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Chapter

Amnesia among Indigenous Australians

Alison Husain

Abstract

Looking at the incidence of amnesia in Australian indigenous people who have experienced a legacy of intergenerational trauma and psycho-social traumas in childhood such as psychological, sexual and physical abuse, domestic violence, substance abuse, out-of-home care, and over-policing, this chapter will consider the impact of trauma-based amnesia from the perspective of social neuroscience in relation to the frequency of incidence derived from data on reported mood and neurotic group disorders to draw insights into the epidemiology of psychogenic amnesia among indigenous Australians. This chapter will also consider cultural implications as health is not just a physiological or mental status of an individual but encompasses social, emotional, and cultural connectedness which amnesia disrupts. This research seeks to create better understanding as to the causal attributes of more prevalent levels of suffering among indigenous Australians as compared to non-indigenous Australians.

Keywords: amnesia, psycho-social trauma, intergenerational trauma, indigenous Australians, mental health, epidemiology, dissociative and psychogenic amnesia

1. Introduction

While much research has been undertaken on the neural mechanisms and effect of trauma-induced amnesia, it is suggested that much less attention has been applied to the more covert and pervasive types of trauma and long-term effects of psychogenic amnesia among indigenous Australians. This chapter is essentially a study in the application of social neuroscience in the psycho-social trauma frequently associated with childhood. The objective of this social neuroscience research is to understand the epidemiology of amnesia and related neurophysiological systems that underpin the traumatic social background of indigenous Australians, and is intended to further understanding.

This article analyses themes underlying the causes of childhood trauma, considers the impact leading to amnesia, available diagnosis and mitigation. The material was informed by a review of epidemiological literature on psycho-social trauma present in indigenous Australians with consideration given to international literature to determine the elements of collective and mass trauma studies which correlate to indigenous communities in Australia. Psychogenic amnesia as a specific mental disorder has not been recorded in the data history of indigenous and non-indigenous hospitalizations. Consideration has therefore been given to the group of mood and neurotic disorders within which psychogenic amnesia lies in particular arising from stress levels. This article will contemplate memory

disorders by considering memory disturbances, relationships to functionality and frequency, before turning to aspects of therapeutic interventions and culturally safe approaches.

The use of social neuroscience in exploring the incidence of amnesia caused by emotional and psychological trauma among indigenous Australians will provide broader consideration of the causal attributes of more prevalent levels of suffering among indigenous Australians as compared to non-indigenous Australians [1]. Social neuroscience perspectives on childhood trauma unite the concept that the brain responds to stress and abuse, as social behaviors stem from brain development [2]. Consideration may then be given to development of best therapeutic practices to promote healing and recovery from the damage caused to brain development by adverse experiences.

1.1 Background

It cannot be emphasized enough that the colonialist practices of dispossession, child removal, suppression of indigenous social practices, stolen heritages and oppressive government policies, resulted in long-term intergenerational trauma that is still experienced today [3]. Ongoing social inequalities are particularly apparent across health outcomes [4, 5].

Current statistics indicate there are approximately 800,000 indigenous Australians, equating to 2.8% of the Australian population [6] (**Figure 1**).

The health and welfare outcomes are significantly disproportionate as indigenous Australians experience disease at a far higher rate than non-indigenous Australians. Of these diseases, the group of mental health disorders has one of the highest disparity ratio. This group represents disorders relating to stress, anxiety, depression, alcohol and drug use, and the autism spectrum [5]. To understand the impact of trauma, the issues raised above may be viewed through Historical Trauma theory. This conceptual theory is based on the premise that where a particular population has been historically subjected to long periods of mass trauma

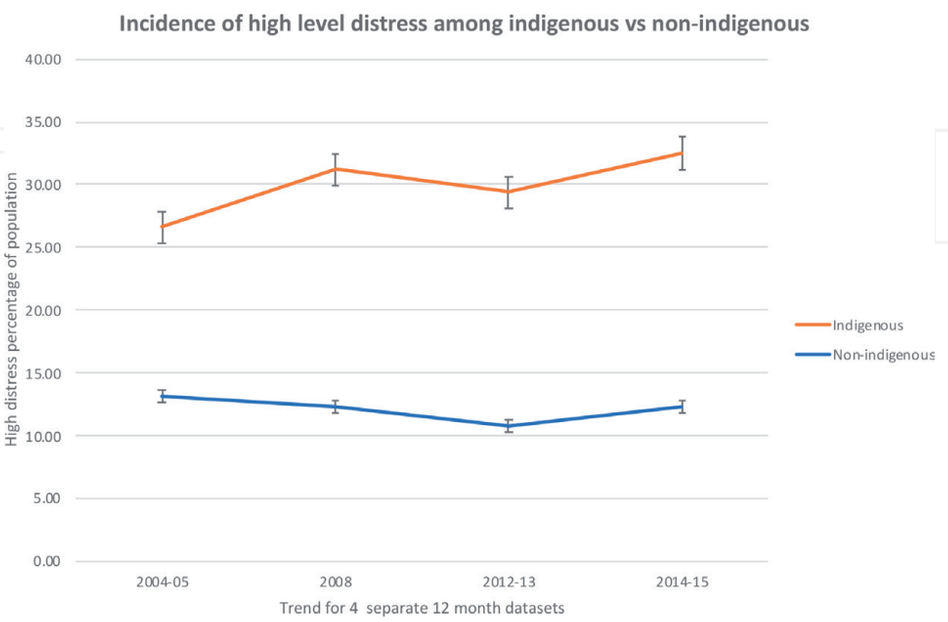


Figure 1.
Incidence of higher levels of distress among indigenous Australians compared to non-indigenous population. For indigenous Australians, the comparative distress levels are not only higher for all the four reported time periods but also show a trend of increasing levels of disparity for each consecutive period. Data for this chart were derived from Australian government report: Overcoming indigenous disadvantage 2016 [7].

(such as colonialism, genocide, slavery, and abuse) then higher incidents of poor health outcomes remain present for many generations to follow [8]. In Australia, this is evidenced by the health disparities currently present [9, 10]. Once primary trauma occurs, the intergenerational effect is amplified by the risks associated with increased vulnerability to secondary trauma identified above. As a result, a pattern of trauma is often established in family and community groups which can be viewed through the current statistics that evidence Australian indigenous children end up in out-of-home care at a greater rate than non-indigenous children and disproportionately high rates of fatal self-harm [11, 12].

1.2 Methodology

For this review, research papers were retrieved from the following databases and search engines: the Centre for Independent Studies (CIS), ProQuest, PubMed, ScienceDirect, Scopus, and Springer Link. The following: "trauma," "childhood trauma," "intergenerational trauma," "indigenous," "aboriginal," "retrograde amnesia of psychogenic origins," "dissociative and psychogenic amnesia," "mental health," "indigenous connection to country" together with "quantitative," "statistical" and "social neuroscience" were used as keywords to filter results. Other keywords to filter results were "over policing," "detention," and "close the gap." Search areas were restricted to clinical neurological science and sociology reporting on amnesia across indigenous Australians with results analyzed on the basis of the last two decades, geographical location, and types of intervention. Statistical evidence was sought from the Australian Bureau of Statistics (ABS) National Health Survey, 2014–2015, National Aboriginal and Torres Strait Islander Social Survey, 2014–2015 and Australian Institute of Health and Welfare (AIHW). Criteria for inclusion in this review were studies from the last two decades to capture political and social changes and were written in the English language. When the effect of mass trauma was analyzed for indigenous Australians on the basis of population and global geographical location, it was observed that New Zealand studies were most relevant to this review.

The exclusion criteria were reviews outside recent neurological memory loss and general indigenous research not relevant to Australian indigenous issues and papers not written in English. Research papers were also limited based on health specific records, identification of indigenous people, diagnosis mixed with other preexisting conditions. Also excluded, were reviews relating to memory loss as a result of accidents, sports, and direct physical damage to the brain, as the scope of this article focusses upon retrograde amnesia of psychogenic origins.

Data used in this article has been derived from Australian Government sources with the figures extrapolated from mental health statistics, in particular mood and neurotic disorders in which dissociative and psychogenic amnesia appears to draw conclusions.

1.3 Results

Indigenous Australians have a higher incidence of distress indicative of social and psychological trauma than non-indigenous Australians. The legacy of trauma continues to exist in indigenous life with lived experience of psychological, sexual and physical abuse (including domestic violence), alcohol and substance abuse, over-policing, dissociation from family due to out-of-home care, continuing discrimination and racism, perpetuating the cycle. The effects are hard to quantify as directly supporting statistical evidence is limited [9, 10]. The greater incidence of distress trauma present in indigenous communities correlates to a higher incidence of amnesia compared to non-indigenous counterparts.

2. Key concepts in memory and related losses: amnesia

To better understand the nature of memory and how memory loss occurs in various types of amnesia, existing knowledge about human memory and a description of the various types of amnesia relevant to this article are set out below.

2.1 Memory

All memory types have two dimensions, time and content. Considering the time dimension, memory is categorized into a further four categories based on its content. Firstly, the shortest term memory type, which lasts a second or less, described as sensory memory, here sensory receptors capture the sensation momentarily to be filed into a longer-term memory section [13]. There are five sensory receptors which provide input to sensory memory: iconic or visual, echoic or auditory, haptic or touch-based, olfactory or smell related, and a taste receptor. Secondly, there is working memory, also referred to as primary or active memory which last less than a minute. Thirdly, there is the long-term memory, the loss of which is essentially the primary subject of this article [13]. The contents of long-term memory are categorized into two main types; one is explicit or conscious memory, sometimes also referred to as declarative memory, and implicit or unconscious memory, also known as procedural memory. The explicit or conscious memory is generally subtyped into episodic memory where events and experience are recorded; and semantic memory where general facts and concepts are recorded. Episodic memory is referred to episodic autobiographical memory (EAM), if the episode recorded relates to personal experiences [14, 15].

Other memory types such as prospective memory relate to processing future tasks and have little to do with recollection of past events. Autonoetic consciousness, however, is regarded as an anchor, or sense of self, in that all past experiences or exposures over a person's lifetime are able to be retrieved and reflected upon [14, 16]. Conversely, semantic memory refers to the process of collecting general knowledge, allowing for recall of rudimentary facts and common knowledge, learned during the course of an individual's existence, not drawn from personal experiences but is interconnected with culture [14].

Independent case studies have demonstrated that both episodic and semantic memories may be lost and, given the right time and circumstances, these memories may be recovered at a later date [14]. In one case it was observed that a patient experiencing retrograde amnesia caused by a mild head trauma exacerbated by work stressors was unable to access episodic and semantic memories. Over a period of several months, the patient was observed to be able to recall some semantics until full access to his blocked memories was established. In this case, to determine full recovery the patient was required to demonstrate competency in three faculties; ability to sense time, be aware of subjective autonoetic chronology and be aware of the presence of his own self through that chronology [14]. Neuroscience research relating to the experience, absorption, and memory of various episodes in life has found little evidence of early infantile episodic memory and given the development of the brain, early episodic and autobiographical memory during infancy does not happen. It is generally agreed that these memories occur after the age of 3 years [15].

For indigenous Australians, associations with family, community, land and wellbeing are crucial; individual land ownership is not an indigenous concept. Memories are formed through "storytelling" as a form of continuous oral tradition of recording and preserving history and importance of connection to land and

country [17]. Intimate knowledge of country forms a strong connection that is inherent to indigenous identity and sustains wellbeing across spiritual, physical, social and cultural perspectives. Caring for country means participating in inter-related activities which aim to promote ecological, spiritual and human health and wellbeing. Loss of autonoetic consciousness interrupts such connection to country and as such, impacts upon health and wellbeing, not just for an individual but often for a community [1, 18]. The impact of amnesia results in lost inheritance for future generations.

2.2 Amnesia

Whilst it is acknowledged that memory loss may occur as a result of accidents, sports, and direct physical damage to the brain, the scope of this article is centered upon retrograde amnesia of psychogenic origins. Retrograde amnesia is the inability to recall long-term memory, mainly episodic and autobiographical, and is caused by extreme psychological trauma typified by that experienced by indigenous Australians [19]. In severe cases, anterograde amnesia may occur preventing the formation of any further memories after the experience of an episode of severe psychogenic trauma and, although atypical, may also be accompanied by loss of semantic and factual memories [19]. Dissociative amnesia, a subtype of psychogenic amnesia, is usually triggered by a traumatic event and is illustrated by retrospective memory gaps, the inability to recall personal information, often of a traumatic or stressful nature and is too explicit to be ascribed to forgetfulness or fatigue [20]. This article will also specifically consider indigenous childhood trauma of psychogenic origins that causes the removal of painful memories from parts of the brain that are responsible for memory function. The removal of such painful memories is considered a defense mechanism to extreme emotional and psychological stress. Dissociative amnesia may also have accompanying indications of depression and anxiety, with associated displays of impulsive aggressive behaviour, self-mutilation and suicidal ideation [21, 22].

2.2.1 History of amnesia

Historically, incidents of amnesia associated with memory lapses and forgetfulness have been linked to physical, emotional, and spiritual welfare and often hypothesized through a philosophical lens [23]. Historically, memory loss was attributed to neurological disorders and physical head injuries, metabolic dysregulation, substance abuse, other acute or chronic brain illnesses. Following much debate, amnesia was identified as a memory disorder with further specificity distinguishing retrograde and anterograde categories [23]. Amnesia as a clinical feature was critical to the development of notions of dissociation of conscious from subconscious recall, and differentiation of neurogenically-based from psychogenic-based amnesia became central to understanding post-traumatic states [21].

2.2.2 Neurological observations of stress-related amnesia

Memory functionality has been found to improve when events recorded by the brain are emotionally arousing. These events tend to enable the human brain to absorb and recall events more effectively, over a longer period of time. The use of corticosteroids or cortisol, the main form of long-term stress hormones, has been considered to enhance or increase the brain's memory capacity [24]. Conversely, persistently high levels of the stress hormone cortisol, common among indigenous

people can be detrimental to long-term health, mental health and, wellbeing of the individual and community [25, 26]. Episodic memory appears to be affected when the Hypothalamus-pituitary-adrenal (HPA) axis records higher amounts of glucocorticoids, released from the adrenal cortex, when stress is experienced which impacts the regions inside the brain. Central to the above is that episodic memory is not just impaired, but more specifically its access and retrieval is temporarily blocked [27].

2.2.3 Beneficial effects of amnesia

The repression of memory, whether consciously practiced or chemically induced, is considered to be a suitable coping mechanism for trauma-related or acute stress and has been observed to be good practice for sufferers of myocardial infarction [28]. The benefits of memory repression were realized whilst researching prevention, delayed onset, or reduction in the severity of post-traumatic stress disorders (PTSD) [29]. Although trauma-induced amnesia does not increase a person's functionality, intellect or powers of execution, it has been found to reduce stress disorders. The defense mechanism in the brain that induces amnesia after a severe episode of trauma has the protective effect of reducing the likelihood of PTSD, autism spectrum disorder and other associated side effects [29].

2.2.4 Treatments of psychogenic and dissociative amnesia

No agreed treatment is available for psychogenic dissociative amnesia nor any methodology in place that may lead to rehabilitation. It is suggested that this is one area where complimentary intensive research in neurophysiology may improve understanding of the disorder and produce a feasible solution to improve the quality of life for those afflicted [30]. The inherent danger in dissociative amnesia is that it statistically points to increased risk of self-harm, suicide, and life-long loss of cognitive functionality. The detection and prevalence of dissociative amnesia varies broadly nationally and internationally, making it harder to define and detect let alone attempt to mitigate its effects [30].

Consequently, this article will correlate neurophysiological research with social and demographic research pertaining to indigenous Australians to detect the presence and epidemiology of psychogenic amnesiacs. The platform of social neuroscience, where such convergence occurs, is considered a suitable area of study as outlined further below.

3. Social neuroscience and its relevance

Humans are social in nature and create evolving social structures based on an individual social grouping and the creation and evolution of accompanying cultures. These social structures have influenced the evolution of human neurobiological systems and accompanying effects on genes, cells, neural networks, and hormones. Social neuroscience is a study of the connection of the two systems as they coexist and co-influence [31]. Human neurobiological makeup has assisted in the various social constructs humans have built around themselves, which have then influenced and mutated human biology [31]. Social neuroscience is a relatively new area of academic inquiry which allows for greater understanding into the co-dependency and confluence of biological and social sciences. Insights into the cause and effect of psychological events on human neurophysiology validate the need for further research into social neuroscience [32].

Neuroscience research provides evidence that traumatic psychogenic amnesia, not directly associated with physical brain damage, impacts upon brain functions following the use of a neuroimaging technique called positron emission tomography (PET) [33]. It has been observed that a psychogenic amnesiac has different parts of the brain activated compared to non-amnesiacs in that the amygdala and other regions of the brain showed increased activity [19]. This leads to the suggestion that limbic functions and limbic cortical functions are affected by psychogenic amnesia and in case studies, patients recorded as having experienced traumatic psychogenic amnesia, also demonstrate cognitive impairments in attention, execution and intellectual capabilities [34].

4. Social, community and belief considerations

Research into trauma related amnesia in relation to indigenous people can be a sensitive issue. Much has been written about indigenous health with criticism around the research methodology, theoretical perspectives, and evaluations of programs. It is clear the "closing the gap" strategy is struggling to have a major impact on the ambitious targets set by the Australian Government [35]. Reflective practices between cultures often present different philosophical and theoretical perspectives and discrete communication and language add complexity to the problems faced. The interpretation of incidence of amnesia among indigenous Australians can aggravate the segregation of the two cultures [36]. Interventions should be in the context of the use of traditional learning processes to view health and wellbeing from traditional healing perspectives with sound solutions for the future [36]. Comparative New Zealand research into therapeutic interventions for indigenous mental health, demonstrated that treatment based on the premise that a holistic view of wellbeing which is congruent with culture, customs and values integrating aspects of spirituality, provides a greater individual sense of self and place, and should be considered in any treatment plan [37].

Within the last decade, there appears to have been a shift in the narrative around acknowledging that not all aspects of indigenous culture is positive. Recent discourse by prominent female indigenous leaders has provided a sincere snapshot into some of the continuing health issues [38]. It is conceded that indigenous communities are often desensitized to a culture of violence, with many assaults going unreported, and violence deemed the norm [39]. It is also felt that the very nature of the traditional culture continues to maintain the dominant rights for men to control women [38]. These adverse aspects of culture are regarded as detrimental to finding solutions to better health outcomes.

There is an urgent need for better evaluation of indigenous policies and programs nationally to assess outcomes. There is a lack of reliable national data reporting on how health and wellbeing measures are based. Evidence shows that when programs are well researched, supported by effective community targeting and engagement, then outcomes are positive [39]. One example of this is in relation to petrol sniffing and the implementation of OPAL fuel (a low aromatic fuel) substitution for petrol. This program resulted in a dramatic reduction in ailments arising from petrol sniffing [40]. Improved data collection around patient consultation, diagnosis, referrals to specialists, and outcome of referrals is required to better understand the impact of amnesia [41].

The concept of culture plays an important part in both the social and biological sciences as culture enables a community to make sense of their world and impacts treatment outcomes. Research provides that the biogenetic, environmental and cultural influences impact collectively on cognitive development affecting

behaviour [42]. It cannot be emphasized enough that through culture, people are able to place themselves and self-identify, as such traditional healing methods should form part of health strategies and be framed through cultural messaging [43]. It has been suggested that two fields of research practice have dominated debates around health and wellbeing, one view suggests that factors such as income, socioeconomic hierarchy, and social status provide indicators of risk of disease, the second view, held by health psychologists, anthropologists and sociologists, is that risk of disease is associated with stressors and the ability of an individual or community to cope with such stressors [32]. Therefore health and wellbeing are impacted by historical legacies and politics; and the passage of time directly affects how culture shapes health trends in relation to indigenous people.

5. Incidence, detection, and impact of amnesia

Testing for amnesia is often unreliable as it is frequently associated with cognitive dysfunction identified through impairment of learning and executive functions [44]. Cognitive dysfunction is also ubiquitous with high rates of poor health, diseases, substance abuse, domestic violence, psychological stress, and trauma, as reported widely among indigenous Australians. Tests are also often based on Western premise and not tuned for cultural nuances [45]. Alcohol and substance abuse, in general, is one of the most reported concerns among indigenous Australians with misuse often resulting in impairment and toxic harm to organs and tissues, with premature aging and death. Being in a state of intoxication diminishes coordination, cognition, perception and promotes dependency [46]. It has been established that alcohol abuse alters the structure of the brain through degeneration of the cerebral cortex, and causes changes to the hypothalamus and cerebellum [47]. These changes directly impact cognitive processes associated with learning, memory, attention, rational thinking, and impulse control [48, 49]. The abuse of alcohol may cause complications giving rise to neuropsychological disorders, cancer, cardiovascular, diabetes and infectious diseases, injuries whilst intoxicated, and fetal disorders [44, 47]. Poverty and economic stress arising from poor educational outcomes, and unemployment can cause additional psychogenic trauma impacting mental health causing anxiety and depression [41]. As previously outlined, stress triggers hormonal action on the nervous system to produce a biological uninhibited reaction which often translates into violence or abuse. Continuously high stress levels lead to heightened states of hypersensitivity undermining positive health leading to mood disorders such as depression, anxiety and aggression, diabetes and high blood pressure and potentially resultant amnesia [50].

6. Neurophysiological research

Recent research into dissociative identity disorders supports the finding that highly stressful events during childhood development produce a neurological response to intolerable stress which results in the deconstruction of self-identity [51]. Stress-induced trauma may arise from physical and emotional abuse or neglect, disturbed attachment, and boundary violations with the resultant effect amplified as a result of familial, societal and cultural factors [52]. As a biopsychosocial concept, dissociative identity disorder has been validated as a chronic psychiatric disorder arising from intolerable stress and trauma grounded on interpersonal non-assimilation, cognitive and neurobiological responses and as such warrants further comparative research [51].

Research has provided insights into how stress interacts with long-term potentiation (LTP), long-term depression (LTD), stress, and memory on the hippocampus, amygdala and prefrontal cortex [53]. These three regions of the brain are impacted in time from stress-related, trauma-inducing events so that immediate impact is temporarily followed by a medium-term, then a longer term effect [54]. In relation to the hippocampus, the LTP is engaged and activated for a short period of time. After this early period lasting no more than a few minutes, LTP activity is blocked and a period of memory consolidation occurs for up to half an hour [54, 55]. During this period of consolidation new memories are suppressed and LTP is disengaged. In the amygdala region, LTP is engaged for a longer-period and emergency decision making is enabled and action is taken [54]. The prefrontal cortex reacts differently compared to the hippocampus and amygdala in that LTP is temporarily impaired, attention is divided and multitasking is enabled. After a period lasting a few minutes to an hour normal LTP induction is restored. These concurrent effects on the three parts of the brain induced by traumatic events not only show how strong psychological and emotional events induce high levels of stress, resulting in short-, medium- and long-term effects but also result in longer-term phenotype changes in their physiological structure [54]. Further evidence of the impact of trauma on neurophysiological structures is provided by PET data, which illustrates that the right hemisphere of the brain is affected by these events and visual areas of the brain are activated, directly related to the extent of trauma [19, 33, 34].

7. Epidemiology of psychogenic amnesia

In severe cases of trauma-related stress, both retrograde and anterograde memories are affected along with overall impairment of mental and physical health [26, 55]. Studies relating to the frequency of dissociative and psychogenic amnesia have been carried out in 16 countries with rates of prevalence in different countries varying from 0.2 to 7.3% [56]. This large variation in the epidemiology may partly be explained by a lack of standard testing. Therefore, combining social research with neuroimaging data and neurobiological studies of this disorder is suggested to improve understanding of the debilitating impact on its sufferers, and indigenous Australian communities in general [56].

Access to appropriate treatment is problematic given the lack of accurate testing, diagnosis and reporting. Frequently, the correlation between a patient's symptoms and traumatic experiences are not explored in depth as existing diagnostic tools are used to analyze and problem-solve which may only result in partial treatments [44]. Often trauma is treated by prescribing medicines for insomnia, anxiety and depression without understanding the etiology of the trauma condition [12, 51, 52]. There is also an increase in interventions from agencies in relation to emotional abuse, neglect and exposure to domestic violence and the need to mitigate risk to children. Again, although the paramount protection of children is the overriding concern, interventions do not address underlying issues associated with trauma and to a certain extent, perpetuate the effects [50].

According to the 2012–2013 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) 30% of people over 18 years old reported high or very high levels of psychological distress. Indigenous people were approximately three times likely to have experienced very high levels of psychological distress across age groups [57]. As previously mentioned, stress can impact on cognitive function and produce mental health issues. Cognitive processes affected in mood disorders include impairment of working memory, abstract reasoning, sustained attention, visuomotor skills and verbal memory [45, 53, 58]. **Figure 2** below demonstrates

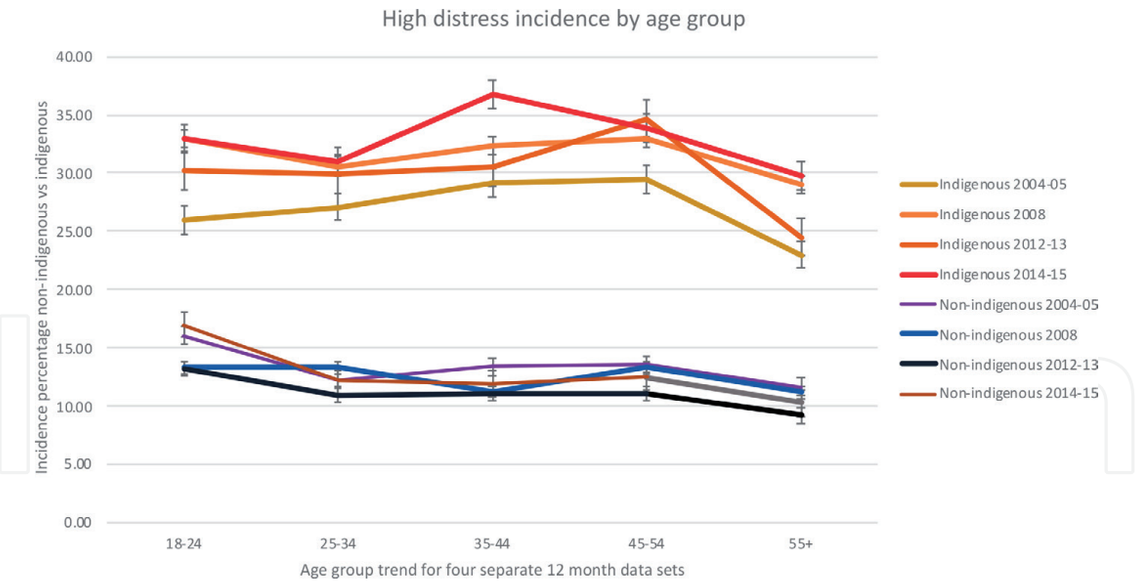


Figure 2.
Levels of distress in indigenous versus non-indigenous Australians across time and age-groups. Indigenous Australians aged 35–44 years record the highest levels of distress and non-indigenous Australians aged 55+ years record the lowest levels of distress. As time passes, stress levels appear to be increasing in all age groups in indigenous Australians and decreasing or stable in non-indigenous. Data for this chart were derived from Australian government report: Overcoming indigenous disadvantage 2016 [7].

varying levels of high distress experienced by various age groups among indigenous and non-indigenous Australians, exemplifying the huge mental health disparity between the two communities.

8. Incidence of psycho-social trauma

Childhood psychogenic trauma can be experienced in a multitude of ways. Although many indigenous children grow up in stable and loving homes, those exposed to secondary trauma, develop coping mechanisms [59]. Long-term stress arising from direct forms of psychogenic trauma and indirect transgenerational trauma gives rise to a continuous stream of cortisol. These high levels of cortisol result in the body disabling the cortisol receptors in an attempt to disengage itself from painful events. When high levels of cortisol are present in childhood, it results in children feeling withdrawn and inactive with an associated lack of stimulation [25]. Conversely, responding to the similar circumstances of high stress and unabated levels of cortisol, some children may display highly sensitive and alert behavior which eventually takes a toll on their long-term health [25]. In either case, recurring levels of stress produce psychiatric damage that continues into adulthood. The impact is then perpetuated at community levels displaying across their mental and physical health. Further, sensory emotional and physical flashbacks of repeated traumatic experiences including diagnosed post-traumatic stress disorders produce further disordered memory function. Flashbacks are more likely to occur when a person is upset, stressed or aroused by any association with the traumatic event [52].

Within indigenous Australian culture, traditional values still control communities and maintain the dominant rights of indigenous males over females. Negative aspects of this culture are associated with the intersection of customs and law whereby customary law allows for the sexual assault of under-age girls who are "promised wives" to men and suffer an early cessation of childhood [60]. Family violence also has a significant impact on the health and welfare of individuals,

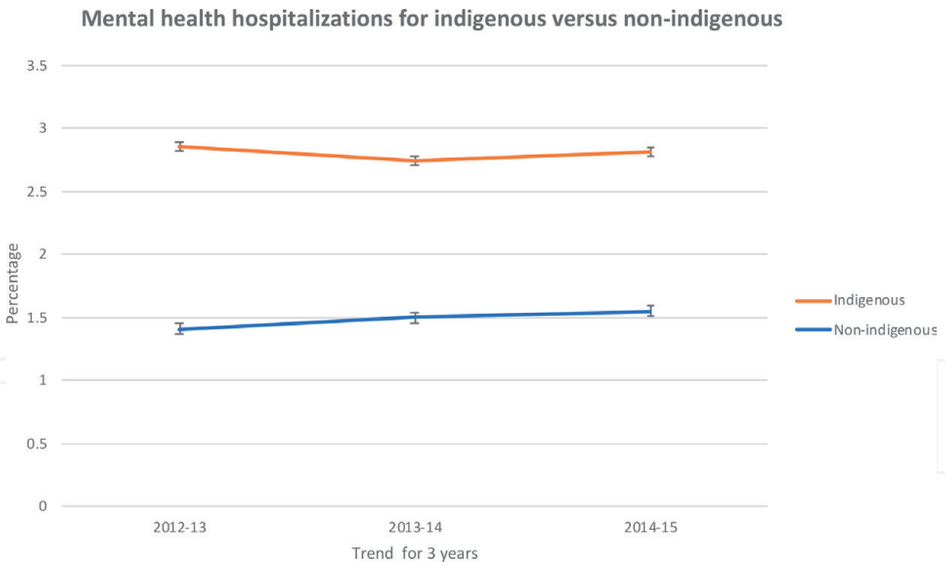


Figure 3.
All mental health hospitalizations for indigenous versus non-indigenous Australians over time indicating significant variation in population. Data for this chart were derived from Australian government report: Overcoming indigenous disadvantage 2016 [7].

families, and communities [38, 61]. In some Australian jurisdictions, police records indicate indigenous women were physically assaulted up to 11.4 times more frequently than non-Indigenous women with reports of domestic and family violence by a current partner also considerably higher than for non-indigenous women [7]. Hospitalizations for indigenous women for non-fatal family violence-related assaults were also significantly higher at 32 times the rate of non-Indigenous females [7]. Hospitalizations among indigenous population due to mental health disorders are twice as high as non-indigenous Australians as shown in **Figure 3** below.

In understanding the ongoing legacy related to trauma, consideration needs to be given to the number of children in kinship care. Kinship carers are often in an older age group, are economically poorer, with reduced health, and lower levels of education than foster carers and may appear to perpetuate the pattern of disadvantage [62]. The number of indigenous children in kinship care has grown at more than twice the rate of children in foster and residential care with some suggestions that this has been driven by increased demands for care, a shortage of foster carers, and reduction in costs [63].

Attention must also be placed on the enduring disproportionate rates of indigenous arrests, detention, and over-policing evident in many indigenous communities. The 1991 establishment of the Royal Commission into Aboriginal Deaths in Custody confirms that treatment of indigenous people in the criminal justice system was considered of national importance and left no doubt as to concerns about inappropriate violence perpetrated by Police [64–66]. More recent concerns raised by the New South Wales Ombudsman still suggest a disproportionate level of interaction, over-policing and use of Tasers against indigenous people [67].

9. What can be done and what has been achieved

Research has shown that often individual experiences of trauma underscore difficulties in recovery as the effects of trauma compound within a community on which an individual has depended, and the community becomes fragmented and disconnected [9]. An individual diagnosis of psychogenic amnesia may be better served if consideration is given to collective community trauma; individual

treatment may result in disconnection from community and loss of self-connection [9]. Studies indicate that adopting evidence-based principles of family and community healing, developed internationally in mass communal disaster situations, may assist in conceptualizing a more informed response to the wellbeing for indigenous Australian communities [9].

It is acknowledged that treatment for trauma-induced amnesia is in early stages of development with robust data not readily available. It is evident that health practitioners working with indigenous Australians affected by trauma need to modify their programs to suit individual traumatic experiences and operate from a "trauma-informed" community perspective [59]. Culturally competent staff accept that trauma is individualized, and that therapeutic care must be customized for the individual to meet holistic and ecological needs [59]. Medical concepts in plain English or local language should replace technical specialist language within cross-cultural settings with the use of "story" central to shared understanding. As a society, we have a responsibility to ensure children have the opportunity to heal from trauma and have a responsibility to ensure all appropriate services and treatment methods are provided to achieve this [42].

In 2015, the Australian Government released the Implementation Plan for the National Aboriginal and Torres Strait Islander Health Plan 2013–2023 which outlines actions and strategies to be undertaken by the Government and other key stakeholders to execute the priorities [68]. Priorities include access to primary health care for early intervention to prevent hospitalizations and avoidable deaths and improved mental health outcomes. The Plan acknowledges that mental health has implications for incidence of domestic violence, substance abuse imprisonment and family disconnections and seeks a reduction in suicide and self-harm rates [68]. The Plan indicates that rates of family and community violence were unchanged between 2002 and 2014–2015 (around 22%), and risky long-term alcohol use in 2014–2015 was similar to 2002 [68]. Of concern, is that the proportion of adults reporting high levels of psychological distress increased from 27% in 2004–2005 to 33% in 2014–2015 (as shown in **Figure 1**),

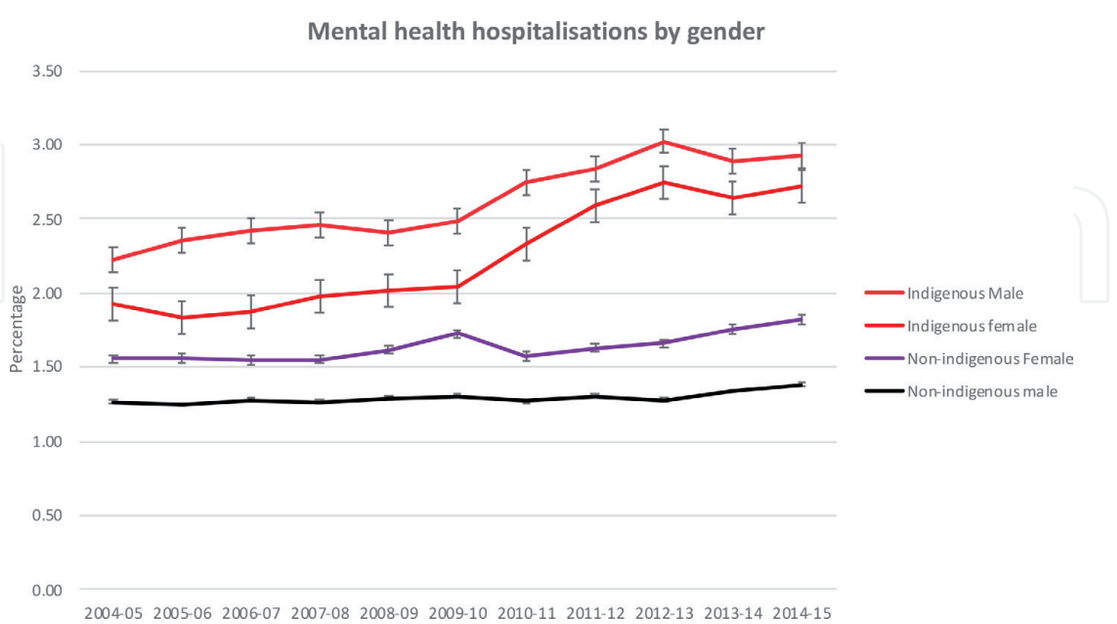


Figure 4.
Mental health hospitalizations by gender for indigenous versus non-indigenous Australians for a reported period and shows increased levels of hospitalizations for both male and female indigenous. Male indigenous hospitalizations show more than twice the level as compared to non-indigenous. Female indigenous have higher levels of hospitalizations than non-indigenous but less than male indigenous which raises possible concerns over reporting. Data for this chart were derived from Australian government report: Overcoming indigenous disadvantage 2016 [7].

and hospitalizations for self-harm increased by 56% over this period. The proportion of adults reporting substance misuse in the previous 12 months increased from 23% in 2002 to 31% in 2014–2015 [5, 68] (**Figure 4**).

It has been inspiring to see organizations implement Reconciliation Action Plans driving collective action to implement change for positive indigenous Australian health outcomes. It has been acknowledged that indigenous patient safety is inextricably linked with cultural safety and that currently, no agreed national definition of cultural safety exists [69]. Despite this some organizations have informed the view that cultural safety should be defined as the individual and institutional knowledge, skills, attitudes, and competencies needed to deliver optimal equitable health care for indigenous people [69].

The perspective of trauma-informed health care may change the lens on treatment plans for indigenous people presenting with mental illness [70, 71]. For change to occur, local indigenous communities and regional areas must be in control of determining health needs and responsible for assessing the outcome in conjunction with health professionals [72, 73]. Indigenous Australians have a "right to a good life" and past uncoordinated approaches to tackle the problems of poor health outcomes has led to a culture of low expectations [74].

10. Conclusion

This chapter has considered the psycho-social trauma and epidemiology of amnesia associated with childhood and intergenerational trauma prevalent among indigenous Australians, from the social neuroscience perspective. The legacy of destruction imposed on indigenous Australian by violence and assimilation has had severe long-term consequences contributing to the tragic health inequality present in indigenous Australian's today. The insights derived from this review indicate that the complex effects of psycho-social trauma induced amnesia should be considered in any treatment plan.

It is clear there is strong need to understand the meaning of trauma recovery in the indigenous context which differs from non-indigenous interpretations, and acknowledgment that wellbeing of indigenous people has to take into account genetic and environmental influences. Indigenous people suffering from psycho-social trauma-induced amnesia often experience additional complex factors of social disconnection. Open discussions need to address cultural dimensions that value past, present and preservation of knowledge. Taking a deeper look at the underlying causal factors of amnesia may allow consideration of a greater range of treatment options across a multitude of social neurological science disciplines may go towards informing funding for further research and training.

Conflict of interest

The author declares no conflict of interest.

Other declarations

This chapter generally uses the term "indigenous Australians" to describe Aboriginal and Torres Strait Islander Australians, as Australia's first peoples, and "non-indigenous Australians" to refer to Australians of other backgrounds, except where quoting other sources.

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