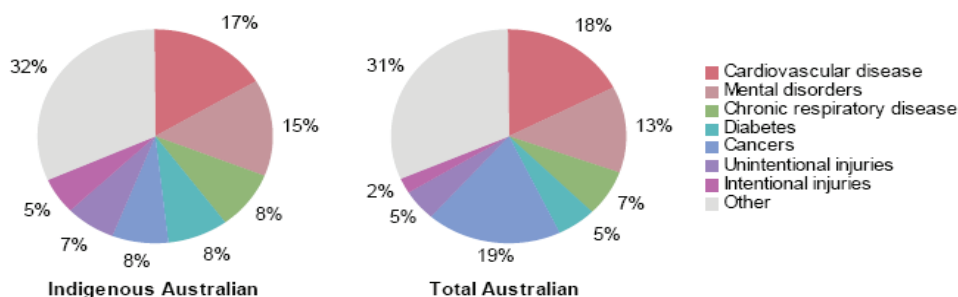


FIGURE 37

DALY (disability adjusted life-years) by broad cause group, Indigenous Australian and total Australian populations, 2003.

Source: Burden of disease and injury in Aboriginal and Torres Strait Islander peoples 2003 (Vos et al., 2007).

Several limitations of the QSR data containing information about a person's (physical and mental) health need to be acknowledged. First, as discussed previously, a lack of knowledge about particular aspects of the deceased's life circumstances and physical and/or psychiatric conditions may have contributed to the under-reporting of important details. However, at the same time it seems reasonable to assume that comparable underestimations occurred in the sample of non-Indigenous suicides. Consequently, while this report may not offer accurate approximations of the prevalence of physical conditions, it still provides valuable comparisons of these conditions in large samples of Indigenous and non-Indigenous suicides. Second, various studies and governmental reports have argued that information on the number of contacts with health professionals and hospitalisations of Indigenous people is limited by the accuracy with which Indigenous patients are identified in medical records (Cunnigham, 2002; Pink & Allbon, 2008; SCRGPS, 2007). Hence, when the investigating police officer would contact the deceased's treating health professional, there may have been no records available, either due to a failure to record Indigenous status or a reluctance on the part of the patients to identify themselves as Indigenous. The third and possibly most influential aspect to consider when comparing the presence of physical illnesses in Indigenous and non-Indigenous suicides cases is the limited access to health facilities; remote areas are particularly affected, with significant shortages of health professionals, difficult availability of transport and lower affordability of private health insurance (Pink & Allbon, 2008).

The most frequently reported medical disorders in Indigenous suicides in the QSR, were: general or unspecified health problems (including chronic pain, sleep disorder, and other or unspecified disabilities not included in other categories); trauma near death (including cuts, fractures or other minor injuries); circulatory

system disorders (heart or artery disorders); metabolic disorders (most commonly diabetes) and infectious diseases. These findings are congruent with reports on the high prevalence of these disorders among Indigenous people (SCRGPS, 2007; Pink & Allbon, 2008; Vos et al., 2008); however, our results did not corroborate their larger occurrence when compared with the non-Indigenous suicides.

Further, our results showed that while cancer was present in over 4% of non-Indigenous suicides, it was only reported in two Indigenous cases over the observed period of 13 years. This may be a reflection of the lower life expectancy of Indigenous people (many types of cancer are age-dependent) or the lower incidence of cancer in the Indigenous population, where it constitutes 8% of the burden of disease, compared with 19% in non-Indigenous people (Vos et al., 2008). On the other hand, these results indicate that cancer, and physical diseases in general, could be less relevant factors in Indigenous suicides than non-Indigenous suicides.

About 70% of Indigenous suicide cases with at least one medical condition had been in contact with a health professional in the 3 months prior to death — a percentage similar to their non-Indigenous counterparts. These results are consistent with the findings of the *National Aboriginal and Torres Strait Islander Health Survey* (NATSIHS) (Trewin, 2006). The NATSIHS reported that, after adjusting for age differences between the two populations, Indigenous people were equally as likely as non-Indigenous people to have visited a doctor.

5.3.4 Mental illness

There is overwhelming evidence suggesting that mental illness, particularly affective and substance abuse disorders, play a key role in both fatal and non-fatal suicidal behaviours in non-Indigenous populations worldwide (e.g., Borges et al., 2008; Rihmer, 2007). However, at present there is no comprehensive national data about the incidence or prevalence of mental illnesses among Indigenous people. This is at least partly due to mental health facilities that are often culturally inappropriate (Farrelly, 2008). As a result, information about the mental health of Indigenous Australians is mainly sourced from data on hospitalisations and mortality due to serious mental illnesses (SCRGPS, 2007). In 2003, an analysis of the burden of disease among Indigenous Australians showed that mental illnesses caused 15% of the total disease burden; anxiety and depression, alcohol dependence/harmful use, and schizophrenia comprised more than three-quarters of this burden. Further, the burden due to mental illnesses in Indigenous Australians was 1.6 times the rate of the total Australian population, with alcohol dependence 4.5 times that of the total Australian population (Vos et al., 2008). In addition, Indigenous people had higher rates of hospitalisation for mental illnesses and behavioural disorders than non-

Indigenous people (SCRGPS, 2007; Roxbee & Wallace, 2003). The NATSIHS (Trewin, 2006) reported that almost 10% Indigenous persons surveyed reported feeling nervous all or most of the time; 7% felt so sad that nothing could cheer them up.

The disparity between Indigenous and non-Indigenous conceptions of mental health urges the need for a better understanding of cultural context and, particularly, the meaning of depression-related behaviours (Elliot-Farrelly, 2004; Reser, 1991). The National Aboriginal Community Controlled Health Organisation stated that:

For Aborigines, mental health must be considered in the wider (Aboriginal concept of wellbeing) context of health and well-being. This requires that this health issue be approached in the social-emotional context and that both social-emotional health and psychiatric disorders encompass oppression, racialism, environmental circumstances, economical factors, stress, trauma, grief, cultural genocide, psychological processes and ill-health. (NACCHO Position Paper, 1993, as cited in Swan & Raphael, 1995, p. 21).

The aforementioned necessity of integrating holistic views on physical and mental health in the Indigenous population has led some authors to dispute the purported role of mental illness as a causal factor in Indigenous suicide (Reser, 1991; Tatz, 2001). For example, Tatz (2001) has argued that suicide and attempted suicide among Indigenous youth is not the result of mental illness 'in the strict pathological sense', but is still certainly a manifestation of mental health problems.

The inability to evaluate causal factors in Indigenous suicides is particularly hindered by the scarce and inconsistent evidence-based epidemiological data on the prevalence of mental illnesses in Indigenous Australians. Some authors have cautioned that the cultural mechanisms underlying mental illnesses in the Indigenous population may differ from those in non-Indigenous people. Further, it is possible that psychological and emotional distress is expressed in a culturally determined manner that the available screening instruments may be unable to pick up (Butler et al., 2007). However, a study by Hunter (1993) on self-harming behaviour among young Indigenous people found that those who had attempted suicide reported a high level of anxiety and depression. A study conducted in the Northern Territory indicated that almost 70% of Aboriginal people who died by suicide demonstrated features that may have been characteristic of mental illness prior to taking their lives. Signs tended to be more obvious among Indigenous males than females. One of the most common signs was 'depressed mood', which was found more often in females than males (Parker & Ben-Tovim, 2002). However, the reliability of these findings is uncertain, as the results were drawn from descriptions

of ‘signs of abnormal behaviour’ by family or friends of the deceased. Only one Aboriginal suicide case included in this study had a diagnosed mental illness.

As a general remark, it should be noted that the overall prevalence of mental illnesses in the QSR is lower than that frequently reported in the literature (e.g., Bertolote et al., 2004). Results from the QSR rely on the accuracy of reports from informants and available clinical data. A coroner may ask for further investigation only when the cause of death is unclear — for example, from GPs, psychiatrists, private psychologists or counsellors. Therefore, it is likely that the reported prevalence of mental illnesses in our sample of suicide cases is affected by both under-reporting and misclassification of disorders. Nevertheless, several marked differences emerged when police and coronial documents of Indigenous and non-Indigenous suicides were reviewed.

The presence of at least one mental illness was reported in twice as many non-Indigenous suicides (40.4%), compared with 20.5% of Indigenous cases. In both groups, the most frequent diagnosis was unipolar depression; yet this diagnosis was found about 4-times more often in non-Indigenous cases (26.9% compared with 6.6% of non-Indigenous). Psychotic disorders were the second most frequent diagnosis, present in about 5.6% of suicide cases in both groups. Approximately 3.8% of both groups had a record of an unspecified mental illness, which includes cases where the informants knew of the presence of the deceased’s ‘mental health problems’ or were aware of the deceased receiving treatment by a mental health professional, but they did not know the specific diagnosis. A significant difference was observed between the two populations with regards to the presence of substance abuse disorders — they were diagnosed almost twice more often in Indigenous suicides than in non-Indigenous suicides (5.2% vs. 2.9%). This is consistent with numerous reports on the elevated levels of alcohol and drug consumption among Indigenous Australians, which will be discussed in more depth later on.

There are several possible reasons that might have contributed to the observed discrepancies in the prevalence of mental illnesses in Indigenous and non-Indigenous suicide cases. While some might arise from the limitations inherent in the use of psychological autopsy questionnaires (see Section 2.6: Methodological limitations), some others might specifically pertain to investigating mental illnesses in Indigenous Australians. It has been observed by several authors that Indigenous persons conceptualise mental illness as a holistic combination of spiritual, social, economic and physical factors; in contrast, non-Indigenous persons commonly see mental illness as an individual and internal problem (Cox, 2009; Ypinazar et al., 2007). As Pridemore (2009) comments, applying western diagnostic measures to Indigenous cultures constitutes a ‘category fallacy’, so called because the specific

definitions of 'normal' and 'abnormal' behaviours lack coherence and validity for members of more traditional cultures. As data utilised in our study do not allow for deliberations on the suitability of the Form 1 for Indigenous people, more in-depth research on understanding the link between suicide and the Indigenous experience of mental illness would be needed.

In this report, we also analysed help-seeking behaviour among Indigenous and non-Indigenous suicide cases. The NATSIHS study (Trewin, 2006) showed that, among the Indigenous people who reported experiencing psychological distress, only 12% saw a doctor or other health professional; more females than males sought help. Results from the QSR confirmed this low level of help-seeking for mental illnesses in Indigenous suicide cases. Twice as many non-Indigenous suicide cases (42.3% compared with 23.3%) have received any sort of treatment by a mental health professional in their lifetime; this difference becomes even more pronounced when looking only at contacts with mental health services in the three months prior to death (2.5 times more often in non-Indigenous suicide cases). In the non-Indigenous cases, females more frequently sought help from a mental health professional than males, while among Indigenous Australians these gender differences were not significant.

Indigenous and non-Indigenous suicide cases also sought help from different sources for mental illnesses: results illustrated that almost half the Indigenous cases received treatment as patients in a mental health facility, compared with 30.7% of non-Indigenous cases. This supports conclusions derived from the National Hospital Morbidity Database which showed that hospital separation rates for mental illnesses among Indigenous Australians was 1.8 times the rate of non-Indigenous Australians (AIHW, 2009). Between 2005 and 2007, mental illnesses and behavioural disorders due to psychoactive substance use were the most common type of mental health-related conditions requiring hospitalisations of Indigenous Australians (38%, compared with 17% in non-Indigenous Australians). This was followed by psychotic (26%) and mood disorders (15%) — the latter were the most common condition in non-Indigenous hospitalisations (AIHW, 2009). An additional source of information on help-seeking behaviours is the National Community Mental Health Care Database, which presents contacts with specialised public mental health services dedicated to the care of non-admitted patients (AIHW, 2009). This database showed that, on a national level, Indigenous people present at these services twice as often as non-Indigenous. However, results from the QSR did not confirm any differences between the two groups; around one-third of both Indigenous and non-Indigenous suicide cases had received treatment for mental conditions as outpatients. The majority of non-Indigenous suicide cases with

recognised mental illnesses had been receiving treatment from their general practitioners (55.3%), compared with just over one-third of Indigenous suicide cases.

The reported differences in the help-seeking behaviours of Indigenous and non-Indigenous suicide cases prior to death are likely to reflect several underlying causes. For instance, Farrelly (2008) has suggested that the inappropriate methods of help offered by mainstream services to Indigenous clients are a dominant obstacle to help-seeking for suicide issues. This leads to a greater reliance on informal sources of help, such as friends and family, which may be problematic due to the 'close-knit' nature of Indigenous communities, where people may feel ashamed to openly speak about their problems. Additionally, different levels of accessibility and availability of sources of mental health care have been well documented in Australia. Indigenous people have greater under-utilisation and receive less specialised care for mental and behavioural disorders (AIHW, 2009; Vicary & Bishop, 2005). Westerman (2004) has further shown that Indigenous people are more likely to engage with mental health services only when their mental illness has progressed to more severe and chronic levels and when they are in need of acute care. This is supported by data that shows that Indigenous people most commonly present with substance abuse and psychotic disorders (AIHW, 2009). In fact, when compared to mood or anxiety disorders, substance abuse and psychotic disorders are more easily diagnosable and warrant prompt specialised treatment. Further, the more common utilisation of general practitioners by non-Indigenous people may be an outcome of the shift in psychiatric care in Australia, where psychiatric de-institutionalisation has led to greater use of primary healthcare services (e.g., Doessel et al., 2005; Whiteford et al., 2002). The described difficulties faced by Indigenous people in accessing medical facilities influence their different help-seeking patterns. Moreover, cultural misunderstandings and inappropriate service provision, concerns regarding confidentiality, and the stigma surrounding the disclosure of suicidal thoughts have been acknowledged as additional restraints that prevent Indigenous Australians from seeking the necessary help for mental illnesses (Farrelly, 2008; Vicary & Bishop, 2005). Farrelly (2008) documented that Aboriginal-specific formal help sources, provided and staffed by Aboriginal community members, are preferred because of their greater understanding of background and culture. However, engagement with these services increases the difficulties associated with disclosing sensitive issues, such as suicide or self-harm.

Zubrick et al. (2005) conducted a study on emotional and behavioural health in Aboriginals. In their sample, 16% of young people aged 12 to 17 years had seriously thought about ending their lives in the 12 months prior to the survey. Of those, 39% had attempted suicide in that time period. In contrast, an Australian study assessing lifetime suicide prevalence in non-Indigenous adolescents found that 22%

of the sample had experienced suicidal ideation (Allison et al., 2001). Results from the QSR showed no difference in the prevalence of lifetime and recent (previous 12 months) communication of suicidal intent between the Indigenous and non-Indigenous suicide cases; just over 40% of persons expressed their wish to die or communicated their suicidal plans prior to death, which is consistent with results presented by Parker & Ben-Tovim (2002). Of those with reported past suicide attempt(s), 33.6% of Indigenous cases received treatment afterwards, compared with almost half the non-Indigenous cases.

Previous research has suggested that Indigenous suicides are often more impulsive, with fewer warning signs prior to the event, which indicates a lack of premeditation and planning (Hunter et al., 2001; Reser, 1991; Tatz, 2001). In addition, Indigenous suicides are associated with elevated levels of alcohol and substance use, which are known catalysts for impetuous suicidal acts (Wojnar et al., 2009). Results of the prevalence of past suicidal behaviours and communications of intent from the QSR did not support assumptions that Indigenous suicides more often occurred as a reactive response to a particular stressful situation or event (Reser, 1991). However, Indigenous people were found to have left a suicide note almost 3 times less often than non-Indigenous people; but this may be due to poorer levels of literacy among the Indigenous population (AIHW, 2009).

5.3.5 Alcohol and drug use

Results from the QSR on alcohol and drug use confirm several reports and investigations on substance use and misuse in the Indigenous population (e.g., AIHW, 2009; SCRGPS, 2007). In general, research has indicated that Indigenous Australians are less likely than other Australians to drink alcohol, but those who drink are more likely to consume it at hazardous levels. In 2004 and 2005, around half of all Indigenous adults (49%) reported having consumed alcohol in the week prior. One-third of these people, more males than females, reported drinking at risky/high risk levels (Trewin, 2006).

Among the Indigenous suicide cases in the QSR, 5.2% had an identified diagnosis of substance abuse disorder (5.4% of males and 4.1% of females), in comparison to 2.9% of non-Indigenous cases. Indeed, non-Indigenous suicide cases showed a reverse trend in gender comparison (2.7% of males and 3.6% of females had this diagnosis). These results were supplemented by reports provided by the informants in the psychological autopsy; around 40% of Indigenous suicide cases had a recognised problem with drinking (including binge drinking, depressed mood and violent behaviour), compared to 16.9% of non-Indigenous suicide cases. The age distribution of people with problematic drinking habits showed a predominance

of young Indigenous people. Similar results were obtained in a study in the Northern Territory (Hanssens, 2007b).

Toxicology reports provided an additional source of information on the alcohol and drug consumption of suicide victims; these reports overcome the limitations of incompleteness and poor accuracy of reports by the informants. These results showed that 66.5% of Indigenous people (more females than males) and 40.4% of non-Indigenous persons (more males than females) had some level of alcohol found in their blood at the time of death. Additionally, almost 25% of the Indigenous subjects had blood alcohol levels 4 times in excess of the legal driving limit. This confirms the conclusions of health surveys such as the NATSIHS (Trewin, 2006) and other studies, which suggested that Indigenous Australians are at a higher risk for alcohol abuse. Alcohol abuse is also associated with aspects of socioeconomic disadvantage, like violence (Weatherburn et al., 2006) and criminal behaviour (Putt et al., 2005).

Statements obtained by the informants further demonstrated that more than a third of Indigenous suicide cases were either occasional or regular users of illicit drugs (compared with around a quarter of non-Indigenous suicide cases). These results are aligned with the findings of the 2001 National Drug Strategy Household Survey (AIHW, 2002), which reported that 32% of Indigenous persons aged 14 years and older were current users of illicit drugs; this was twice the percentage found in the general population. The most frequent illicit drug used in both Indigenous and non-Indigenous suicide cases was cannabis; yet its use was twice as common among Indigenous cases. Previous studies have illustrated the endemic misuse of cannabis in Indigenous communities and its profound effects on health and social adjustment (Clough et al., 2004; Lee et al., 2009), associated with increased suicidal ideation (Clough et al., 2006). The second most frequent drug reported in Indigenous suicides was amphetamines (5.9%), followed by the use of inhalants (2.4%), and heroin and opiates (1.9%). In developed countries, inhalation of petrol fumes or other solvents is only practised by a minority of people; however, its use has increased markedly in recent years, particularly among Indigenous youth (Maclean & D'Abbs, 2002; Chivell, 2008). Petrol sniffing poses significant risks to an individual's health and can result in permanent disability, particularly brain damage, as well as having disruptive and destructive effects on the functioning of families and communities (Australian Human Rights Commission, 2003). Similarly, growing trends have been observed in injecting drugs, particularly heroin and amphetamines (Meyerhoff, 2000). Lee et al. (2009) argue that the social disadvantage common to Indigenous people nationwide (such as limited employment, poor-quality housing, high rates of morbidity, mortality and

incarceration) is likely to be both a strong risk factor for substance abuse and a perpetuating influence.

5.3.6 Life events

The experience of stressful events (e.g., illness, loss of a significant person or relationship problems) can significantly affect an individual's social and emotional wellbeing and has long been recognised to increase the risk for suicidal behaviour across the life-span (e.g., Borges et al., 2008; Osvath et al., 2004). It has also been documented that the link between life events and suicidality may be culturally dependent (Leach, 2006). This has prompted the need for an informed appreciation of the particularities of specific cultural backgrounds, their value systems and consequent links between suicide risk factors.

The previous sections of this report have described a greater prevalence of several stressful life events in the Indigenous population, which have been recognised as risk factors for suicide behaviour, particularly substance abuse and unemployment. Results from the 2004–2005 NATSIHS study (Trewin, 2006) further showed that twice as many Indigenous people experienced high to very high levels of distress compared with non-Indigenous people (26.6% vs. 13.1%). These feelings were most commonly associated with experiences of abuse, criminal activities and drug- or alcohol-related problems. Almost 80% of the people surveyed reported having experienced at least one stressful event in the previous 12 months; on average, 2.6 stressful events were present. Results from the QSR showed comparable percentages of Indigenous and non-Indigenous suicide cases with at least one recorded stressful precipitating life event (around two-thirds of the group). However, it should be noted that life events in the QSR were not recorded using a standardised assessment tool (as in the NATSIHS study) but were extracted from informants' statements obtained by police officers in the psychological autopsy questionnaire. Therefore, it is likely that results from the QSR present an under-estimation of actual life stressors experienced by both Indigenous and non-Indigenous persons prior to death. Despite this limitation, and keeping in mind that direct causal links between reported events and suicides could not be determined, the results illustrated several relevant differences among the two populations.

The most common life events, reported in about one-third of Indigenous suicides, were relationship problems (more often relationship conflicts than separations). The second most common life events preceding Indigenous suicide were pending legal matters and bereavement (each was reported in about every ninth Indigenous suicide case). The elevated prevalence of these stressful events in the Indigenous populations has been reported by several other authors (e.g., Hanssens, 2007b; Tatz, 2001).

The National Inquiry into the Human Rights of People with Mental Illness (Human Rights and Equal Opportunity Commission, 1993) found that antisocial and self-destructive behaviours, often the result of undiagnosed mental illnesses, have brought Aboriginal and Torres Strait Islander people into frequent contact with the legal system. Further, it has been suggested that incarcerated people commonly experience depressive symptoms associated with unresolved anger, which can result in suicide attempts. Although Butler et al. (2007) found no differences in Indigenous and non-Indigenous prisoners' risk of death from suicide, higher rates of imprisonment among Indigenous Australians automatically increase their numbers of deaths in custody.

Analysis of the QSR data showed that a record of current or past criminal offences was reported in nearly twice as many Indigenous suicide cases than non-Indigenous cases. However, within the cases with criminal records, the prevalence of specific types of behaviours appeared to be rather indistinguishable between the two groups. It is worth noting the relatively high prevalence of cases in which a criminal history was reported but not further identified (around 26% of Indigenous and 18% of non-Indigenous cases).

The last key characteristic of Indigenous suicides was their greater exposure to bereavement, particularly the experience of losing people within their social networks to suicide. With elevated mortality and morbidity rates due to recognised disadvantages in health and a lack of appropriate treatments for both physical and mental conditions, it is expected that Indigenous Australians are more often confronted with deaths of people around them from an early age. This is even more evident in remote and closely connected communities. Among the Indigenous suicide cases in the QSR, 11.1% reported being bereaved due to a recent loss of a significant person in their lives (compared with 8.0% of non-Indigenous cases). Further, almost twice as many Indigenous than non-Indigenous suicide cases had been exposed to a suicide in their social network (16.7% vs. 8.8%). The deleterious impacts of such experiences on the mental and physical health of the surviving individual have been supported by a vast amount of empirical data on bereavement in suicide survivors (Agerbo, 2005; Cerel et al., 2008; De Groot et al., 2006). Suicidal thoughts are not uncommon among the bereaved (Neary, 2006). Further, the experience of suicidal thoughts seems to be particularly high in children and adolescents following the loss of a parent (Cerel et al., 1999) or in response to the suicide of a peer (Melhem et al., 2004). Zubrick et al. (2005) found that a higher proportion of Indigenous youth, who knew people who had recently attempted suicide, had themselves seriously thought about ending their own lives (35%), compared with young people without any such acquaintances (11%).

There have been several investigations into the clustering phenomenon of suicides, with suggestions that familial aggregations of suicides might be mediated by genetic factors (Brent & Mann, 2005) and/or shared environmental factors (Fu et al., 2002). Most research has focused on suicide clustering in youth and adolescents. While some studies have confirmed several suicide deaths occurring within a small geographical region and with temporal proximity in such clusters (Gould et al., 1990; Johansson et al., 2006), there is still an ongoing debate into the mechanism behind these patterns. Some researchers have supported the contagion or imitation hypothesis (e.g., Gould, 2003; Haw, 1994; Schmidtke & Haefner, 1988), while others have proposed alternative explanations. For example, Joiner (1999) stated that individuals vulnerable to suicide may cluster before the occurrence of suicides in their social network or through the portrayal of suicidal death by the media; it is these negative events that increase the risk for suicide in an already susceptible population. Similarly, Brent et al. (1993) argued that exposure to suicide induces or exacerbates complicated bereavement in vulnerable individuals, which can then manifest itself as suicidal behaviour. On the other hand, Hanssens' (2007a) research on the clustering effects of Indigenous suicides in the Northern Territory described a mechanism of 'behavioural contagion'. This theory proposes that suicide, including attempted suicide and self-harm, appear to produce further clusters of suicides in Indigenous communities via the 'contagious' spread of several forms of antisocial behaviours, such as criminality, conduct disorder, and alcohol and drug abuse. These behaviours, in combination with exposure to social stressors, dramatically increase the risks for suicide.

Either way, the outcomes for people affected by a suicide in their social environment are reflective of the complex relationship between the nature of death, interpersonal and intrapersonal resources, and any individual's coping skills (Stroebe et al., 2006). It is reasonable to assume that, due to a myriad of adverse life circumstances experienced by the Australian Indigenous population, the available resources for coping with such traumatic events in their communities are weakened.

6 | Implications From Findings

The main objective of this study was to describe and analyse the trends and characteristics of suicides among the Indigenous population of Queensland. Providing a set of recommendations for the development of suicide prevention programs or evaluating existing strategies was outside the scope of this report. Nevertheless, some general suggestions have been provided in regard to areas in need of future attention.

Voyle and Simmons (1999) raised the concern that there is commonly a gap between understanding what initiatives need to be implemented and knowing how to effectively put them into action. In response, experts both internationally and within Australia are supporting community-based interventions as the best approach to working within Indigenous communities (Bourke et al., 2000; Potvin et al., 2003; Wekerle et al., 2007). Although they may take time to develop, health programs that incorporate ideals of community development and are implemented with the goal of empowerment and eventual community ownership were found to have positive outcomes for Maori in South Auckland (Voyle & Simmons, 1999). The term ‘community development’ refers to ‘the process of organising and/or supporting community groups in identifying their health issues, planning and acting upon their strategies for social action/change, and gaining increased self-reliance and decision-making power as a result of their activities’ (Labonte, 1993, p. 237).

Key foundations of the community development approach are:

1. equal participation of community members in decision-making
2. utilisation of existing community expertise and strengths (Potvin et al., 2003)
3. program flexibility (Potvin et al., 2003)
4. cultural sensitivity and relevance, particularly in regards to the needs of the specific community in which the programs are implemented
5. consistency with Indigenous holistic (i.e., individual, society, community) approaches to health and wellbeing (Parker et al., 2006)
6. increase in community motivation to source and adapt its own resources.

However, community participation in the development and implementation of a program does not necessarily guarantee quantitatively assessable improvements in health or wellbeing (Daniel et al., 1999). Community strategies have been used with varying success in Indigenous populations to address issues such as substance misuse (including petrol sniffing and alcohol abuse), physical health concerns (in particular diabetes management) and school compliance (Parker et al., 2006; Rowley et al., 2000). It must be remembered that many of the issues faced in Indigenous communities have their roots deep in inter-generational suffering as a result of their colonial experience (Blackstock & Trocmé, 2005). Further, community development and empowerment initiatives can take several years to demonstrate positive change, as they focus on changing behaviours rather than short-term risk factors (Daniel et al., 1999). In this way, future suicide prevention strategies for Indigenous communities need to involve a longitudinal approach where researchers work in partnership with the communities in both the development and implementation of holistic and culturally appropriate programs and activities. In addition, external evaluations should take place regularly, with a stronger focus on process, particularly in the initial stages.

A limitation of the community development approach is the lack of suitably qualified Indigenous people who may possess the skills needed to address health and social issues in Indigenous communities, especially those in remote areas (Tsey, 2000). Additionally, community approaches require considerable support from the community to be effective. A lack of interest and lack of belief in the proposed programs, and a lack of trust in those connected to the programs, are all potential barriers to the development, establishment and implementation of interventions in Indigenous communities (Voyle & Simmons, 1999).

It has been suggested that the most appropriate roles for non-Indigenous people working in Indigenous communities are those of 'advocate', 'supporter' or 'consultant' (Voyle & Simmons, 1999). For example, Mohajer et al. (2009) suggested mentorship and peer support as a way to increase resilience and reduce boredom, hopelessness and traumatic responses, which can lead to substance misuse. As discussed above, training community members for these roles in suicide prevention programs and activities can be incorporated into the longitudinal research so necessary for this area. This may also ensure that the positive impacts of effective strategies continue after the research itself concludes.

The Australian Government's strategy '*Closing the Gap on Indigenous Disadvantage: the Challenge for Australia*', released in 2009, recognised the paramount relevance of establishing respectful and collaborative partnerships with Indigenous Australians, which need to be defined by clear objectives and responsibilities

(Australian Government, 2009b). Through the Council of Australian Governments (COAG), all states have pledged to develop and implement coordinated strategies addressing key causes of Indigenous disadvantage. This is aimed at meeting the needs of remote communities, improving their health outcomes and employment opportunities, and finally halving the gap in mortality rates for Indigenous people. The national initiative led the Queensland Government to develop a plan, *'Making Tracks: Toward Closing the Gap in Health Outcomes for Indigenous Queenslanders by 2033'* (Queensland Government, 2010). This program is meant to improve individual and community resilience in order to reduce suicide risk and mortality in Aboriginal and Torres Strait Islander populations, and to facilitate access to services in response to suicidal behaviour.

From the material presented in this report, it is apparent that suicide mortality among Indigenous people has been rather stable between 1994 and 2006. In fact, since the beginning of the new millennium, rates have clearly been decreasing. However, suicide among Indigenous people remains disproportionately high, particularly among young people. We believe it can be reduced. It should not be forgotten that suicide among Aboriginal and Torres Strait Islander people was very rare before the 1960s (Cantor & Neulinger, 2000; Elliott-Farrelly, 2005a; Leenaars, 2006; Tatz, 2004). The natural protective factors that characterise these populations (e.g., social cohesion, extended ties, and spontaneous inter-individual support) could potentially re-emerge once group identity, and feelings of empowerment, repossession and community pride are reintegrated into their lives.

Understandably, this process may take several decades, a time largely dictated by political choices and directions, and socio-cultural adaptations. At the moment, better efforts should be made in counteracting factors identified as specifically endangering and affecting a population, factors that make an already at-risk population even more vulnerable. We are specifically referring to controlling the use of alcohol and illicit drugs (particularly cannabis), as these elements have clearly been evidenced as important contributory factors in Indigenous suicide. A powerful un-inhibiting agent, alcohol and its abuse triggers a cascade of events, such as impulsive and violent behaviours, legal consequences, relationship problems, poor academic performance, job loss, accident-proneness, physical illnesses and depression. Further, the use of alcohol has strong links to intergenerational trauma and its controlled intake also needs to be viewed as part of a holistic intervention. Consequently, alcohol abuse and binge-drinking should be targeted with particular intensity in anti-suicide campaigns.

With the remarkable exception of depression, mental illnesses are important factors in the determinism of suicide in both Indigenous and non-Indigenous populations.

In contrast to non-Indigenous suicide, the apparently limited role of depression in Indigenous suicide is puzzling and surely deserving of special attention in future research. Whether due to different phenomenology of symptoms, sub-syndromal clinical pictures or the inability of western investigations to capture their essence, unipolar depression does not appear to be entirely absent in Indigenous suicides, but simply of low prevalence (nearly 4 times less than in non-Indigenous suicide cases). While waiting for a better comprehension of this unexpected evidence, it is quite possible that the search for depressive 'equivalents' has to consider the buffering effects of the strong clan connectedness that often characterises Indigenous people. In fact, this protective factor carries a potential to lessen the impact of emotional reactions arising from numerous internal and external stressors by sharing these feelings with members of the community, instead of suffering individually (as can happen in western culture). This strong connection to the members of the community could also explain the higher incidence of Indigenous people sharing the experience of a suicide in their social network, compared with non-Indigenous people. At least in part, this argument might be used when interpreting the frequent occurrence of 'cluster' suicides in Indigenous communities. Similarly, conflicts with relatives and members of the social group are frequently and specifically reported in cases of Indigenous suicide, but not so much in those of non-Indigenous suicide.

Early recognition and early intervention in treatments of mental illnesses appear to be of primary importance for Indigenous health promotion. Apart from depression, all other forms of mental illness appear to be equally prevalent in all Australians; however, substance abuse is more prevalent in Indigenous groups. Help-seeking behaviours, especially through contact with GPs, should be vigorously promoted, and special attention should be paid to developing services, characterised by the presence of skilled Indigenous professionals. Training health care professionals to better treat suicidal patients is another area that can benefit from being led by evidence-based research. This can ensure that health care within Indigenous communities is both holistic and effective.

In addition, unemployment is particularly common in Indigenous suicide cases and constitutes another major contributory factor to suicidal behaviour. Compared with the general Australian population, the number of formally employed Indigenous people is still unacceptably low. In unemployed Indigenous males, a suicide rate of 260.8 per 100,000 was recorded. Efforts to address this problem would positively affect suicide prevention in many ways. Indeed, having a job does not just mean receiving an income or having less time for unhealthy pursuits, but also signifies respect, dignity and self-esteem — all of which are natural buffers against suicide ideation.

Lastly, an important reflection should be paid to the issue of ‘impulsiveness’, often reported to be a characteristic of Indigenous suicide (e.g., Hanssens, 2007a) and fatalistically perceived as a further obstacle to suicide prevention. Far from being a generalised identity feature, data from our study seem to clarify the many factors that may eventually concur in spuriously creating this ‘temperamental’ attribution. These factors are: (1) the much younger age of Indigenous suicide cases; (2) the wider presence of alcohol-related behavioural problems (again, in younger subjects) and levels of alcohol found in the blood of deceased persons; (3) a greater diffusion of cannabis use; (4) the frequency of (multiple) exposures to suicide or death from other causes in the social group; and, (5) the presence of criminal records and the concern related to pending legal procedures. The concomitance of all these characteristics (plus potentially others not identified in our investigation) would be able to explain a good part of the variance that describes the ‘impulsiveness’ of Indigenous suicide. Since previous communication of intent and past suicidal behaviour were, surprisingly, similar in both Indigenous and non-Indigenous groups, the rare presence of suicide notes (one of the indicators of suicide impulsiveness) could be simply related to either a lower level of literacy in Indigenous people and/or their belonging more to a culture of ‘telling’ than ‘writing’.

The study here presented is unique in terms of the number of cases of Indigenous suicide analysed. However, while its remarkable sample size is a guarantor of the robustness of the obtained findings, the retrospective nature of the investigation constitutes an obvious limitation that cannot be ignored when trying to establish causal links among different factors. Hopefully, future research in this area should take the form of longitudinal quantitative and qualitative observations, targeting the interplay of risk and protective factors in both suicidal and non-suicidal community members. Only these types of investigations may provide a credible picture of how suicidal behaviours develop in people and, consequently, offer opportunities for effective suicide prevention.

7 | References

- Adams, M., & Danks, B. (2007). A positive approach to addressing Indigenous male suicide in Australia. *Aboriginal & Islander Health Worker Journal*, 31, 28–31.
- Agerbo, E. (2005). Midlife suicide risk, partner's psychiatric illness, spouse and child bereavement by suicide or other modes of death: a gender specific study. *Journal of Epidemiology and Community Health*, 59, 407–412.
- Agerbo, E., Qin, P., & Mortensen, P.B. (2006). Psychiatric illness, socioeconomic status, and marital status in people committing suicide: A matched case-sibling-control study. *Journal of Epidemiology and Community Health*, 60, 776–781.
- Aguirre, R.T.P., & Watts, T.D. (2010). Suicide and alcohol use among American Indians: Toward a transactional–ecological framework. *Journal of Comparative Social Welfare*, 26, 3–11.
- Ajdacic-Gross, V., Weiss, M.G., Ring, M., Hepp, U., Bopp, M., Gutzwiller, F., & Rössler, W. (2008). Methods of suicide: International suicide patterns derived from the WHO mortality database. *Bulletin of the World Health Organization*, 86, 726–732.
- Allison, S., Roeger, L., Martin, G., & Keeves, J. (2001). Gender differences in the relationship between depression and suicidal ideation in young adolescents. *Australian and New Zealand Journal of Psychiatry*, 35, 498–503.
- Andreasyan, K., Hoy, W., & Kondalysamy-Chennakesavan, S. (2007). Indigenous mortality in remote Queensland, Australia. *Australian and New Zealand Journal of Public Health*, 31, 422–427.
- Andriessen, K. (2006). Do we need to be cautious in evaluating suicide statistics? *European Journal of Public Health*, 16, 445–447.
- Australian Bureau of Statistics. (2004). *Australian Census Analytic Program: Indigenous Australians in the Contemporary Labour Market*. (Cat. No. 2052.0). ABS: Canberra, Australia: Author.
- Australian Bureau of Statistics. (2005). *Australian Standard Classification of Cultural and Ethnic Groups* (2nd ed., Cat. No. 1249.0). Canberra, Australia: Author.
- Australian Bureau of Statistics. (2006a). *Suicides, Australia, 1994–2004*. Cat. No. 3309.0. ABS: Canberra.
- Australian Bureau of Statistics. (2006b). *Labour Force Characteristics of Aboriginal and Torres Strait Islander Australians, Experimental Estimates from the Labour Force Survey*. Cat. No. 6287.0. ABS: Canberra.
- Australian Bureau of Statistics. (2007). *Suicides, 2005*. Cat. No. 3309.0. ABS: Canberra.
- Australian Bureau of Statistics. (2008a). *Population Characteristics, Aboriginal and Torres Strait Islander Australians, 2006*. Cat. No. 4713.0. ABS: Canberra.
- Australian Bureau of Statistics. (2008b). *Deaths, Australia, 2007*. Cat. No. 3302.0. ABS: Canberra.
- Australian Bureau of Statistics. (2009a). *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 1991 to 2021*. Cat. No. 3238.0. ABS: Canberra.
- Australian Bureau of Statistics. (2009b). *Experimental life tables for Aboriginal and Torres Strait Islander Australians, 2005–2007*. Cat. No. 3302.0.55.003. ABS: Canberra.

Suicide in Indigenous Populations of Queensland

- Australian Bureau of Statistics. (2009c). *Causes of death, Australia, 2007* (Cat. No. 3303.0). ABS: Canberra, Australia: Author.
- Australian Government. (2009a). *National Mental Health Policy 2008*. Department of Health and Ageing: Canberra.
- Australian Government. (2009b). *Closing the gap on Indigenous Disadvantage: The Challenge for Australia*. Department of Families, Housing, Community Services and Indigenous Affairs: Canberra.
- Australian Human Rights Commission. (2003). *Social Justice Report 2003*. (http://www.hreoc.gov.au/social_justice/sj_report/sjreport03/index.html). Accessed 16 July 2009.
- Australian Institute of Health and Welfare. (2002). *2001 National Drug Strategy Household Survey: Detailed findings*. Cat. No. PHE 41. AIHW: Canberra.
- Australian Institute of Health and Welfare. (2008). *GRIM (General Record of Incidence in Mortality) books*. AIHW: Canberra.
- Australian Institute of Health and Welfare. (2009). *Measuring the social and emotional wellbeing of Aboriginal and Torres Strait Islander peoples*. Cat. No. IHW 24. AIHW: Canberra.
- Beautrais, A. (2003). Suicide in New Zealand I: Time trends and epidemiology. *New Zealand Medical Journal*, 116, 460.
- Bernal, M., Haro, J.M., Bernert, S., Brugha, T., de Graaf, R., Bruffaerts, R., Lépine, J.P., de Girolamo, G., Vilagut, G., Gasquet, I., Torres, J.V., Kovess, V., Heider, D., Neeleman, J., Kessler, R., Alonso, J., the ESEMED/MHEDEA Investigators (2007). Risk factors for suicidality in Europe: Results from the ESEMED study. *Journal of Affective Disorders*, 101, 27–34.
- Bertolote, J.M., Fleischmann, A., De Leo, D., Wasserman, D. (2004). Psychiatric diagnoses and suicide: Revisiting the evidence. *Crisis*, 25, 147–155.
- Bishop, B., Colqhoun, S., & Johnson, G. (2006). Psychological sense of community: An Australian Aboriginal experience. *Journal of Community Psychology*, 34, 1–7.
- Blackstock, C., & Trocmé, N. (2005). Community-based child welfare for Aboriginal children: Supporting resilience through structural change. *Social Policy Journal of New Zealand*, 24, 12–33.
- Blair, E., Zubrick, S., & Cox, A. (2005). The Western Australian Aboriginal child health survey: Findings to date on adolescents. *Medical Journal of Australia*, 183, 433–435.
- Borges, G., Angst, J., Nock, M.K., Ruscio, A.M., & Kessler, R.C. (2008). Risk factors for the incidence and persistence of suicide-related outcomes: A 10-year follow-up study using the National Comorbidity Surveys. *Journal of Affective Disorders*, 105, 25–33.
- Bourke, C.J., Rigby, K., & Burden, J. (2000). *Better practice in school attendance. Improving the school attendance of Indigenous students*. Commonwealth Department of Education Training and Youth Affairs: Canberra.
- Brent, D.A., & Mann, J.J. (2005). Family genetic studies, suicide, and suicidal behavior. *American Journal of Medical Genetics Part C: Seminars in Medical Genetics*, 133, 13–24.
- Brent, D.A., Perper, J.A., Moritz, G., Allman, C., Schweers, J., Roth, C., Balach, L., Canobbio, R., & Liotus, L. (1993). Psychiatric sequelae to the loss of an adolescent peer to suicide. *Journal of American Academy of Child and Adolescent Psychiatry*, 32, 509–517.
- Brideson, T., & Kanowski, L. (2004). The struggle for systematic ‘adulthood’ for Aboriginal mental health in the mainstream: The Djirruwang Aboriginal and Torres Strait Islander mental health program. *Australian e-Journal for the Advancement of Mental Health* 3, 3 (<http://www.ausinet.com/journal/vol3iss3/bridesonkanowski.pdf>). Accessed 16 February 2009.

- Brown, R. (2001). Australian Indigenous mental health. *Australian & New Zealand Journal of Mental Health Nursing*, 10, 33–41.
- Butler, T., Allnutt, S., Kariminia, A., & Cain, D. (2007). Mental health status of Aboriginal and non-Aboriginal Australian prisoners. *Australian and New Zealand Journal of Psychiatry*, 41, 429–435.
- Cantor, C., & Baume, P. (1998). Access to methods of suicide: What impact? *Australian and New Zealand Journal of Psychiatry*, 32, 8–14.
- Cantor, C., & Neulinger, K. (2000). The epidemiology of suicide and attempted suicide among young Australians. *Australian and New Zealand Journal of Psychiatry*, 34, 370–387.
- Capp, K., Deane, F.P., & Lambert, G. (2001). Suicide prevention in Aboriginal communities: Application of community gatekeeper training. *Australian & New Zealand Journal of Public Health*, 25, 315–321.
- Cerel, J., Fristad, M., Weller, E., & Weller, R. (1999). Suicide-bereaved children and adolescents: A controlled longitudinal examination. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38, 672–679.
- Cerel, J., Jordan, J.R., & Duberstein, P.R. (2008). The impact of suicide on the family. *Crisis*, 29, 38–44.
- Chandler, M., & Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's first nations. *Transcultural Psychiatry*, 35, 191–219.
- Chandler, M., Lalonde, C., Sokol, B., & Hallett, D. (2003). Personal persistence, identity development, and suicide: A study of native and non-native North American adolescents. *Monographs of the Society for Research into Child Development*, 68, 1–117.
- Chivell, W. (2008). Petrol sniffing. In *Indigenous Australians and the Law*, 2nd Edition (ed. J. Hinton, E. Johnston, M.G. Hinton & D. Rigney), pp. 31–46. Routledge-Cavendish: New York.
- Clarke, C., Harnett, P., Atkinson, J., & Shochet, I. (1999). Enhancing resilience in Indigenous people: The integration of individual, family and community interventions. *Aboriginal & Islander Health Worker Journal*, 23, 6–10.
- Clarke, D., Colantonio, A., Rhodes, A., & Escobar, M. (2008). Pathways to suicidality across ethnic groups in Canadian adults: The possible role of social stress. *Psychological Medicine*, 38, 419–431.
- Clayer, J.R., & Czechowicz, A.S. (1991). Suicide by Aboriginal people in South Australia: Comparison with suicide deaths in the total urban and rural populations. *Medical Journal of Australia*, 154, 683–685.
- Clough, A., d'Abbs, P., Cairney, S., Gray, D., Maruff, P., Parker, R., & O'Reilly, B. (2004). Emerging patterns of cannabis and other substance use in Aboriginal communities in Arnhem Land, Northern Territory: A study of two communities. *Drug and Alcohol Review*, 23, 381–390.
- Clough, A., Kylie Lee, K., Cairney, S., Maruff, P., O'Reilly, B., d'Abbs, P., & Conigrave, K. (2006). Changes in cannabis use and its consequences over 3 years in a remote Indigenous population in northern Australia. *Addiction*, 101, 696–705.
- Collins, L., & Muzzamil, A. (2003). Deaths in custody in Australia: 2002 National Deaths in Custody Program Annual Report. *Research and Public Policy Series* (No. 50). Australian Institute of Criminology: Canberra.
- Cook, J. (1768–1771). *Journal of the Endeavour 1768–1771*. Cited in: Cook's Endeavour Journal: The inside story, 2008, p.155. National Library of Australia: Canberra.
- Cooke, M., Mitrou, F., Lawrence, D., Guimond, E., & Beavon, D. (2007). Indigenous well-being in four countries: An application of the UNDP's human development index to Indigenous

- peoples in Australia, Canada, New Zealand and the United States. *BMC International Health & Human Rights*, 7, 1–11.
- Commission for Children and Young People and Child Guardian Queensland. (2006). *Annual report: Deaths of children and young people, Queensland 2005–2006*. Commission for Children and Young People and Child Guardian Queensland: Brisbane.
- Commonwealth of Australia v. Tasmania — The Tasmanian Dam Case [1983] HCA 21; (1983) 158 CLR 1.
- Cox, L. (2009). Queensland Aborigines, multiple realities and the social sources of suffering: Psychiatry and moral regions of being. *Oceania*, 79, 97–120.
- Cunningham, J. (2002). Diagnostic and therapeutic procedures among Australian hospital patients identified as Indigenous. *Medical Journal of Australia*, 176, 58–62.
- Cunningham, J., Cass, A., & Arnold, P.C. (2005). Bridging the treatment gap for Indigenous Australians. *Medical Journal of Australia*, 182, 505–506.
- Dalton, V. (1999). Death and dying in prison in Australia: National overview, 1980–1998. *The Journal of Law, Medicine & Ethics*, 27, 269–274.
- Daniel, M., Green, L.W., Marion, S.A., Gamble, D., Herbert, C.P., Hertzman, C., & Sheps, S.B. (1999). Effectiveness of community-directed diabetes prevention and control in a rural Aboriginal population in British Columbia, Canada. *Social Science & Medicine*, 48, 815–832.
- Davidson, J. (2003). Presentation of a near-hanging to an emergency department in the Northern Territory. *Emergency Medicine*, 15, 28–31.
- De Groot, M.H., Keijser, J., & Neeleman, J. (2006). Grief shortly after suicide and natural death: A comparative study among spouses and first-degree relatives. *Suicide and Life-Threatening Behavior*, 36, 418–431.
- De Leo, D. (2007). Suicide mortality data needs revision. *Medical Journal of Australia*, 186, 157–158.
- De Leo, D. (2009). Under-reporting of cases in official suicide mortality data. (<http://www.living-isforeveryone.com.au>). Accessed 15 July 2009.
- De Leo, D., & Spathonis, K. (2004). Suicide and suicidal behaviour in late life. In *Suicidal behaviour. Theories and research findings* (ed. D. De Leo, U. Bille-Brahe, A. Kerkhof & A. Schmidtke), pp.253–287. Cambridge, MA: Hogrefe & Huber.
- De Leo, D., & Klieve, H. (2007). Communication of suicide intent by schizophrenic subjects: Data from the Queensland Suicide Register. *International Journal of Mental Health*, 1, 6–12.
- De Leo, D., & Heller, T. (2008). Social modelling in the transmission of suicidality. *Crisis*, 29, 11–19.
- De Leo, D., Klieve, H., & Milner, A. (2006). *Suicide in Queensland 2002–2004*. Australian Institute for Suicide Research and Prevention, Griffith University: Brisbane.
- De Leo, D., Dwyer, J., Firman, D., & Neulinger, K. (2003). Trends in hanging and firearm suicide rates in Australia: Substitution of method. *Suicide and Life-Threatening Behavior*, 33, 151–164.
- De Leo, D., Dudley, M., Mendoza, J., Barnes, M., Aebersold, C., Ranson, D., & Harrison, J. (2010). Achieving standardised reporting of suicide in Australia: Rationale and plan of action. *Medical Journal of Australia*, 192, 452–456.
- Deane, F., Capp, K., Jones, C., de Ramirez, D., Lambert, G., Marlow, B., Ress, A., & Sullivan, E. (2006). Two-year follow-up of a community gatekeeper suicide prevention program in an Aboriginal community. *Australian Journal of Rehabilitation Counselling*, 12, 33–36.

- Department of Communities. (2006). *Partnerships Queensland baseline report: Future directions framework for Aboriginal and Torres Strait Islander policy in Queensland 2005–10*. Queensland Government: Brisbane, QLD.
- Devanesen, D., Furber, M., Hampton, D., Honari, M., Kinmonth, N., & Peach, H.G. (1986). *Health indicators in the Northern Territory*. Northern Territory Department of Health: Darwin.
- Doessel, D.P., Scheurer, R.W., Chant, D.C., & Whiteford, H.A. (2005). Australia's National Mental Health Strategy and deinstitutionalization: Some empirical results. *Australian and New Zealand Journal of Psychiatry*, 39, 989–994.
- Elliott-Farrelly, T. (2004). Australian Aboriginal suicide: The need for Aboriginal suicidology? *Australian e-Journal for the Advancement of Mental Health*, 3, 1–8.
- Elliott-Farrelly, T. (2005a). An overview of Australian Aboriginal suicide: Part one. *Aboriginal & Islander Health Worker Journal*, 29, 11–15.
- Elliott-Farrelly, T. (2005b). An overview of Australian Aboriginal suicide: Part two. *Aboriginal & Islander Health Worker Journal*, 29, 24–28.
- Ellis, I. (2007). The management of threatened hanging and near-hanging: A unique feature of remote area emergency care. *Australasian Emergency Nursing Journal*, 10, 164–168.
- Elnour, A.A., & Harrison, J. (2008). Lethality of suicide methods. *Injury Prevention*, 14, 39–45.
- Elnour, A.A., & Harrison, J. (2009). Suicide decline in Australia: Where did the cases go? *Australian and New Zealand Journal of Public Health*, 33, 67–69.
- Esler, D.M., Johnston, F., & Thomas, D. (2007). The acceptability of a depression screening tool in an urban Aboriginal community controlled health service. *Australian and New Zealand Journal of Public Health*, 31, 259–263.
- Farrelly, T. (2007). Aboriginal suicide prevention: Community specific research and Aboriginal control over interpretation of data. *Aboriginal & Islander Health Worker Journal*, 31, 32–35.
- Farrelly, T. (2008). The Aboriginal suicide and self-harm help-seeking quandary. *Aboriginal & Islander Health Worker Journal*, 32, 11–15.
- Fawcett, J. (2006). Depressive Disorders. In *Textbook of suicide assessment and management* (ed. R. Simon & R. Hales), pp. 255–277. American Psychiatric Publishing Inc.: Washington, DC.
- Fazel, S., Cartwright, J., Norman-Nott, A., & Hawton, K. (2008). Suicide in prisoners: A systematic review of risk factors. *Journal of Clinical Psychiatry*, 69, 1721–1731.
- Fergusson, D.M., Boden, J.M., & Horwood, L.J. (2009). Tests of causal links between alcohol abuse or dependence and major depression. *Archives of General Psychiatry*, 66, 260–266.
- Folds, R. (1987). *Whitefella school: Education and Aboriginal resistance*. Allen & Unwin: Sydney.
- Fu, Q., Heath, A.C., Bucholz, K.K., Nelson, E.C., Glowinski, A.L., Goldberg, J., Lyons, M.J., Tsuang, M.T., Jacob, T., True, M.R., & Eisen, S.A. (2002). A twin study of genetic and environmental influences on suicidality in men. *Psychological Medicine*, 32, 11–24.
- Gould, M.S. (2003). Media contagion and suicide among the young. *American Behavioural Scientist*, 46, 1269–1284.
- Gould, M.S., Wallenstein, S., & Kleinman, M.H. (1990). Time-space clustering of teenage suicide. *American Journal of Epidemiology*, 131, 71–78.
- Gunnell, D., Bennewith, O., Hawton, K., Simkin, S., & Kapur, N. (2005). The epidemiology and prevention of suicide by hanging: A systematic review. *International Journal of Epidemiology*, 34, 433–442.
- Hair, J., Anderson, R., Tatham, R., & Black, W. (1992). *Multivariate Data Analysis*. Macmillan Publishing Company: New York, NY.

Suicide in Indigenous Populations of Queensland

- Hanssens, L. (2007a). The search to identify contagion operating within suicide clusters in Indigenous communities, Northern Territory, Australia. *Aboriginal & Islander Health Worker Journal*, 31, 27–33.
- Hanssens, L. (2007b). Indigenous dreaming: How suicide in the context of substance abuse has impacted on and shattered the dreams and reality of Indigenous communities in Northern Territory, Australia. *Aboriginal & Islander Health Worker Journal*, 31, 26–34.
- Harrison, J., & Moller, J. (1994). Injury mortality amongst Aboriginal Australians. *Australian Injury Prevention Bulletin*, 7, 1–8.
- Haswell-Elkins, M., Hunter, E., Nagel, T., Thompson, C., Hall, B., Mills, R., Wargent, R., Tsey, K., Knowles, L., & Wilkinson, Y. (2005). Reflections on integrating mental health into primary health care services in remote Indigenous communities in Far North Queensland and the Northern Territory. *Australian Journal of Primary Health*, 11, 62–69.
- House of Representatives Standing Committee on Family and Community Affairs (2000). *Health is life: Report on the inquiry into Indigenous Health*. Commonwealth of Australia: Canberra.
- Haw, C.M. (1994). A cluster of suicides at a London psychiatric unit. *Suicide and Life-Threatening Behavior*, 24, 256–266.
- Hawgood, J., Spathonis, K., & De Leo, D. (2004). Physical illness and suicidal behaviour. In *Suicidal behaviour. Theories and research findings* (ed. D. De Leo, U. Bille-Brahe, A. Kerkhof & A. Schmidtke), pp. 139–165. Cambridge, MA: Hogrefe & Huber.
- Hawton, K. (2007). Restricting access to methods of suicide: Rationale and evaluation of this approach to suicide prevention. *Crisis*, 28, 4–9.
- Helps, Y., & Harrison, J. (2004). *Reported injury mortality of Aboriginal and Torres Strait Islander peoples in Australia, 1997–2000*. Australian Institute of Health and Welfare: Adelaide.
- Hocking, B. (2002). Placing Indigenous rights to self-determination in an ecological context. *Ratio Juris*, 15, 159–185.
- Horton, L. (2006). Social, cultural and demographic factors in suicide. In *Textbook of suicide assessment and management* (ed. R. Simon & R. Hales), pp. 107–139. American Psychiatric Publishing Inc.: Washington, DC.
- Hudson, S. (2008). *CDEP: Help or hindrance? The Community Development Employment Program and its impact on Indigenous Australians*. Centre for Independent Studies: St Leonards.
- Human Rights and Equal Opportunity Commission. (1993). *Human rights and mental illness: report of the National Inquiry into the Human Rights of People with Mental Illness*. Australian Government Publishing Service: Canberra.
- Human Rights and Equal Opportunity Commission. (1997). *Bringing them home: Report of the national inquiry into the separation of Aboriginal and Torres Strait Islander children from their families*. Australian Government Publishing Service: Canberra.
- Hunter, E. (1991). Out of sight, out of mind: Social and historical contexts of self harmful behavior among Aborigines of remote Australia. *Social Science and Medicine*, 33, 661–671.
- Hunter, E. (1993). *Aboriginal health and history: Power and prejudice in remote Australia*. Cambridge University Press: Melbourne and New York.
- Hunter, E. (1996). Aboriginal communities and suicide. *Australasian Psychiatry* 4, 195–199.
- Hunter, E. (2003). Staying tuned to developments in Indigenous health: Reflections on a decade of change. *Australasian Psychiatry*, 11, 418–423.
- Hunter, E. (2007). Disadvantage and discontent: A review of issues relevant to the mental health of rural and remote Indigenous Australians. *Australian Journal of Rural Health*, 15, 88–93.

- Hunter, E., & Harvey, D. (2002). Indigenous suicide in Australia, New Zealand, Canada and the United States. *Emergency Medicine*, 14, 14–23.
- Hunter, E., & Milroy, H. (2006). Aboriginal and Torres Strait Islander suicide in context. *Archives of Suicide Research*, 10, 141–157.
- Hunter, E., Reser, J., Baird, M., & Reser, P. (1999). *An analysis of suicide in Indigenous communities of North Queensland: The historical, cultural and symbolic landscape*. University of Queensland: Cairns.
- Hunter, E., Reser, J., Baird, M., & Reser, P. (2001). *An analysis of suicide in Indigenous communities of North Queensland: The historical, cultural and symbolic landscape*. Commonwealth Government Department of Health and Aged Care: Canberra.
- Johansson, L., Lindqvist, P., & Eriksson, A. (2006). Teenage suicide cluster formation and contagion: Implications for primary care. *BMC Family Practice*, 7, 32–36.
- Joiner, T.E. (1999). The clustering and contagion of suicide. *Current Directions in Psychological Science*, 8, 89–92.
- Joudo, J. (2006). *Deaths in custody in Australia: 1990–2004. Trends and Issues in Crime and Criminal Justice* (No. 309). Australian Institute of Criminology: Canberra.
- Kahn, M.W., Hunter, E., Heather, N., & Tebbutt, J. (1990). Australian Aborigines and alcohol: A review. *Drug and Alcohol Review*, 10, 351–366.
- Kariminia, A., Butler, T., & Levy, M. (2007). Aboriginal and non-Aboriginal health differentials in Australian prisoners. *Australian & New Zealand Journal of Public Health*, 31, 366–371.
- Keeley, H., Corcoran, P., & Bille-Brahe, U. (2004). Addiction and suicidal behaviour: Questions and answers in the EPSIS. In *Suicidal behaviour. Theories and research findings* (ed. D. De Leo, U. Bille-Brahe, A. Kerkhof & A. Schmidtke), pp. 165–184. Hogrefe & Huber: Cambridge, MA.
- Kerkhof, A., & Arensman, E. (2004). Repetition of attempted suicide: Frequent, but hard to predict. In *Suicidal behaviour. Theories and research findings* (ed. D. De Leo, U. Bille-Brahe, A. Kerkhof & A. Schmidtke), pp. 111–125. Hogrefe & Huber: Cambridge, MA.
- Klieve, H., Barnes, M., & De Leo, D. (2009). Controlling firearms use in Australia: Has the 1996 gun law reform produced the decrease in rates of suicide with this method? *Social Psychiatry and Psychiatric Epidemiology*, 44, 285–292.
- Kosky, R.J., & Dundas, P. (2000). Death by hanging: Implications for prevention of an important method of youth suicide. *Australian and New Zealand Journal of Psychiatry*, 34, 836–841.
- Kutcher, S.P., & Szumilas, M. (2008). Youth suicide prevention. *Canadian Medical Association Journal*, 178, 282–285.
- Labonte, R. (1993). Community development and partner-ships. *Canadian Journal of Public Health*, 84, 237–240.
- Labiberté, A., & Tousignant, M. (2009). Alcohol and other contextual factors of suicide in four Aboriginal communities of Quebec, Canada. *Crisis*, 30, 215–221.
- Laugharne, J. (1999). Poverty and mental health in Australia. *Psychiatric Bulletin*, 23, 364–366.
- Leach, M.M. (2006). *Cultural diversity and suicide*. Haworth Press: Philadelphia.
- Lee, K.S., Conigrave, K., Clough, A., Wallace, C., Silins, E., & Rawles, J. (2008). Evaluation of a community-driven preventative youth initiative in Arnhem Land, Northern Territory, Australia. *Drug & Alcohol Review*, 27, 75–82.
- Lee, K.S., Conigrave, K.M., Patton, G.C., & Clough, A.R. (2009). Cannabis use in remote Indigenous communities in Australia: Endemic yet neglected. *Medical Journal of Australia* 190, 228–229.

Suicide in Indigenous Populations of Queensland

- Leenaars, A. (2006). Suicide among Indigenous peoples: Introduction and call to action. *Archives of Suicide Research*, 10, 103–115.
- Lin, J.J., & Lu, T.H. (2006). Association between the accessibility to lethal methods and method-specific suicide rates: An ecological study in Taiwan. *Journal of Clinical Psychiatry*, 67, 1074–1079.
- Linacre, S. (2002). *National Aboriginal and Torres Strait Islander Social Survey, 2002*. ABS: Canberra.
- Lohr, C., & Schmidtke, A. (2004). Marital relationships of suicide attempters. In *Suicidal behaviour. Theories and research findings* (ed. D. De Leo, U. Bille-Brahe, A. Kerkhof & A. Schmidtke), pp. 125–137. Hogrefe & Huber: Cambridge, MA.
- Macintosh, D., & Pearson, J. (2003). Patterns of injury in Indigenous Australians admitted to Cairns base hospital. *Australian Journal of Rural Health*, 11, 99–106.
- MacLean, S., & d'Abbs, P. (2002). Petrol sniffing in Aboriginal communities: A review of interventions. *Drug and Alcohol Review*, 21, 65–72.
- McCalman, J., Baird, B., & Tsey, K. (2007). Indigenous men taking their rightful place — how one Aboriginal community is achieving results. *Aboriginal and Islander Health Worker Journal*, 31, 8–11.
- McCalman, J., Tsey, K., Jackson, R., Connolly, B., Baird, B., Costello, C., & Bulmer, M. (2008). *Yarrabah family violence report*. James Cook University & Gurriny Yealamucka Health Service: Cairns.
- McCormack, P., Mohammed, F., & O'Brien, A. (2001). Learning to work with the community: The development of the Wujal Wujal guidelines for supporting people who are at risk. *Aboriginal & Islander Health Worker Journal*, 24, 19–25.
- McCoy, B. (2007). Suicide and desert men: The power and protection of kanyirninpa (holding). *Australasian Psychiatry*, 15, S63–S67.
- McGarigal, K., Cushman, S., & Stafford, S. (2000). *Multivariate statistics for wildlife and ecology research*. Springer: New York.
- McKnight, D. (2002). *From hunting to drinking: The devastating effects of alcohol on an Australian Aboriginal community*. Routledge: London.
- McLennan, W. (1999). *Standards for Statistics on Cultural and Language Diversity*. Cat. No. 1289.0. ABS: Canberra.
- Measey, M., Li, S., Parker, R., & Wang, Z. (2006). Suicide in the Northern Territory, 1981–2002. *Medical Journal of Australia*, 185, 315–319.
- Melhem, N.M., Day, N., Shear, M.K., Day, R., Reynolds, C.F., & Brent, D. (2004). Predictors of complicated grief among adolescents exposed to a peer's suicide. *Journal of Loss and Trauma*, 9, 21–34.
- Meyerhoff, G. (2000). *Injecting drug use in urban Indigenous communities: A literature review with a particular focus on the Darwin area*. Danila Dilba Medical Service Education and Training Service: Darwin.
- Mohajer, N., Bessarab, D., & Earnest, J. (2009). There should be more help out here! A qualitative study of the needs of Aboriginal adolescents in rural Australia. *Rural and Remote Health*, 9 (online), 1137. Available from: <http://www.rrh.org.au>.
- Monti, P.M., Miranda, R. Jr, Nixon, K., Sher, K.J., Swartzwelder, H.S., Tapert, S.F., White, A., Crews, F.T. (2005). Adolescence: Booze, brains, and behavior. *Alcoholism: Clinical and Experimental Research*, 29, 207–220.

- Neary, D. (2006). *The effects of adolescent and young adult suicide on family and friends: A meta-analysis*. Unpublished Dissertation, Hofstra University.
- Neulinger, K., & De Leo, D. (2001). Suicide in elderly and youth populations — how do they differ? In *Suicide and euthanasia in older adults. A transcultural journey* (ed. D. De Leo), pp.137–155. Kirkland, Seattle: Hogrefe & Huber.
- Oquendo, M., Carballo, J., Stanley, B., & Brodsky, B. (2006). Personality disorders. In *Textbook of suicide assessment and management* (ed. R. Simon, & R. Hales), pp. 329–347. American Psychiatric Publishing Inc.: Washington, DC.
- Osvath, P., Voros, V., & Fekete, S. (2004). Life events and psychopathology in a group of suicide attempters. *Psychopathology*, 37, 36–40.
- Parker, E., Meiklejohn, B., Patterson, C., Edwards, K., Preece, C., Shuter, P., & Gould, T. (2006). Our games our health: A cultural asset for promoting health in Indigenous communities. *Health Promotion Journal of Australia*, 17, 103–108.
- Parker, R., & Ben-Tovim, D. (2002). A study of factors affecting suicide in Aboriginal and ‘other’ populations in the top end of the Northern Territory through an audit of coronial records. *Australian and New Zealand Journal of Psychiatry*, 36, 404–410.
- Petchkovsky, L., San Roque, C., Napaljarri Jurri, R., & Butler, S. (2004). Indigenous maps of subjectivity and attacks on linking: Forced separation and its psychiatric sequelae in Australia’s stolen generation. *Australian e-Journal for the Advancement of Mental Health* 3 (<http://www.ausinet.com/journal/vol3iss3/petchkovsky.pdf>). Accessed 16 February 2009.
- Pink, B., & Allbon, P. (2008). *The health and welfare of Aboriginal and Torres Strait Islander peoples 2008*. Cat. No. 4704.0. ABS: Canberra.
- Pirkis, J., Burgess, P., & Dunt, D. (2000). Suicidal ideation and suicide attempts among Australian adults. *Crisis*, 21, 16–25.
- Potvin, L., Cargo, M., McComber, A.M., Delormier, T., & Macaulay, A.C. (2003). Implementing participatory intervention and research in communities: Lessons from the Kahnawake Schools Diabetes Prevention Project in Canada. *Social Science & Medicine*, 56, 1295–1305.
- Pounder, D.J. (1993). Why are the British hanging themselves? *American Journal of Forensic Medicine and Pathology*, 14, 135–140.
- Pridemore, S. (2009). Australian aboriginal stories and psychopathology. *Asian Journal of Psychiatry*, 2, 139–142.
- Procter, N. (2005). Parasuicide, self-harm and suicide in Aboriginal people in rural Australia: A review of the literature with implications for mental health nursing practice. *International Journal of Nursing*, 11, 237–241.
- Putt, J., Payne, J., & Milner, L. (2005). Indigenous Male Offending and Substance Abuse. *Trends and Issues in Crime and Criminal Justice* (No. 293). ABS: Canberra.
- Queensland Government. (2003). *Reducing suicide: The Queensland Government suicide strategy 2003–2008*. Queensland Government: Brisbane.
- Queensland Government. (2010). *Making Tracks towards closing the gap in health outcomes for Indigenous Queenslanders by 2033 – implementation plan 2009–2012*. The State of Queensland (Queensland Health): Brisbane.
- Reath, J. (2005). The RACGP: Supporting GPs to work better in Aboriginal and Torres Strait Islander Health. *Australian Family Physician*, 34, 845–848.
- Rees, S., Tsey, K., Every, A., Williams, E., Cadet-James, Y., & Whiteside, M. (2004). Empowerment and human rights in addressing violence and improving health in Australian Indigenous communities. *Health & Human Rights*, 8, 95–113.

Suicide in Indigenous Populations of Queensland

- Reid, J. (ed.) (1982). *Body, land and spirit: Health and healing in Aboriginal society*. University of Queensland Press: St Lucia.
- Reid, J., & Trompf, P. (ed.) (1991). *The health of Aboriginal Australia*. Sydney: Harcourt Brace.
- Reser, J.P. (1991). Aboriginal mental health: Conflicting cultural perspectives. In *The Health of Aboriginal Australia* (ed. J. Reid & P. Trompf), pp. 218–291. Harcourt Brace & Company: Marrickville, Australia.
- Rihmer, Z. (2007). Suicide risk in mood disorders. *Current Opinion in Psychiatry*, 20, 17–22.
- Ring, I., & Brown, N. (2002). Indigenous health: Chronically inadequate responses to damning statistics. *Medical Journal of Australia*, 177, 629–631.
- Ring, I., & Firman, D. (1998). Reducing Indigenous mortality in Australia: Lessons from other countries. *Medical Journal of Australia*, 169, 528–533.
- Ring, I., & O'Brien, J. (2007). Our hearts and minds — what would it take for Australia to become the healthiest country in the world? *Medical Journal of Australia*, 187, 447–451.
- Robinson, G. (1990). Separation, retaliation and suicide: Mourning and the conflicts of young Tiwi men. *Oceania*, 60, 161–178.
- Roxbee, L., & Wallace, C. (2003). Emotional and social wellbeing: National policy context. *Australasian Psychiatry*, 11, s45–s50.
- Rowley, K.G., Daniel, M., Skinner, K., Skinner, M., White, G.A., & O'Dea, K. (2000). Effectiveness of a community-directed 'healthy lifestyle' program in a remote Australian Aboriginal community. *Australian & New Zealand Journal of Public Health*, 24, 136–144.
- Rowse, T. (1993). *After Mabo: Interpreting Indigenous traditions*. Melbourne University Press: Melbourne.
- Salander-Renberg, E., Lindgren, S., & Osterberg, I. (2004). Sexual abuse and suicidal behaviours. In *Suicidal behaviour. Theories and research findings* (ed. D. De Leo, U. Bille-Brahe, A. Kerkhof & A. Schmidtke), pp. 185–197. Cambridge, MA: Hogrefe & Huber.
- Sawyer, M.G., Kosky, R.J., Greatz, B.W., Arney, F., Zubrick, S.R., & Baghurst, P. (2000). The National Survey of the Mental Health and Wellbeing: The child and adolescent component. *Australian and New Zealand Journal of Psychiatry*, 34, 214–220.
- Schmidtke, A., Bille-Brahe, U., De Leo, D., & Kerkhof, A. (eds). (2004). *Suicidal Behaviour in Europe: Results from the WHO/EURO Multicentre Study on Suicidal Behaviour*. Hogrefe and Huber: Göttingen.
- Schmidtke, A., & Haefner, H. (1988). The Werther effect after television films: New evidence for an old hypothesis. *Psychological Medicine*, 18, 665–676.
- Seebeck, N., Shepherd, B., Smith, L., Taylor, A., Taylor, D., & Thompson, J. (2007). *Queensland's Aboriginal and Torres Strait Islander population*. Department of Local Government, Planning, Sport and Recreation: Brisbane.
- Shah, C., & Johnson, R. (1992). Comparing health status: Native peoples of Canada, Aborigines of Australia, and Maoris of New Zealand. *Canadian Family Physician*, 38, 1205–1219.
- Silburn, S., Blair, E., Griffith, J., Zubrick, S., Lawrence, D., Mitrou, F., & De Maio, J. (2007). Developmental and environmental factors supporting the health and well-being of Aboriginal adolescents. *International Journal of Adolescent Medicine & Health*, 19, 345–354.
- Smith, L. (1999). *Decolonizing methodologies: Research and Indigenous peoples*. Zed Books: London.
- Stack, S. (2000). Work and the economy. In *Comprehensive textbook of suicidology* (ed. R. Maris, A. Berman & M. Silverman), pp.193–222. NY: Guilford Press.
- Stack, S., & Wasserman, I. (2005). Race and method of suicide: Culture and opportunity. *Archives of Suicide Research*, 9, 57–68.

- Steering Committee for the Review of Government Service Provision – SCRGPS (2007). *Overcoming Indigenous disadvantage: Key Indicators 2007 report*. Productivity Commission: Canberra.
- Stroebe, M.S., Folkman, S., Hansson, R.O., & Schut, H. (2006). The prediction of bereavement outcome: Development of an integrative risk factor framework. *Social Science & Medicine*, 63, 2440–2451.
- Suicide Prevention Australia. (2008). *Position statement: Suicide prevention and capacity building in Australian Indigenous communities*. Australian Government, Suicide Prevention Australia.
- Swan, P., & Raphael, B. (1995). *Ways Forward: National Aboriginal and Torres Strait Islander Mental Health Policy National Consultancy Report*. Commonwealth of Australia: Canberra.
- Tabachnick, B.G., & Fidell, L.S. (2001). *Using multivariate statistics* (4th ed.). Allyn and Bacon: Boston, London.
- Tatz, C. (2001). *Aboriginal suicide is different*. Aboriginal Studies Press: Canberra.
- Tatz, C. (2004). Aboriginal, Maori and Inuit youth suicide: Avenues to alleviation? *Australian Aboriginal Studies*, 2, 15–25.
- Taylor, J. (2008). Indigenous peoples and indicators of well-being: Australian perspectives on United Nations global frameworks. *Social Indicators Research*, 87, 111–126.
- Thomson, N., & Krom, I. (2007). Summary of Indigenous health: Injury. *Aboriginal & Islander Health Worker Journal*, 31, 20–22.
- Trewin, D. (2006). *National Aboriginal and Torres Strait Islander Health Survey, 2004–05*. Cat. No. 4715.0. ABS: Canberra.
- Trovato, F. (2001). Aboriginal mortality in Canada, the United States and New Zealand. *Journal of Biosocial Science*, 33, 67–86.
- Tsey, K. (2000). An innovative family support program by and for Indigenous Australians: Reflections in evaluation practice. *Journal of Family Studies*, 6, 302–308.
- Tsey, K., & Every, A. (2000). Evaluating Aboriginal empowerment programs: The case of Family Well-Being. *Australian & New Zealand Journal of Public Health*, 24, 509–514.
- Tsey, K., Patterson, D., Whiteside, M., Baird, L., & Baird, B. (2002). Indigenous men taking their rightful place in society? A preliminary analysis of a participatory action research process with Yarrabah men's health group. *Australian Journal of Rural Health*, 10, 278–284.
- Tsey, K., Patterson, D., Whiteside, M., Baird, L., Baird, B., & Tsey, K. (2003). Indigenous men taking their rightful place in society? A follow-up report. *Australian Journal of Rural Health*, 11, 285–286.
- Tsey, K., Patterson, D., Whiteside, M., Baird, L., Baird, B., & Tsey, K. (2004). A microanalysis of a participatory action research process with a rural Aboriginal men's health group. *Australian Journal of Primary Health*, 10, 64–71.
- Tsey, K., Travers, H., Gibson, T., Whiteside, M., Cadet-James, Y., Haswell-Elkins, M., McCalman, J., & Wilson, A. (2005a). The role of empowerment through life-skills development in building comprehensive primary health care systems in Indigenous Australia. *Australian Journal of Primary Health*, 1, 16–25.
- Tsey, K., Whiteside, M., Daly, S., Deemal, A., Gibson, T., Cadet-James, Y., Wilson, A., Santhanam, R., & Haswell-Elkins, M. (2005b). Adapting the 'family wellbeing' empowerment program to the needs of remote Indigenous school children. *Australian & New Zealand Journal of Public Health*, 29, 112–116.

Suicide in Indigenous Populations of Queensland

- Tsey, K., Wilson, A., Haswell-Elkins, M., Whiteside, M., McCalman, J., Cadet-James, Y., Wenitong, M. (2007). Empowerment-based research methods: A 10-year approach to enhancing Indigenous social and emotional wellbeing. *Australasian Psychiatry*, 15, s34–s38.
- Vicary, D.A., & Bishop, B.J. (2005). Western psychotherapeutic practice: Engaging Aboriginal people in culturally appropriate and respectful ways. *Australian Psychologist*, 40, 8–19.
- Vos, T., Barker, B., Stanley, L., & Lopez, A. (2007). *Burden of disease and injury in Aboriginal and Torres Strait Islander peoples 2003*. Centre for Burden of Disease and Cost-Effectiveness, University of Queensland: Brisbane.
- Voyle, J.A., & Simmons, D. (1999). Community development through partnership: Promoting health in an urban Indigenous community in New Zealand. *Social Science & Medicine*, 49, 1035–1050.
- Walker, S., Chen, L., & Madden, R. (2008). Deaths due to suicide: The effects of certification and coding practices in Australia. *Australian and New Zealand Journal of Public Health*, 32, 126–130.
- Weatherburn, D., Snowball, L., & Hunter, B. (2006). *The economic and social factors underpinning Indigenous contact with the justice system: Results from the 2002 NATSISS survey*. Crime and Justice Bulletin no. 104. NSW Bureau of Crime Statistics and Research: Sydney.
- Wekerle, C., Waechter, R.L., Leung, E., & Leonard, M. (2007). Adolescence: A window of opportunity for positive change in mental health. *First Peoples Child & Family Review*, 3, 8–16.
- Welch, D. (2008). Kevin Rudd says sorry. *Sydney Morning Herald*, February, 13, 2008.
- Westerman, T. (2004). Engagement of Indigenous clients in mental health services: What role do cultural differences play? *Advances in Mental Health*, 3, 88–93.
- Whiteford, H., Buckingham, B., & Manderscheid, R. (2002). Australia's National Mental Health Strategy. *British Journal of Psychiatry*, 180, 210–215.
- Wilson, P. (1982). *Black death white hands*. George Allen & Unwin: Sydney.
- Wojnar, M., Ilgen, M., Czyz, E., Strobbe, S., Klimkiewicz, A., Jakubczyk, A., Glass, J., Brower, K. (2009). Impulsive and non-impulsive suicide attempts in patients treated for alcohol dependence. *Journal of Affective Disorders*, 115, 131–139.
- World Health Organization. (2004). *Suicide: Huge but preventable health problem*. Retrieved July 16, 2009 from <http://www.who.int/mediacentre/news/releases/2004/pr61/en/index.html>
- Wyder, M., Ward, P., & De Leo, D. (2009). Separation as a suicide risk factor. *Journal of Affective Disorders*, 116, 208–213.
- Ypinazar, V., Margolis, S., Haswell-Elkins, M., & Tsey, K. (2007). Indigenous Australians' understandings regarding mental health and disorders. *Australian and New Zealand Journal of Psychiatry*, 41, 467–478.
- Zhao, Y., Guthridge, S., Magnus, A., & Vos, T. (2004). Burden of disease and injury in Aboriginal and non-Aboriginal populations in the Northern Territory. *Medical Journal of Australia*, 180, 498–502.
- Zubrick, S.R., Silburn, S.R., Lawrence, D.M., Mitrou, F.G., Dalby, R.B., Blair, E.M., Griffin, J., Milroy, H., De Maio, J.A., Cox, A., Li, J. (2005). *The Western Australian Aboriginal Child Health Survey: The social and emotional wellbeing of Aboriginal children and young people*. Curtin University of Technology and Telethon Institute for Child Health Research: Perth.

Appendix A

Suicide Classification Flow Chart

Suicide classification flow chart

