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Examining the Associations Between Experiences of Perceived Racism and Drug and Alcohol Use in Aboriginal Australians

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Abstract

Objective

This study aimed to explore the relationships between experiences of perceived racism, mental health and drug and alcohol use among Aboriginal Australians.

Method

Sixty-two Aboriginal Australians, ranging in age from 19-64 years ($M_{age} = 33.71$, $SD = 12.47$) and residing in Victoria completed an online questionnaire containing measures of perceived racism, alcohol use, substance use and mental health.

Results

First, 66% of the sample reported experiencing interpersonal racism, with the highest proportion of reported experiences occurring in health settings, educational/academic settings and by staff of government agencies. Second, perceived racism was significantly associated with poorer mental health and well-being. Finally, while perceived racism was not significantly associated with substance use, there was an indirect pathway from perceived racism to substance use through mental health concerns.

Conclusions

The current research indicates that racism is still frequently experienced by Aboriginal Australians and is directly associated with poorer mental health, and indirectly with substance use through poorer mental health. The findings demonstrate a clear need for further research in this area.

Acknowledgements

The authors acknowledge the people of the Kulin Nations, on whose land they work, and pay their respects to their Elders, past and present – acknowledging that their sacred bonds to this land remain unbroken, and unceded.

Keywords

Indigenous, Aboriginal, Australia, drugs, alcohol, substance use, racism, wellbeing

Experiences of perceived racism have been proposed to have detrimental effects on the social and emotional well-being of Aboriginal Australians, including influencing drug and alcohol use (Maher, 2008). Recreational drug and alcohol use were virtually non-existent in Australian Aboriginal cultures prior to colonisation (Maher, 2008). However, today, research demonstrates that the use of substances is significantly higher in Australian Aboriginal populations, as compared with non-Aboriginal Australians, and is associated with the poorer mental health outcomes of many Aboriginal peoples (ABS, 2019; AIHW, 2018, 2020a, 2020b, 2021). The introduction of these substances has caused dramatic changes to the way Aboriginal people cope with the challenges and consequences of stressful and adverse experiences, such as those posed by colonization (e.g., Paradies et al., 2015). Therefore, it is essential to further understand factors associated with the use and impact of substances among Aboriginal peoples.

Racism is an important factor to consider as it can impact health, adversely influencing cognitive and emotional processes and associated psychopathology, which can be associated with substance use (Paradies et al., 2015). Racism is also proposed to impact health by increasing engagement in unhealthy behaviours (e.g., alcohol and other drug use) either directly as a coping response, or indirectly via poor mental health, emotional difficulties and reduced self-regulation (Paradies et al., 2015). The current study therefore focused on the associations between perceived experiences of racism, substance use and mental health among Aboriginal peoples living in Victoria.

Mental health and substance use disorders are the main causes of non-fatal burden of disease among Aboriginal people aged 5 – 49 years, representing 19% of the burden of disease (AIHW, 2018). Moreover, the Australian Institute of Health and Welfare (2018) reported that 37% of the burden of disease in the Aboriginal population could be prevented by reducing exposure to modifiable risk factors, such as substance use and poor mental health. Aside from the direct impact of the harms caused by the use of alcohol and other drugs, the indirect harms can also have significant impacts on Aboriginal people, families and communities (Gray, Cartwright, Stearne, Siggers, Wilkes, & Wilson, 2018).

Prevalence of Alcohol and Other Drug Use

While excessive alcohol consumption is a significant risk factor in both Indigenous and non-Indigenous Australian populations, it represents a considerable concern for the health and wellbeing of Aboriginal people. It is important to note, however, that data from several sources indicate that Aboriginal people are more likely to abstain from consuming alcohol than non-Indigenous Australians and abstinence among Indigenous Australians has increased from 25% in 2010 to 29% in 2019 (AIHW, 2021). However, for some Aboriginal people alcohol consumption poses as a significant problem. In 2018-2019, half of all Indigenous Australians aged 15 years and over consumed alcohol at risky levels (more than four standard drinks on a single occasion) at least once in the last two weeks, which is 1.2 times the rate for non-Indigenous Australians (ABS, 2019). Of these individuals, the Australian Bureau of Statistics (ABS, 2019) reported that 18% of Aboriginal people consumed alcohol at least once per week. In 2018-2019, 18% of Indigenous Australians aged over 15 years exceeded the National Health and Medical Research Council alcohol risk guidelines (i.e., drinking no more than the recommended two standard drinks per day). Of these individuals, 37% consumed 2-3 standard drinks daily (versus 39% for non-Indigenous Australia), 15% consumed 3-4 standard drinks daily (versus 23% for non-Indigenous Australians) and 48% consumed more than 4 standard drinks daily (versus 38% for non-Indigenous Australians; ABS, 2019). These statistics suggest that when Indigenous Australians do consume alcohol, they are more likely to do so at risky levels.

In 2011, illicit substance use accounted for the 2.3% of the total burden of disease and injuries, 1.3% of deaths and 1.4% of the non-fatal burden of disease in Australia, with use more prevalent in males than in females (3.2% in males versus 1.2% in females) (AIHW, 2018). In 2018-2019, 29% of Indigenous Australians aged over 15 years reported having used substances within the past 12 months, compared with only 16% of non-Indigenous Australians (AIHW, 2020a). In 2018-2019, marijuana, hashish or cannabis resin were the most used illicit substances among Indigenous Australians, with 25% of Indigenous Australians aged over 15 years reporting use in the last 12 months (AIHW, 2020a). This was followed by amphetamines (e.g., speed, ice) (3%), opioid analgesics (3%) and tranquilisers (e.g., benzodiazepines) (2%) (AIHW, 2020a). Additionally, 21% of

Indigenous Australians reported having used only one substance in the last two months and 8% reported the use of multiple substance (AIHW, 2020a).

Consequences of Substance Use

The harms associated with excessive alcohol consumption are numerous, and include liver disease, behavioural disorders, assault and transport accidents, as well as social harms, including interpersonal and family violence, child abuse and neglect, homicide, family breakdown and financial and legal issues (Gray, et al., 2018) The Aboriginal and Torres Strait Islander Health Performance Framework (AIHW, 2020a) reported that in 2018 the rate of alcohol-related deaths among Indigenous Australians was 18 deaths per 100,000 population, compared to 4.5 per 100,000 in non-Indigenous Australians (AIHW, 2021). Further, excessive alcohol consumption during pregnancy can significantly affect the health of newborn babies, usually through Foetal Alcohol Syndrome, which is significantly more prevalent in Aboriginal infants (Gray et al., 2018). Gray and colleagues also reported significant correlations between acts of self-harm and suicide attempts, and the frequency of drinking. For example, from 2011-2015, 30% of Indigenous female and 40% of Indigenous male suicides were attributed to alcohol use.

The harms associated with illicit substances vary depending on the specific substance being used and the route of administration. Illicit substance use contributes to liver problems, blood-borne viruses, heart disease, mental health difficulties, accidents, injuries, family and social disruption, workplace issues, violence, and crime (ABS, 2019). The Aboriginal and Torres Strait Islander Health Performance Framework (AIHW, 2020a) reported that in 2018 the rate per capita of unintentional drug-related deaths among the Australian Indigenous population was estimated to be 17.3 per 100,000, compared to the 6.0 per 100,000 estimation for non-Indigenous Australians (AIHW, 2021). According to the National Survey of Mental Health and Wellbeing (NSMHW), of the people who misused drugs nearly every day in the prior 12 months, almost two-thirds (63%) also had a 12-month mental health disorder (ABS, 2007). Similarly, almost half (49%) of the people who misused drugs nearly every day had a 12-month substance use disorder, 38% had a 12-month anxiety disorder, and 31% had a 12-month affective disorder (ABS, 2007).

The high co-morbidity between substance use and mental health disorders is well-established. The Australian Institute of Health and Welfare (AIHW, 2020b) demonstrated that the number of self-reported mental health conditions among people aged 18 years and over was higher in those who reported substance use in the last 12 months (26%), as compared to those who had not used substances during this time (15.2%). This indicates that drug and alcohol abuse is significantly associated with poorer wellbeing for all Australians. However, as demonstrated by the Steering Committee for the Review of Government Service Provision (SCRGSP; 2003), the considerable disadvantage experienced by Aboriginal people as a result of the consequences of colonization, causes Aboriginal people to be significantly more vulnerable to alcohol- and drug-use disorders, as well as other mental health disorders and general psychological distress. Furthermore, the existence of a mental health disorder may exacerbate drug use (AIHW, 2020b).

Additionally, emerging research indicates that mental health concerns and emotional difficulties can mediate the relationship between life and social stressors, such as victimization and bullying, and substance use (e.g., McCabe et al., 2021; Richard et al., 2020). Experiences, and even expectations, of racism are often experienced as life stressors that can significantly influence mental health (e.g., Sawyer et al., 2012; Williams, 2018). Thus, here in the current study, we also investigated whether there is an indirect pathway between perceived racism (as a life stressor) and substance use through mental health concerns.

Perceived Racism

When the British first arrived in 1788, it is estimated that between 350,000 and 950,000 Aboriginal people were living in Australia, with 260 distinct language groups and 500 dialects (Purdie, Dudgeon, & Walker, 2010). By the end of the 20th century, the estimated Aboriginal population had declined dramatically to just 75,000 people (Purdie, Dudgeon, & Walker, 2010). This not only had significant effects on the lives Aboriginal people of the time but has had longer-lasting effects that still affect Aboriginal people today. Like many

settler-colonial countries, where the clashing of opposing cultures is unavoidable, Australia has a long history of perceived racism from non-Indigenous toward Indigenous Australians (Purdie, Dudgeon, & Walker, 2010).

Racism can be defined as “organized systems within societies that cause avoidable and unfair inequalities in power, resources, capacities and opportunities across racial or ethnic groups. Racism can manifest through beliefs, stereotypes, prejudices or discrimination” (Paradies et al., 2015, p. 1). It involves overt rejection of other groups and their members, underpinned by a belief in the superiority of one’s own group over others and can occur at an individual, institutional, or cultural level, can include subjective and objective experiences, and can cause long-lasting consequences (Clark 2004; Pedersen, Dudgeon, Watt & Griffiths, 2006). Perceived racism involves perceptions of discriminatory behaviours and prejudiced attitudes and can include both subtle forms of racism (e.g., symbolic beliefs) and overt expressions of behaviours (e.g., being called racist names) (Clark, 2004). Perceived racism differs from institutional, systemic racism, which may not be perceived (Clark, 2004). Misconceptions of Aboriginal people persist to this day (Pedersen et al., 2006). These include being dependent on welfare, consistent recipients of government handouts and being more likely to drink alcohol. Paradies and Cunningham (2009), using the Measure of Indigenous Racism Experiences, demonstrated the high prevalence of perceived self-reported racism among urban Indigenous Australians in Darwin, with interpersonal racism being reported by 70 per cent of participants. Perceived racism was most commonly experienced from service providers and in employment and public settings. A third of respondents had high levels of internalized racism, while two-thirds acknowledged the existence of systemic racism. A decade later, Markwick et al. (2019) still found high levels of perceived racism experienced by Aboriginal people. They investigated the population-based prevalence of experiences of perceived racism of Indigenous adults in Victoria. They found that Indigenous Victorian adults were four times more likely than their non-Indigenous counterparts to have experienced racism in the preceding 12 months. Furthermore, when the non-Indigenous comparison group consisted predominately of adults of Anglo-Celtic origin, Indigenous adults were seven times more likely to have experienced racism. The researchers found that racism directed against Indigenous Australians is still significant and cannot be ascribed to any specific attributes such as socioeconomic status or lifestyle risk factors. Despite improvement in education, employment, and health in the last 14 years among Aboriginal Australians, Aboriginal Australians are still experiencing racism and disadvantage at alarming rates (Ferdinand, Paradies, and Kelaher, 2017). Ferdinand and colleagues (2017) suggest that Aboriginal Australians are typically experiencing racism on multiple occasions in a 12-month period, in a number of settings, with no differences in experience based on age, gender, educational achievement or rurality.

Perceived racism has been found to be associated with Aboriginal health and well-being. For instance, Priest and colleagues (2011) found that, in a sample of 345 Aboriginal Australians aged 16–20 years, perceived racism was significantly associated with anxiety, depression, suicide risk, and poor overall mental health. Kelaher, Ferdinand, and Paradies (2014) investigated perceived experiences of racism and mental health among Aboriginal Australians ($n= 755$) living in two metropolitan and two rural Victorian local government areas between 1 December 2010 and 31 October 2011. They found that 221 participants reported that they had experienced racism in health settings in the past 12 months. Additionally, those who had experienced racism were more likely to be experiencing high or very high levels of psychological distress when compared to those who did not experience racism. Moreover, experiencing interpersonal racism in health settings was found to be associated with increased psychological distress over and above what would be expected in other settings. Ferdinand et al. (2020) recently reported that individuals experiencing high levels of racist incidents were 342% more likely to experience high or very high psychological distress. Paradies (2020) reported that perceived racism results in negative health impacts by causing an increase in maladaptive behaviours, reduced adaptive behaviours, and increased psychological distress. While the impacts of perceived racism on health and wellbeing have been well studied in countries such as New Zealand, the United States, and the United Kingdom (Larson, Gillies, Howard & Coffin, 2007), there is considerably less research examining the continued experience of racism on contemporary Aboriginal Australians (Paradies et al., 2008; Markwick et al., 2019). Moreover, despite perceived racism being proposed to be associated with substance use among Aboriginal peoples (Paradies, Harris, & Anderson, 2008) and contributing to the

gap in health between non-Aboriginal and Aboriginal peoples (Markwick, Ansari, Clinch & McNeil, 2019), there is still limited research examining these associations.

While Aboriginal people continue to experience racism in contemporary Australian society, there is still little research examining the nature of such experiences and the consequences of racism on the lives of Aboriginal people (Paradies et al., 2008; Markwick et al., 2019). Perceived racism has been proposed as a key determinant of the health of Aboriginal people and may explain the unremitting gap in socioeconomic and physical and mental health outcomes between Aboriginal and non-Aboriginal Australians (Markwick et al., 2019). Pedersen and colleagues (2006) highlight that the causes and effects of alcohol and other drug use in Aboriginal individuals and communities needs to be better understood. Despite these claims, little research has investigated the relationships between perceived racism, substance use and mental health among Aboriginal Australians.

Current Study

The current study, therefore, aimed to explore the relationships between experiences of perceived racism and drug and alcohol use in Aboriginal people. First, we hypothesized that greater levels of perceived racism would be positively associated with greater use of alcohol and other drugs. Second, we hypothesized that greater levels of perceived racism would be positively associated with poorer mental health. Third, based on recent findings indicating an indirect pathway from life and social stress to substance use via mental health (McCabe et al., 2021; Richard et al., 2020), we hypothesized that mental health concerns would mediate the relationship between perceived racism and substance use.

Method

Design and Research Team

This study employed a cross-sectional, correlational design and was conducted between March-August 2020. An Indigenous Elder guided the research process throughout. The research obtained ethical approval from the Monash University Human Ethics Research Committee (19305). The guidelines for ethical conduct in Aboriginal and Torres Strait Islander Health research guided the research process (NHMRC, 2003). This included ensuring the research adhered to the values of spirit and integrity, reciprocity, respect, responsibility, equality, and survival and protection (NHMRC, 2003). Aboriginal-led research emphasises situating and acknowledging the researchers and holding the researchers accountable (e.g., Absolon, 2011; Kovach, 2009). The first author is a Yorta Yorta woman and an emerging Aboriginal scholar, led the research and was guided by the university Elder-in-Residence and several other community Elders. The second and third authors are established researchers with experience in cross-cultural health, ethics, and psychology.

Knowledge Holders

Sixty-two knowledge holders¹ (female $n=54$; male $n=8$) participated in the study. The mean age of knowledge holders was 33.71 years ($SD = 12.47$; age range = 19 – 64 years). Knowledge holders were recruited through advertisements placed on social media and by snowballing. In order to be included in the study, knowledge holders were required to be: a) aged 18-65 years, b) living in the state of Victoria, Australia, c) a descendant of an Aboriginal or Torres Strait Islander inhabitant of Australia, and d) identify as an Aboriginal or Torres Strait Islander person. The majority of the sample were single ($n=30$, 48.4%), with 23 participants being in a de facto relationship or married (37.1%), 8 participants were separated or divorced (12.9%) and one participant did not disclose their relationship status (1.6%). Regarding education, 22 participants reported having a bachelor's degree or above (35.5%), 17 participants reported having a diploma or higher education certificate (27.4%), 14 participants reported having completed secondary school (22.6%) and 9 participants reported completing some secondary school (14.55%).

¹ The term "knowledge holder" was used, rather than "participant", to highlight the value in knowledge holders' experiences (Murrup-Stewart et al., 2020).

Measures

Measure of Indigenous Racism Experiences (MIRE; Paradies & Cunningham, 2008)

The MIRE is a 31-item (presented as six multi-item questions) self-report questionnaire that assesses perceived racism experienced by Indigenous Australians (Atkins, 2014). Specifically, it assesses individual perceived experiences of exposure to: interpersonal racism (i.e., the experience of being treated unfairly due to being Indigenous; 9 items), internalized racism (i.e., the incorporation of racist attitudes, affect and beliefs into one's own worldview; 4 items), systematic racism (the production, control and access to material, information and symbolic resources within a society that serve to increase power differentials between racial groups; 3 items) and maladaptive cognitive responses to racism (i.e., reactions and responses to experiences; 11 items) (Paradies, 2006; Paradies & Cunningham, 2008; Paradies, 2009). Knowledge holders responded to items on either Likert scales or subjective (e.g., 'sometimes', 'often') frequency scales. The psychometric properties of the MIRE have been found to be adequate (Paradies & Cunningham, 2008). The total scores are summed for each subscale (some items are reverse coded), with higher scores representing greater experiences of perceived racism. In the current study, to address the hypotheses we focused on overall perceived racism as indexed by the MIRE. We found that internal consistency of the MIRE total scale was good (Cronbach alpha = .80).

AUDIT (Alcohol Use Disorders Identification Test; Babor, et al., 2001; Saunders & Wutzke, 1998)

The AUDIT is a simple and effective method of screening for unhealthy alcohol use, defined as risky or hazardous consumption or any alcohol use disorder. AUDIT questions are designed to understand the fundamental relationship between people and alcohol, including its liability to cause dependence (addiction) and a range of harmful consequences. The AUDIT includes 10 items, with each item having a selection of possible responses. Items 1 to 8 are scored on scales ranging from 0-4. Items 9 and 10 are scored 0, 2 or 4. Scores on the AUDIT are summed together to give a total score, with higher scores representing more hazardous or harmful drinking patterns. It is suggested that scores 0-7 represent 'low risk', scores 8-15 represent 'risky or hazardous' level, 16-19 represent 'high-risk or harmful' level and 20 or more represent 'high risk dependence likely' (Babor et al., 2001; Saunders & Wutzke, 1998). In the current study internal consistency was good (Cronbach alpha = .89).

Two-Item Drug Abuse Screening Test (DAST-2; Skinner, 1981; Tiet, et al., 2017)

Knowledge holders completed a two-item screening questionnaire that enquired about use of drugs other than alcohol in the last 12 months. Knowledge holders were required to indicate how many days in the last 12 months they had "used drugs more than [they] meant to" and how many days they had "felt bad or guilty about [their] use", with options including '0', '1-10', '11-20', '21-30' or '30+' (Tiet, et al., 2017). The DAST-2 has been found to have adequate psychometric properties and is highly sensitive and specific for drug use disorders (Tiet et al., 2017). Following the approach of Tiet et al. (2017), we used the DAST-2 to identify knowledge holders with (and without) subclinical drug use problems. In the current study internal consistency was excellent (Cronbach alpha = .92).

Indigenous Risk Impact Screen (IRIS; Schlesinger, Ober, McCarthy, Watson & Seinen, 2007)

The IRIS comprises two sets of questions, with items 1–7 forming the 'Alcohol and Other Drug risk' (AOD) component and items 8– 13 forming the 'mental health and emotional well-being risk' component. The items assessing mental health and emotional well-being focus on symptoms of anxiety and depression. Knowledge holders selected from a list of responses the option that best described their current situation. For the AOD questions, items are summed, and higher scores are indicative of greater drug and alcohol problems, with a score of 10 or more indicating problematic use (Schlesinger et al., 2007). On the mental health and wellbeing items, scores are summed, and higher scores are indicative of poorer mental health and wellbeing. Scores of 11 or above suggest a need for further assessment or intervention to maintain emotional wellbeing and mental health. The IRIS is

a well validated, culturally appropriate, and widely used tool for assessing substance use and mental health in Aboriginal community samples. The IRIS is the first culturally appropriate screening instrument to be validated for the risk of drug and alcohol and mental disorder among Indigenous adults (Schlesinger et al., 2007). In the current study internal consistency was good for the total scale (Cronbach alpha = .86), AOD scale (Cronbach alpha = .86) and wellbeing and mental health scale (Cronbach alpha = .81).

Procedure

Following informed consent, knowledge holders completed the questionnaires online using Qualtrics. Knowledge holders were asked to provide demographic information (i.e., age, gender, relationship status, country of birth, highest level of education completed and current employment status). Knowledge holders were given the option 'Prefer not to say' for items that were not related to our inclusion criteria (i.e., questions related to gender, relationship status, education, and employment). Following this, knowledge holders completed the MIRE and then a disclaimer was issued, instructing individuals that the next series of questions related to alcohol and other drug use, and that they did not need to answer every question if they were uncomfortable doing so. Knowledge holders then completed the IRIS, AUDIT and DAST-2. Knowledge holders were reimbursed (\$20 gift card) for their time. All information provided was anonymous.

Data Analysis Plan

Analyses were conducted using IBM SPSS Statistics 28. Item data ($\leq 3.4\%$) was missing completely at random. Regression replacement was used to impute missing data (Hair et al., 2010). Comparison of standardized scores ($Z > \pm 3.29$) identified that there was one outlier for the AUDIT total score ($Z = 3.39$) measure and these data points were Winsorized (Tabachnick & Fidell, 2013). This was changed to one unit larger than the next most extreme score, reducing their deviation and influence (Tabachnick & Fidell, 2013). Preliminary analyses were conducted to ensure no violation of assumptions. Shapiro-Wilk's test of normality was significant for the AUDIT Total Scale Score, IRIS Substance Use Total Score and IRIS Total Scale Score, indicating non-normal distributions. To avoid reducing the interpretability of findings, we did not transform variables to correct non-normality (Field, 2013) and instead, utilized bootstrapping and nonparametric tests.

Demographic data was analysed as basic descriptive statistics to allow for a better understanding of the research sample and frequency of perceived racism experienced by the sample. We followed the approach of Paradies and Cunningham (2007) to calculate the proportion of knowledge holders who had experienced no racism across the nine settings (i.e., selected 'never'), 'low' levels of racism across the nine settings (i.e., average response of 'hardly ever') and 'high' levels of racism across the nine settings (i.e., average response of 'sometimes', 'often, and 'very often'). Following Paradies and Cunningham, 'experiences of racism by other Indigenous people' was not included in these calculations. To test Hypotheses 1 and 2, Spearman rho correlation analyses were used to assess the relationships between experiences of perceived racism (MIRE), substance use (IRIS), alcohol use (AUDIT) and mental health (IRIS). We used a point-biserial correlation analysis to examine the association between perceived racism (MIRE) subclinical drug use problems (i.e., dichotomous variable as indexed on the DAST-2). According to Cohen's (1988) conventions, correlation coefficients of .10 were considered small, .30 considered moderate and .50 considered large. A mediation analysis was used to examine whether there was an indirect relationship between perceived racism and substance use through poorer mental health and wellbeing (Hypothesis 3). As depicted in Figure 1, the 'a' pathway was the association between perceived racism and mental health and wellbeing, the 'b' pathway was the association between mental health and wellbeing and substance use, and the 'c' pathway was the association between perceived racism and substance use. The indirect pathway was between perceived racism and substance use through poorer mental health and wellbeing. This was conducted using the PROCESS v3.4 macro (Model 4) (Hayes, 2017). To minimise the number of analyses, we selected to use the IRIS as an index of substance use, as this measure has specifically been designed for Indigenous Australians and assesses both alcohol and other drug use. We used 5,000 bootstrap resamples of the data with replacement. Statistical significance ($\alpha=.05$) was indicated by the 95% confidence intervals not crossing zero. As researchers must be careful when making inferences from cross-sectional data, we also considered the alternative model

(MacCallum & Austin, 2000) with perceived racism as the predictor, substance use as the mediator and mental health as the outcome variable.

Results

Knowledge Holder Characteristics

Knowledge holder descriptive data is presented in Table 1. In terms of alcohol use, the majority of knowledge holders ($n = 37$; 66.1%) were in the 'non-risky range' on the AUDIT. Eleven knowledge holders (19.64%) scored in the 'risky or hazardous' level, two knowledge holders (3.57%) were using alcohol at 'high-risk or harmful levels' and 6 knowledge holders (10.71%) were in the 'high risk with likely dependence' range.

In terms of use of drugs other than alcohol, knowledge holders indicated that in the last 12 months the majority of the sample had not used drugs more than they had meant to ($n = 44$, 75.9%). Some knowledge holders indicated that in the last 12 months they had used drugs more than they had meant to on '1-10' ($n = 8$, 13.8%), '11-20' ($n = 0$), '21-30' ($n = 0$) or '30+' ($n = 5$, 8.6%) occasions. Knowledge holders also indicated how many days they had "felt bad or guilty about [their] use", with options including '0' ($n = 46$, 79.3%), '1-10' ($n = 6$, 10.3%), '11-20' ($n = 2$, 3.4%), '21-30' ($n = 0$) or '30+' ($n = 3$, 5.2%) occasions.

Sixteen knowledge holders (27.6%) scored above the cut-off on the DAST-2 for meeting the criteria for experiencing negative consequences of drug use or a Drug Use Disorder. Twenty-two knowledge holders (39.29%) scored above the cut-off on the IRIS for problematic use with alcohol and other drugs and 41 (73.21%) knowledge holders scored above the cut-off for emotional wellbeing and mental health concerns.

Prevalence of Self-Reported Experiences of Racism

Table 2 presents the prevalence of self-reported racism across nine interpersonal settings. While around one third (34.29%) of the sample reported experiencing no interpersonal racism, the majority of the sample reported experiencing some racism; 46.93% of the sample reported experiencing low interpersonal racism and 13.91% of the sample reported experiencing high interpersonal racism.

High levels of racism were most common in health settings (56.9%), followed by educational/academic settings (53.4%) and by staff of government agencies (53.4%). Knowledge holders also reported experiencing racism in the following settings: work (44.8%), general public (39.6%), police/legal (36.2%), sporting/recreational/leisure (31.1%), neighbourhood (31.0%) and by people on the street and when receiving other services (e.g., restaurants, shops, taxis) (29.3%). Knowledge holders also reported experiencing racism by other Indigenous people (39.6%).

Correlation Analyses (Hypotheses 1 and 2)

As presented in Table 3, and contrary to Hypothesis 1, perceived racism was not significantly associated with substance use (as indexed on the IRIS). There was also no evidence to indicate perceived racism was associated with alcohol use (AUDIT) or illicit drug use (DAST-2). Perceived racism was significantly positively associated with poorer mental health and well-being, with a small to moderate association observed, supporting Hypothesis 2.

When we examined the individual subscales of the MIRE, as exploratory analyses, a similar pattern of results emerged. There was no evidence to support Hypothesis 1; the MIRE subscales were not significantly associated with substance use (all r 's < .17 – see Supplemental Table 1). In terms of Hypothesis 2, poorer mental health was only significantly positively associated with the maladaptive cognitive responses to racism subscale, $r(55) = .49$, 95%CI [.26-.69], $p < .001$. The associations with internalized racism, interpersonal racism, and systemic racism were non-significant (see Supplemental Table 1).

Mediation Analyses (Hypothesis 3)

The indirect pathway from perceived racism (MIRE) to substance use (IRIS AOD subscale), through mental health (IRIS Mental Health and Wellbeing subscale) was statistically significant, effect = .04, SE= .02, 95% CI [0.02 - 0.10] (Hypothesis 3). The 'a' pathway (perceived racism to mental health) was significant, $B = .07$, SE= .03, $t = 2.04$, $p = .046$, 95% CI [0.001 - 0.14]. The 'b' pathway (mental health to substance use) was significant, $B = .55$, SE= .20, $t = 2.77$, $p = .008$, 95% CI [.15 - .96]. The 'c' pathway (perceived racism to substance use) was not significant, $B = -.01$, SE= .05, $t = .20$, $p = .841$, 95% CI [-.12 - .10]. When we tested the alternative model, the indirect pathway from perceived racism (MIRE) to mental health (IRIS Mental Health and Wellbeing subscale) through substance use (IRIS AOD subscale), the indirect effect was not statistically significant, effect = .007, SE= .01, 95% CI [-0.02 - 0.03]².

Discussion

The aim of the current study was to explore the relationships between experiences of perceived racism, mental health and drug and alcohol use in Aboriginal peoples. Contrary to our first hypothesis, perceived racism was not significantly associated with substance use (as indexed on the IRIS). There was also no evidence to indicate perceived racism was associated with alcohol use (AUDIT) or illicit drug use (DAST-2). This is contrast to research proposing that perceived racism is associated with substance use among Aboriginal peoples (Paradies et al., 2008). In accordance with Hypothesis 2, perceived racism was significantly positively associated with poorer mental health and well-being. This aligns with previous research indicating perceived racism is associated with poorer health and well-being among Aboriginal Australians (e.g., Ferdinand et al., 2020; Kelaher et al., 2014; Paradies, 2020; Priest et al., 2011). We also found that there was a significant association between greater negative/maladaptive cognitive responses to racism and poorer mental health and well-being. However, no relationship was found between the other aspects of perceived racism and mental health and well-being. In support of Hypothesis 3, there was an indirect pathway from perceived racism to substance use through mental health and well-being. This is consistent with recent findings indicating an indirect pathway from life and social stress to substance use via mental health (McCabe et al., 2021; Richards et al., 2020). Furthermore, when we tested the alternative model (i.e., the indirect pathway from perceived racism to substance use, through mental health), the indirect effect was not significant.

Prevalence of Drug and Alcohol Use and Perceived Racism

In the current study, the majority of the knowledge holders reported not having problems with substance use: the majority were in the 'non-risky range' in terms of alcohol consumption (66.1%), had not used drugs more than they had meant to in the past 12 months (75.9%), and did not feel bad or guilty about their drug use (79.3%). Nevertheless, a significant proportion of the sample reported problematic substance use. More than one third of the sample reported drinking alcohol at levels above the recommended guidelines and 27.6 per cent reported experiencing negative consequences of drug use and met the screening cut-off for a Drug Use Disorder. Almost one-third of the sample indicated that in the last 12 months they had used drugs other than alcohol more than they had meant to and had felt guilty about their use, and 39.3% of the sample reported problematic use with alcohol and other drugs. Additionally, almost three quarters of knowledge holders (73.2%) reported concerns regarding their emotional wellbeing and mental health.

Regarding perceived racism, almost half of the knowledge holders indicated experiencing at least low levels of interpersonal racism and nearly 15 per cent of the sample reported experiencing high levels of interpersonal racism. Similar to the study conducted by Ferdinand et al. (2013), high levels of perceived racism were reported in every identified setting. Frequencies ranged from just over half of all knowledge holders reporting racism in health settings to one-third reporting racism by service staff (e.g., at restaurants, bars,

² The 'a' pathway (perceived racism to substance use) was not significant, $B = .03$, SE= .05, $t = .53$, $p = .599$, 95% CI [-.08 - 0.14]. The 'b' pathway (substance use to mental health) was significant, $B = .23$, SE= .08, $t = 2.77$, $p = .008$, 95% CI [.06 - .39]. The 'c' pathway (perceived racism to mental health) was approaching significance, $B = .06$, SE= .03, $t = 1.96$, $p = .055$, 95% CI [-.001 - .13].

shops, banks, motels). This is consistent with the notion that the different contexts and interactions between individuals in different settings impacts on the level of perceived racism experienced (Ferdinand, Paradies, & Kelaher, 2017). Within the current sample, the highest proportion of reported experiences of perceived racism occurred in health settings, educational/academic settings and by staff of government agencies. This aligns with Kelaher et al. (2014) who similarly observed high levels of perceived racism in health settings among Aboriginal participants residing in Victoria. Our findings indicate that perceived racism is experienced commonly in organisations and at the institutional level, which appears to be at higher levels than that experienced at the individual level (e.g., neighbourhood, engaging in services, etc). This suggests that contrary to the findings of Ferdinand et al. (2013) interventions targeting racism at an organisational and institutional level may not necessarily currently be providing an effective or adequate approach to reduce the experiences of perceived racism in such settings.

Associations with Mental Health, Wellbeing and Substance Use

Consistent with previous research, the experience of perceived racism was found to be associated with poorer mental health and well-being in Aboriginal Australians (Ferdinand, et al., 2020; Kelaher et al., 2014; Paradies, 2020; Paradies & Cunningham, 2008; Priest et al., 2011). However, when we further examined various aspects of perceived racism, poorer mental health and wellbeing was specifically associated with maladaptive, passive cognitive responses to racism. Paradies and Cunningham (2008) suggest that maladaptive cognitive responses to racism include inner- and outer-directed problem- and emotion-focused behavioural responses, disempowerment, and somatic reactions. This suggests that it may be individual cognitive responses to racism rather than the mere level of racism (i.e., internalized, interpersonal or systemic) that is associated with mental health and wellbeing.

Interestingly, contrary to our hypothesis, perceived racism was not directly associated with substance use. We found no evidence to indicate that racism is directly associated with increased engagement in alcohol and other drug use as a coping response (Paradies et al., 2015). However, we did find evidence of perceived racism being indirectly associated with substance use, through mental health problems. This supports the notion that racism may impact health via adversely influencing cognitive and emotional processes and associated psychopathology, which in turn can be associated with substance use (Paradies et al., 2015). It also supports the proposal that racism is indirectly associated with alcohol and other drug use via emotional difficulties (e.g., Paradies et al., 2015). Additionally, the findings contribute to emerging research indicating that mental health concerns and emotional difficulties can mediate the relationship between life and social stressors, such as victimization, bullying, and racism, and substance use (e.g., McCabe et al., 2021; Richard et al., 2020). These research findings must be interpreted with caution, however, given the study is cross-sectional and sample size is relatively small. However, the findings provide support for a need for further research investigating these associations and pathways.

Clinical Implications

The results of this study suggest that Aboriginal Australians are experiencing perceived racism across a variety of settings, including health settings, educational/academic settings and by staff of government agencies. The experience of such perceived racism in these settings is likely to reduce Aboriginal engagement in these services and instead, cause avoidance of such settings (Ferdinand et al., 2020). This is especially concerning when reflecting on the disproportionately high numbers of Aboriginal Australians who report experiencing severe psychological distress, substance use, unemployment, and poor physical health (ABS, 2019), including in the current study where we found almost three quarters of the sample were experiencing concerning levels of mental health concerns. This trend suggests that although Aboriginal Australians are experiencing some of the most significant disadvantage in Australia, they may be less likely to seek assistance due to the perception of racism in the organisational and institutional bodies that are capable of aiding. As such, preventing racism at all levels should be a priority.

Limitations and Future Directions

There are several limitations worth noting. First, there was a disproportionate number of female knowledge holders included in this study, which limits generalisability of the findings to male Aboriginal Australians. This overrepresentation of female knowledge holders is consistent with trends found in previous research indicating lower response rates by Indigenous Australian males (Wright, et al., 2020). Second, the relatively small sample size may have influenced our findings, particularly in terms of having sufficient power to detect small associations and mediation effects. The small sample size also meant we were unable to further explore associations between levels of perceived racism and outcomes (e.g. examining whether the likelihood of experiencing mental health or substance use increases with increasing levels of exposure to racism). Researchers suggest that Indigenous Australians are less likely to respond to surveys due to concerns about data collection and control, feeling over-researched and a history of feeling exploited by researchers (Laycock, Walker, Harrison, & Brands, 2011; Marwick & Mirraboopa, 2003). However, future research should aim to investigate these associations with larger samples. Qualitative methodologies may assist in getting clear understandings of these issues. Third, the majority of our sample had achieved high levels of educational achievement (i.e., having a diploma/ higher education certificate or above). This may have influenced our findings as the Australian Institute of Health and Welfare (AIHW, 2020b) report that people with lower levels of education attainment (i.e., completed year 11 or below) are more likely to engage in risky alcohol consumption and to have used illicit substances in the last 12 months. As such, it is possible that the non-significant results reported in this study were the result of the sample not capturing individuals in this lower education range. Consequently, the data cannot be considered representative of Indigenous Australians as a whole and is not intended to be generalised to the entire population. Fourth, the on-line nature of the study may have influenced the type of knowledge holders that participated in the study, due to the need for IT access to complete the study and potentially a lack of trust of the on-line study as opposed to meeting with a researcher. An on-line study also potentially made responding to these sensitive issues easier as responses were anonymous and there were no researchers present. Finally, causality cannot be inferred from the results of a cross-sectional study, due to the inability to prove temporality of association necessary for determining causality (Jacob & Ganguli, 2016). However, this study can be used as a useful indication of the needs of the population and important trends can be found through replication of the findings.

Conclusion

In 2007, the Council of Australian Governments (COAG) committed to 'closing the gap' in life expectancy between Aboriginal and Torres Strait Islander and non-Indigenous Australians. During his apology to Indigenous Australians in 2008, Prime Minister Kevin Rudd stated that each year the Commonwealth Government would report their progress in 'Closing the Gap' and addressing Indigenous disadvantage. Nevertheless, while there have been improvements in education, employment and health in the last 14 years, Aboriginal Australians are still experiencing racism and disadvantage at alarming rates, which in turn has had a detrimental effect on the mental health and wellbeing (Ferdinand et al. 2020). While the impacts of racism on health and wellbeing have been well studied in New Zealand, America, and United Kingdom (Larson et al., 2007), there is much less research examining the continued experience of racism on contemporary Aboriginal Australians (Paradies et al., 2008; Markwick et al., 2019). Furthermore, despite the multitude of research suggesting a relationship between experiences of racism, substance use and mental health, research has yet to thoroughly explore these relationships. Therefore, the current research provides a step towards understanding the relationships between experiences of perceived racism and drug and alcohol use in Aboriginal peoples and clearly demonstrates a need for further research in this area.

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Table 1*Mean, standard deviation, range and cut-off scores for AUDIT, IRIS and MIRE*

Variable	Mean	SD	Range	Cut-off
AUDIT	7.70	7.77	0 – 34	8 *
IRIS				
<i>Alcohol and Other Drug Use</i>	10.09	4.30	7 – 24	10
<i>Poor Mental Health and Wellbeing</i>	12.59	2.85	7 – 18	11
MIRE				
<i>Total Score</i>	91.82	10.67	68 – 116	n/a
<i>Interpersonal Racism</i>	2.71	0.93	1 – 5	n/a
<i>Internalised Racism</i>	3.80	0.41	2.75 – 4.50	n/a
<i>Systemic Racism</i>	1.87	0.74	1 – 3.67	n/a
<i>Maladaptive Cognitive Responses</i>	37.17	5.73	31 – 48	n/a

Note. AUDIT = Alcohol Use Disorders Identification Test. IRIS = Indigenous Risk Impact Screen. MIRE= Measure of Indigenous Racism Experiences. * Scores above 8 represent risky or hazardous level, 16-19 represent high-risk or harmful levels and 20+ represent high risk with likely dependence.

Table 2

Prevalence of self-reported racism across nine settings

How often are you treated unfairly because you are Indigenous in each of the following situations?	Never (%)	Hardly Ever (%)	Sometimes (%)	Often (%)	Very Often (%)	Total proportion of the sample experiencing high racism ^a
At work or on the job	34.48	20.69	22.41	17.24	5.17	44.82
At home, by neighbours, or at somebody's else's house	37.93	29.31	22.41	6.90	1.72	31.03
At school, university, or other academic setting	27.59	15.52	36.21	6.90	10.34	53.45
While doing sporting, recreational or leisure activities	34.48	29.31	18.97	6.90	5.17	31.04
By the police, security personnel, lawyers or in a court of law	31.03	13.79	12.07	13.79	10.34	36.20
By doctors, nurses or other staff at hospitals or doctor's surgeries	36.21	5.17	34.48	10.34	12.07	56.89
By staff of government agencies like Centrelink, ATSIIC, etc	22.41	13.79	29.31	13.79	10.34	53.44
By staff at restaurants, bars, shops, banks, motels, real estate agents, in taxis or when getting any other services	48.28	20.69	18.97	6.90	3.45	29.32
By other people on the street, at shopping centres, sporting events, concerts, nightclubs	36.21	22.41	29.31	3.45	6.90	39.66
By other Indigenous people	32.76	25.86	27.59	8.62	3.45	39.66

Note. Where the total of the rows does not equal 100%, this is due to some knowledge holders having indicated that the question did not apply to them. ^a Following the approach of Paradies and Cunningham (2009) high = total of sometimes, often, and very often.

Table 3

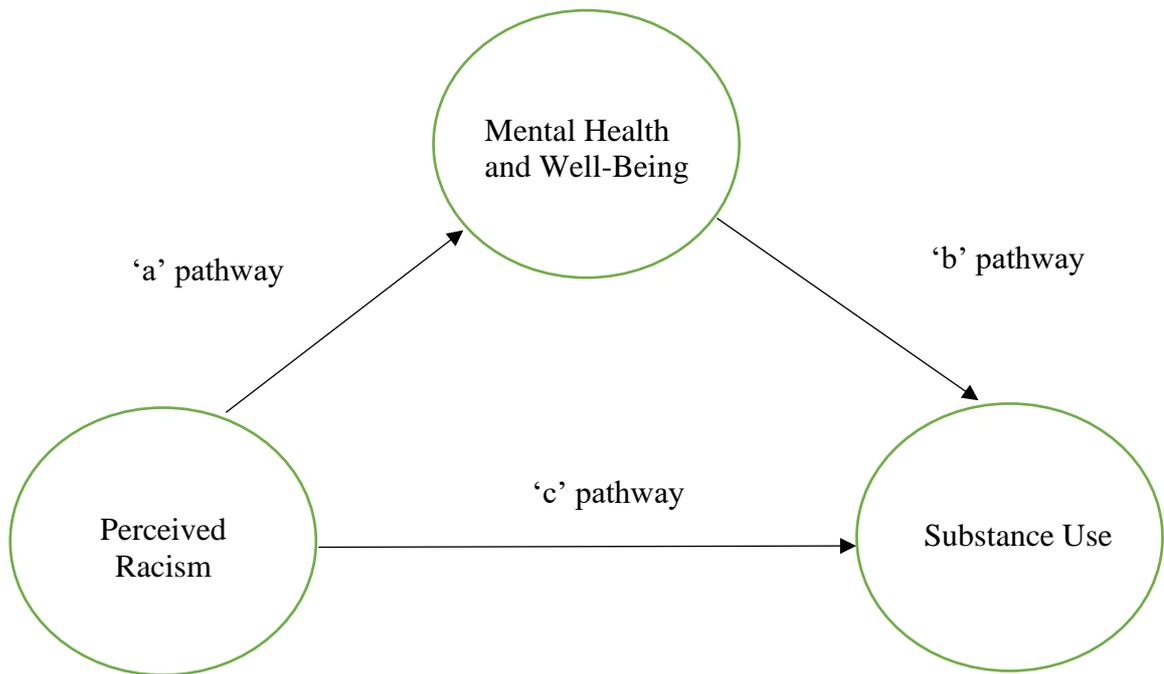
Spearman Rho Correlation analyses [with 95% confidence intervals] of the associations between perceived racism (MIRE), substance use (AUDIT, IRIS, DAST-2) and mental health concerns (IRIS). MIRE, AUDIT, and IRIS (AOD and MH/WB subscales)

Measure	1	2	3	4	5
1. MIRE	-				
2. AUDIT	.13 [-.17-.42]	-			
3. IRIS AOD Subscale	.10 [-.18-.38]	.65** [.45-.83]	-		
4. IRIS MH/WB Subscale	.27* [.01-.52]	.19 [-.07-.43]	.40** [.15-.60]	-	
5. DAST-2	.04 [-.23-.29]	.16 [-.12-.43]	.36** [.09-.58]	-.08 [-.34-.19]	-

Note. * = $p < .05$. ** $p < .001$. AUDIT = Alcohol Use Disorders Identification Test. IRIS = Indigenous Risk Impact Screen. MIRE = Measure of Indigenous Racism Experiences. DAST-2 = Two-Item Drug Abuse Screening Test. MH/WB = Mental Health/Wellbeing

Figure 1

Depiction of the Mediation Model



Supplemental Table 1

Spearman Rho Correlation analyses [with 95% confidence intervals] of the associations between the subscales of the MIRE

Subscale	1	2	3	4	5	6	7	8	9
1. MIRE Interpersonal Racism	1								
2. MIRE MCR to Racism	-.08	1							
3. MIRE Internalised Racism	.13	-.39**	1						
4. MIRE Systemic Racism	-.30*	.02	.15	1					
5. MIRE Total Scale Score	.84**	.30*	.18	-.01	1				
6. IRIS Substance Use	.05	.20	-.07	-.08	.07	1			
7. IRIS Mental Health	.13	.49**	-.22	-.11	.27*	.36*	1		
8. IRIS Total Scale Score	.10	.38**	-.15	.11	.18	.90**	.74**	1	
9. AUDIT Total Score	.15	-.80	.09	-.15	.11	.70**	.18	.59**	1

Note. * = $p < .05$. ** $p < .001$. MIRE= Measure of Indigenous Racism Experiences. MIRE MCR = Measure of Indigenous Racism Experiences Maladaptive Responses to Racism. IRIS = Indigenous Risk Impact Screen. AUDIT = Alcohol Use Disorders Identification Test.