






Suicidality, self-harm, and their correlates among transgender and cisgender people living in Aotearoa/New Zealand or Australia

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ABSTRACT

Background: Transgender people experience high rates of suicidality and self-harm. Past research has established a range of correlates of suicidality/self-harm among transgender people but little is known about whether these correlates are similar for transgender and cisgender people.

Aims: The aim of this study was to test whether a range of potential demographic and psychosocial correlates of suicidality/self-harm hold for both transgender and cisgender people living in Aotearoa/New Zealand and Australia.

Methods: An online survey was completed by 700 adults living in Aotearoa/New Zealand ($n=328$) or Australia ($n=372$). Targeted advertising was used to recruit transgender respondents ($n=392$) and cisgender respondents ($n=308$). Participants completed questions about demographics, discrimination (the Everyday Discrimination Scale), distress (the Kessler-10 scale), social support (the Multi-Dimensional Scale of Perceived Social Support), resilience (the Brief Resilience Scale), suicidality (the Suicidal Ideation Attributes Scale and other questions about ideation/attempts), and self-harm (the Deliberate Self-Harm Inventory).

Results: Lifetime suicidal ideation, lifetime suicide attempts, and lifetime self-harm were more common among transgender participants. Discrimination was associated with lifetime suicide attempts and lifetime self-harm, particularly for transgender participants. Distress was consistently associated with recent suicidality and self-harm for transgender participants. Younger cisgender participants were more likely to report lifetime self-harm. Recent suicidal ideation was associated with lower social support among transgender participants but with lower resilience among cisgender participants.

Discussion: These findings reaffirm and expand on past research on suicidality/self-harm among transgender or cisgender people and demonstrate the relevance of tackling discrimination and distress experienced by transgender people. In addition, the findings highlight the importance of meeting additional social support needs among transgender people to help prevent suicide and self-harm.

KEYWORDS



Cisgender; discrimination; non-suicidal self-harm; psychological distress; resilience; social support; suicide; transgender

Introduction

Suicidality and non-suicidal self-harm are a global health concern and have a major effect on transgender people as a particularly marginalized group within the wider population of people who identify as lesbian, gay, bisexual, transgender, or queer (LGBTQ) (Adams et al., 2017; dickey et al., 2015; Haas et al., 2010; McNeil et al., 2017; Wolford-Clevenger et al., 2018). For the purpose of this paper, we use a broad definition of the term transgender to include people whose gender

differs from that normatively expected of their assigned sex (Riggs et al., 2015), including people with non-binary genders. We use the term “gender modality” to indicate whether an individual is transgender or cisgender (Ashley, 2019). We use this distinction to provide a novel comparison of correlates of suicidality and self-harm for both transgender and cisgender people living in Aotearoa/New Zealand or Australia.

Rates of suicidality and self-harm among people living in Aotearoa/New Zealand or Australia

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 Supplemental data for this article is available online at <https://doi.org/10.1080/26895269.2020.1795959>

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appear to be similar to global trends, though higher among transgender people than cisgender people. Population studies of suicidal ideation suggest 12-month prevalence rates of 2.3% in Australia (Johnston et al., 2009) and 3.2% in Aotearoa/New Zealand (Oakley Browne et al., 2006). Rates of recent self-harm among cisgender people are reported as being around 0.01% (1 in 10,000) in both Australia and Aotearoa/New Zealand (Harrison & Henley, 2014; Ministry of Health, 2016).

Recent international reviews suggest alarmingly high rates of suicidal ideation, suicide attempts, and self-harm among transgender people around the world (Adams et al., 2017; Haas et al., 2010; McNeil et al., 2017; Wolford-Clevenger et al., 2018). For example, a survey of 253 transgender participants living in Aotearoa/New Zealand or Australia found that a quarter had experienced suicidal thoughts in the past two weeks, and transgender women were twice as likely as transgender men to report this (Couch et al., 2007). A study of 8,166 high school students living in Aotearoa/New Zealand found that of the 1.2% participants who were transgender, 20% had attempted suicide in the past 12 months and 46% had self-harmed in the same period (Clark et al., 2014). More recently, a nationwide survey of 1,178 transgender people living in Aotearoa/New Zealand reported that over half had experienced thoughts of suicide in the past year and 79% had experienced such thoughts at some point in their life, particularly transgender men (Veale et al., 2019). Over a third of the participants in that survey had attempted suicide in their lifetime, with 12% having made an attempt in the past year (Veale et al., 2019). Moreover, 42% of the participants had self-harmed in the past year, particularly transgender men (Veale et al., 2019). Similarly, an Australian study with 946 transgender people found that 29% had thought about self-harm in the past week (Hyde et al., 2014).

Despite the higher rates of suicidal ideation and self-harm among transgender people, few studies have undertaken a comparative approach to understanding the prevalence and correlates of suicidality and self-harm rates among *both* transgender and cisgender people. The comparative studies of self-harm that have been conducted

reveal higher rates among transgender people as compared to cisgender people (e.g., Brown & Jones, 2016; Davey et al., 2016; Landers & Gilsanz, 2009; Mathy, 2003; Reisner et al., 2014); however, no studies to date have focused on such comparisons in the context of either Aotearoa/New Zealand or Australia.

The impact of gender-related discrimination

For transgender people, gender-related discrimination has been consistently found to have a significant deleterious impact on lifetime and recent suicidality. Studies conducted in Aotearoa/New Zealand (Veale et al., 2019), Australia (Jones et al., 2015), the United States (Clements-Nolle et al., 2006; Rood et al., 2015; Staples et al., 2018), and Sweden (Zeluf et al., 2018) have all found that experiences of gender-related discrimination are related to an increased likelihood of recent suicide attempts, suicidal ideation, and self-harm. Gender-related discrimination has been found to be particularly detrimental for transgender young people, and studies undertaken in the United States have consistently found that suicidal ideation, suicide attempts and self-harm were more likely for transgender participants who had experienced discrimination (Goldblum et al., 2012; Kuper et al., 2018; Taliaferro et al., 2019; Wilson et al., 2016).

The relationship of psychological distress with suicidality and self-harm

Previous research with transgender and cisgender samples has consistently found both past and present psychological distress to also be a key indicator of the likelihood of suicidal ideation or self-harm. Focusing on cisgender people, psychological distress in the form of an existing mental health concern has been found to relate to suicidality and self-harm in the United States (Nock et al., 2010). Australian research by Martin et al. (2015) found that participants who reported higher psychological distress were more likely to have self-harmed. Research in Aotearoa/New Zealand by Robinson et al. (2017) found that the relationship between socioeconomic deprivation

and self-harm was mediated by depression and anxiety.

Focusing specifically on transgender people, research by Brennan et al. (2017), Nemoto et al. (2011), and Kuper et al. (2018), all undertaken in the United States, found a relationship between depression and suicidal ideation, such that greater depression related to increased suicidality. No studies to date have specifically focused on the relationship between psychological distress and suicidality or self-harm among transgender people in the context of Aotearoa/New Zealand or Australia.

The protective role of resilience and social support

Connectedness to others is a key strategy for the prevention of suicidal behavior regardless of gender modality (Centers for Disease Control and Prevention, n.d.), but particularly for transgender people according to reviews by Haas et al. (2010), McNeil et al. (2017), and Wolford-Clevenger et al. (2018). Focusing on cisgender people, Martin et al.'s (2015) Australian study found that participants who had self-injured in the previous 4 weeks were much less likely to have turned to their family for support when they were distressed. Studies with transgender people in Aotearoa/New Zealand (Veale et al., 2019), Australia (McNair & Bush, 2016; Smith et al., 2014; Strauss et al., 2017), the United States (James et al., 2016; Kuper et al., 2018; Wilson et al., 2016), and Sweden (Zeluf et al., 2018) have similarly found that lower social support is related to increased suicidality.

Few studies of suicidality among transgender people have, however, incorporated consideration of indigeneity (e.g., Fraser et al., 2018; Martin et al., 2015; Robinson et al., 2017). This is despite higher rates of suicidality among Indigenous peoples (Lawson-Te Aho, 2016; McClintock & McClintock, 2017) as well as intersectional issues around impact of racism and transphobia (Riggs et al., 2015; Wolford-Clevenger et al., 2018). A focus on indigeneity has been found to be important, such as in research by Lawson-Te Aho (2016), which found that strong supportive family and peers is crucial for prevention of suicidality among LGBTQ people who are

Māori (the Indigenous peoples of Aotearoa/New Zealand).

Research questions: potential correlates of suicidality and self-harm

There is a need to compare correlates of suicidality and self-harm among transgender and cisgender people so as to inform appropriate service delivery and prevention efforts. Past research on suicidality or self-harm among people with marginalized sexual orientations has sometimes included a small number of transgender participants (e.g., Fraser et al., 2018; McNair & Bush, 2016), but has sometimes excluded transgender people when the subsample is too small to provide robust findings (e.g., Baiocco et al., 2015). Therefore there is a need to pro-actively include transgender participants in research on correlates of suicidality and self-harm. Drawing on the previous literature summarized above, the present study sought to investigate the following research questions:

- What are the rates of suicidality and self-harm among transgender and cisgender people living in Aotearoa/New Zealand or Australia, and are these rates related to specific demographic variables indicated by previous research (i.e., gender, gender modality, sexual orientation, age, indigeneity, rurality, education status, or socioeconomic status)?
- Does experience of discrimination increase the likelihood of suicidality and self-harm among transgender and cisgender people living in Aotearoa/New Zealand or Australia?
- Is psychological distress related to suicidality and self-harm among transgender and cisgender people living in Aotearoa/New Zealand or Australia?
- Does higher social support reduce the likelihood of suicidality and self-harm among transgender and cisgender people living in Aotearoa/New Zealand or Australia?
- Does higher resilience reduce the likelihood of suicidality and self-harm among transgender and cisgender people living in Aotearoa/New Zealand or Australia?

Method

Study design and advertising

The present study involved a cross-sectional survey design. Ethics approval was granted by the Human Research Ethics Committee of Flinders University. Participants completed an online survey compiled by the authors and hosted by Qualtrics. Before making the survey publicly available, a transgender community member with a history of suicidality agreed to advise on the survey design and provided feedback about the acceptability, that did not result in any amendments. The survey was open from January 15th, 2017 to December 15th, 2017. Information about the survey was shared widely via community organizations in Aotearoa/New Zealand and Australia (e.g., LGBTI Health Alliance, Black Rainbow, Gender Diversity Australia), professional organizations (e.g., Beyond Blue), and via paid advertisements on Facebook. The advertisements and study information sheet suggested that people should not complete the survey if they thought they would find it distressing, and emphasized the importance of seeking help if currently experiencing suicidality or self-harming. Contact details of local support organizations were included in the study information sheet and at the beginning and end of the survey.

Inclusion criteria were that participants were aged 18 years or older and lived in either Aotearoa/New Zealand or Australia. To address the primary focus on comparing transgender and cisgender people, quotas were set for gender groups in both countries and this required the exclusion of cisgender women from participating for the final two months of recruitment. Any such respondents were automatically excluded and thanked for their interest after answering the preliminary questions about gender and gender modality (described in the following section).

Survey measures

Having consented to complete the survey, participants were first asked their country of residence and age to confirm they met the eligibility criteria and this was followed by a series of other demographic questions. Eligible participants then

completed a series of measures in the following order: social support, discrimination, distress, resilience, self-harm, and suicidality.

Demographics. A series of questions developed for this survey were asked to address relevant demographics in an inclusive fashion and in locally relevant ways, and with space to add details for questions that required additional information. Gender was asked using four broad options: “Agender,” “Female,” “Male,” or “Non-binary.” Gender modality was asked as a separate question about having identified as transgender or similar, with the options “Yes” and “No.” Intersex status was asked in terms of having an intersex variation, with the options, “Yes,” “No,” and “Unsure.” The questions about gender, gender modality and intersex variation were combined to form one indicator of being transgender or cisgender because 19 of the 20 participants who reported an intersex variation identified as agender, non-binary, and/or transgender, and as such intersex as a separate variable would have been statistically confounded with transgender gender modality. People with intersex variations and transgender people face some similar aspects of discrimination due to cisgenderism, though we acknowledge that intersex variations and being transgender are two distinct experiences. Sexual orientation was asked using the options “Asexual,” “Bisexual,” “Gay,” “Lesbian,” “Pansexual,” “Queer,” “Questioning/unsure,” “Straight/heterosexual,” and “Undefined,” and was coded as heterosexual or not for analysis by merging the non-heterosexual sexualities. Indigeneity was asked using the options “Aboriginal,” “Torres Strait Islander,” “Māori,” “Pacific Islander,” “Other First Nation or Indigenous people,” and “None of the above,” and was coded as Indigenous or not by merging the Indigenous identities. Employment status was coded as employed full- or part-time or not and a separate variable was used for whether or not the participant was studying at that time. Rurality was coded in terms of living in an inner city, suburbs, or rural/remote area. Living status was coded as living alone or not. Socio-economic status was operationalized using the question “Is your household income enough to cover essential bills (e.g., power, rent/mortgage etc.)?” with options “Yes” and “No.”

Multi-Dimensional Scale of Perceived Social Support (MSPSS). The MSPSS measures perceived support using 12 items covering a range of sources of support (Zimet et al., 1988). Sample items include: “My family really tries to help me,” “My friends really try to help me,” and “There is a special person who is around when I am in need.” The MSPSS items are rated on a 7-point Likert scale from “Very strongly disagree” (scored 1) to “Very strongly agree” (scored 7). The overall social support score is calculated as a mean across the 12 items. A score ranging from 1 to less than 3 indicates low support, a score ranging 3 to 5 indicates moderate support, and a score greater than 5 indicates a high level of support (Zimet et al., 1988). The internal consistency of the 12 items was good in the present sample (Cronbach’s $\alpha = 0.90$).

Everyday Discrimination Scale (EDS). A range of experiences of discrimination are covered by the EDS (Lewis et al., 2012). Items are posed in terms of everyday life in general rather than a specific period and without reference to the reason for the discrimination, and include questions such as “You have been treated with less respect than other people” and “You have been called names or insulted.” Questions are answered on a 4-point frequency scale ranging from “Never” (scored 1) to “Often in day-to-day life” (scored 4). A total discrimination score is calculated as the sum of all items and ranges from 10 to 40, with a higher score indicating greater discrimination. The internal consistency of the 10 items was excellent in the present sample ($\alpha = 0.91$).

Kessler-10 (K10). The K10 is a measure of non-specific psychological distress in which participants answer a series of questions about depressive and anxiety-related symptomology (Andrews & Slade, 2001). The K10 asks about the past four weeks and includes questions such as “In the last four weeks, about how often did you feel tired out for no good reason?” The questions are answered using a scale from “None of the time” (scored 1) to “All of the time” (scored 5). The responses are summed and range from 10 to 50, with higher scores indicating higher levels of distress. Scores under 20 indicate individuals likely to be psychologically well, and scores of 30 and over indicate individuals likely to experience high levels of psychological distress and to meet diagnostic criteria for anxiety and/or

depression (Andrews & Slade, 2001). The internal consistency of the 10 items was excellent in the present sample (Cronbach’s $\alpha = 0.94$).

Brief Resilience Scale (BRS). The BRS measures ability to maintain wellbeing in the face of stress using six items, three of which are positively worded such as “I tend to bounce back quickly after hard times” and three of which are negatively worded such as “I have a hard time making it through stressful events” (Smith et al., 2008). The BRS items are rated on a 5-point Likert scale from “Strongly disagree” (scored 1) to “Strongly agree” (scored 5) without reference to a specific timeframe. After reverse coding the negatively worded items, a mean score is computed ranging from 1 to 5 with higher scores indicating greater resilience. The internal consistency of the six items was good in the present sample (Cronbach’s $\alpha = 0.90$).

Recent suicidal ideation: the Suicidal Ideation Attributes Scale (SIDAS). The SIDAS is a measure of frequency of suicidal ideation within the past month (van Spijker et al., 2014). Participants respond to five questions about aspects of suicidality such as “In the past month, how often have you had thoughts about suicide.” The questions are answered on various 11-point scales with anchors such as “Never” (scored 0) and “Always” (scored 10). Total scores are calculated as the sum of the five questions including one reverse-scored about controllability of thoughts about suicidality and range from 0 to 50, with higher scores indicating greater levels of suicidal ideation. The five items had excellent internal consistency in the present study (Cronbach’s $\alpha = 0.92$). The clinical cutoff for clinically significant levels of suicidal ideation is 21/50 (van Spijker et al., 2014) and this was applied in the present study as an indicator of the presence or absence of recent suicidal ideation.

Recent/lifetime suicidal ideation and suicide attempts. A series of single-item questions to ask about suicidality were adapted from past research (May & Klonsky, 2011; McNeil et al., 2012). Lifetime suicidal ideation was asked about using the question “Have you ever thought about ending your life?” with the options “Yes” and “No.” Recent suicide attempts were asked about using the question “How many times have you attempted suicide in the last year?” and then lifetime suicide attempts were asked about using the

question “How many times have you attempted suicide in total over your lifetime?” Both of these questions requested an answer on a numerical scale from 0 to 99 and were subsequently categorized as having attempted suicide or not within those timeframes. Comparisons with the SIDAS demonstrated good convergent validity of these questions as indicators of suicidality but with some variation indicating that they represent different aspects of suicidality.

Deliberate Self-Harm Inventory (DSHI). The DSHI is a measure of self-harming behaviors (Gratz, 2001), and for the present study participants were asked about lifetime engagement in such behaviors. Participants were asked the 17 core questions about whether or not they have ever engaged in specific self-harm behavior (e.g., “Have you ever intentionally (i.e., on purpose) cut your wrist, arms, or other area(s) of your body (without intending to kill yourself?). Internal consistency was not calculated for the DSHI because it is a checklist of specific behaviors and individuals tend to have a small repertoire of self-harm behaviors rather than engaging in all forms (Gratz, 2001). The DSHI therefore provides a more robust measure of engagement in self-harm than open questions by providing clear definitions of self-harming behaviors. When participants indicated that they engaged in a particular form of self-harm, a series of additional open text questions was displayed asking for details of age at first occurrence, number of instances, and last occurrence of the particular behavior. These details were used to code whether a participant had engaged in any of the forms of self-harm in the past month. Two researchers coded the open responses about last occurrence (GT and JF), with initial agreement of 95.0%, and all differences were resolved through discussion. Two DSHI variables were produced: lifetime engagement in any form of self-harm and engagement in any form of self-harm in the past month.

Procedures and participants

A total of 1,281 people commenced the survey and 700 completed enough of the questionnaire to warrant inclusion in the final sample, giving a

completion rate of 54.6%. Only nine individuals (0.7%) accessed the survey website and declined consent to participate, but other individuals who were not willing to participate may have simply closed their browser. Given that information about the questionnaire was shared widely, it is not possible to calculate a response rate because the number of people seeing the study advertisements or accessing the full study information on the survey website cannot be determined, as is common with online community samples.

The 1,281 people who commenced the survey included 43 (3.4%) who consented but did not answer any questions, 20 (1.6%) who were excluded as they were under 18 years old, four (0.3%) who were excluded as they were not living in Aotearoa/New Zealand or Australia, 31 (2.4%) cisgender women who were excluded once that quota was reached, 254 (19.8%) who stopped in the section about gender and intersex status, 111 (8.7%) who stopped in the demographics section, 109 (8.5%) who stopped before completing all measures (50 of whom completed the first measure about social support and then stopped), 7 (0.5%) who only responded to occasional questions and missed most or all of some measures, and two cisgender people who completed the survey extremely fast suggesting that they could not have read the questions. All other participants who completed the survey took an appropriate amount of time in relation to the number of questionnaires based on their gender modality and other answers (e.g., self-harm reported), and the completion rate of items within measures was generally excellent. One item per measure was missed by 11 people (1.6%) for the social support measure (across a range of individual items), by one person for the discrimination measure and by one person for the resilience measure. Individual imputation was used by giving these participants the mean score of items they answered because internal consistency was excellent on these measures across participants who completed all items.

Analytic approach

After the questionnaire was closed, all data were exported into SPSS for scoring, screening, and

preparation for analyses to test the hypotheses. Normality of distributions of continuous variables was tested and no variables were found to have outliers of concern or skewness of distribution that precluded planned analyses. A series of χ^2 tests/Fisher's exact tests and t -tests/ANOVAs (with adjustment for unequal variances where required) were run to test for any completion bias with available variables comparing those who completed the survey to those who did not. Further χ^2 tests/Fisher's exact tests, t -tests/ANOVAs, and correlations were calculated to explore bivariate associations among the criteria variables (suicidality and self-harm) and the potential correlates (demographics and psychosocial measures). Multivariate analyses were conducted using logistic regressions for the clinical cutoff variable for recent suicidal ideation on the SIDAS, the single-item variables about lifetime suicidal ideation and recent/lifetime suicide attempts, and the DSHI variables about recent/lifetime self-harm. Analyses were conducted using the full sample and the transgender and cisgender participants separately. Because we analyzed six outcomes in parallel we applied a probability adjustment to the p -values of odds ratios within logistic regressions such that $p < .008$ (.05/6) was considered significant to reduce the likelihood of a type 1 statistical error. The following variables were entered as potential correlates: country, gender modality (only in the full sample), gender, sexual orientation, age, indigeneity, employment status, student status, rurality, living alone, ability to pay bills, discrimination, distress, social support, and resilience.

Results

Sample, descriptive statistics and differences by country and gender modality

The final sample of 700 respondents included 328 living in Aotearoa/New Zealand and 372 living in Australia. A total of 392 respondents identified as agender, non-binary, transgender and/or intersex, and are collectively referred to by the shorthand term transgender in this report. A total of 308 respondents identified as not transgender and having no intersex variation and are

collectively referred to by the shorthand term cisgender. A greater proportion were transgender in the Australian subsample (65.6%) than the Aotearoa/New Zealand subsample (45.1%; $\chi^2(1)=29.61$; $p < .001$). Other demographic characteristics of the sample can be seen in Table 1, which also includes demographic comparisons of the participants from Aotearoa/New Zealand or Australia and of the participants who are transgender or cisgender.

The age range was 18–74 with a mean of almost 30 years old. Transgender participants were significantly younger than cisgender participants (see Table 1). Gender differed significantly by country and by gender modality. Around one in five participants identified as heterosexual, and this proportion was significantly higher among participants from Aotearoa/New Zealand and among cisgender participants. Around one in 10 participants identified as Indigenous and this proportion was significantly higher among participants from Aotearoa/New Zealand. Around two-thirds of participants were employed and nearly half were currently studying. Significantly fewer transgender participants were employed but significantly more transgender participants were currently studying. Significantly more participants living in Aotearoa/New Zealand were currently studying.

Participants living in Aotearoa/New Zealand were more likely to be living in an inner city area (Table 1). Around one in 10 participants were living alone and significantly more participants were living alone in Australia. Around one in six participants reported being unable to cover household bills, and significantly more transgender participants were unable to cover bills.

Nearly one in three participants met the cutoff for recent suicidality on the SIDAS, and around one in 10 participants had never thought about ending their life (Table 1). Just over one in 10 participants had attempted suicide in the past year, and over 40% had attempted suicide at some point in their life. Over a quarter of participants had engaged in some form of self-harm behavior on the DSHI with the past month, and over three-quarters had self-harmed at some point their life. None of these variables differed significantly by country, but suicidality and self-harm

Table 1. Differences in demographics, suicidality, self-harm, and psychosocial variables by country of residence and gender modality.

Variable	Country			Gender modality		Bivariate difference	Bivariate difference
	Aotearoa/ New Zealand %	Australia %	Transgender %	Cisgender %			
Country							
Aotearoa/New Zealand	N/a	N/a	45.1	54.9	$\chi^2(1)=29.64, p<.001$		
Australia	N/a	N/a	65.6	34.4			
Gender modality							
Transgender	45.1	65.6	N/a	N/a			N/a
Cisgender	54.9	34.4	N/a	N/a			
Gender							
Agender	4.6	6.7	10.2	0			$\chi^2(3)=337.51, p<.001$
Female	48.8	36.0	16.3	74.7			
Male	23.8	21.2	20.2	25.3			
Non-binary	22.9	36.0	53.3	0			
Heterosexual	18.2	11.3	3.8	36.4			$\chi^2(1)=122.60, p<.001$
Indigenous	8.8	3.8	9.8	7.5			$\chi^2(1)=1.18, p=.27$
Employed	61.7	62.1	52.3	73.6			$\chi^2(1)=33.00, p<.001$
Studying	44.4	40.9	49.0	38.6			$\chi^2(1)=7.47, p<.01$
Rural							$\chi^2(2)=1.38, p=.50$
Inner city	24.6	21.5	23.7	25.6			
Suburb	61.4	61.6	61.0	62.0			
Rural or remote	14.0	16.9	15.3	12.3			
Living alone	11.5	15.4	11.3	11.7			$\chi^2(1)=0.03, p=.87$
Can afford bills	86.0	87.1	82.7	90.3			$\chi^2(1)=8.29, p<.01$
Recent suicidal ideation (SIDAS)	30.0	32.3	40.1	17.2			$\chi^2(1)=42.86, p<.001$
Lifetime suicidal ideation (single item)	88.3	88.4	93.6	81.5			$\chi^2(1)=24.54, p<.001$
Recent suicide attempt (single item)	11.4	11.7	16.8	4.6			$\chi^2(1)=24.73, p<.001$
Lifetime suicide attempt (single item)	42.2	44.3	53.4	27.8			$\chi^2(1)=45.41, p<.001$
Recent self-harm (DSHI)	28.6	29.9	36.9	14.8			$\chi^2(1)=44.99, p<.001$
Lifetime self-harm (DSHI)	76.6	78.5	88.0	62.0			$\chi^2(1)=64.98, p<.001$
Age	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)			
	29.64 (11.82)	29.65 (12.46)	26.39 (10.21)	33.78 (12.43)			$t(588.78)=8.44, p<.001$
Discrimination (EDS)	23.76 (6.88)	24.35 (6.63)	24.87 (7.54)	22.36 (5.64)			$t(696.39)=-5.04, p<.001$
Distress (K10)	28.48 (9.91)	27.69 (9.78)	31.63 (9.48)	24.47 (8.97)			$t(698)=-10.16, p<.001$
Social support (MSPSS)	4.89 (1.20)	4.94 (1.26)	4.73 (1.16)	5.09 (1.23)			$t(698)=7.60, p<.001$
Resilience (BRS)	2.73 (0.88)	2.85 (0.88)	2.51 (0.83)	3.00 (0.87)			$t(698)=3.95, p<.001$

BRS = Brief Resilience Scale; DSHI = Deliberate Self-Harm Inventory; EDS = Everyday Discrimination Scale; K10 = Kessler-10 distress scale; MSPSS = Multi-Dimensional Scale of Perceived Social Support; SIDAS = Suicidal Ideation Attributes Scale.

were significantly more common among transgender participants across all variables.

Discrimination and distress were significantly higher among participants living in Australia, and resilience was significantly higher among participants living in Aotearoa/New Zealand (Table 1). Discrimination and distress were significantly lower among cisgender participants, and social support and resilience were significantly lower among transgender participants. Overall, these differences confirm the need to test for different correlates of suicidality and self-harm among transgender and cisgender participants and among participants living in the different countries.

Correlations among the psychosocial variables (discrimination, distress, social support, and resilience) were all in the expected directions, and the associations between suicidality and self-harm variables were as expected and supported the validity of the recent and lifetime measures, with no participants reporting recent suicidality or self-harm without also reporting lifetime experiences of the same phenomenon. These findings are described in detail in a supplemental file.

Multivariate correlates of suicidality and self-harm

There were no significant differences in suicidality or self-harm by country in multivariate analyses controlling for other variables for the full sample or the transgender or cisgender participants separately suggesting that other variables explained the significant bivariate differences by country (Tables 2–4).

Within the full sample, there was a significant association between gender modality and lifetime suicide attempts, which were almost twice as likely among transgender participants compared to cisgender participants (Table 3). In addition, there was a significant association between gender modality and lifetime self-harm, which was almost three times as likely among transgender participants compared to cisgender participants (Table 4).

Younger age was significantly associated with recent and lifetime self-harm in the full sample (Table 4). The association of younger age with lifetime self-harm was only significant among the

cisgender participants and not the transgender participants (Table 4). Among the transgender participants, living status was significantly associated with lifetime self-harm (Table 4), which was five times as likely among transgender participants who live with others compared to transgender participants who live alone.

Higher discrimination was significantly associated with higher likelihood of lifetime suicide attempt in the full sample (Table 3), but in the separate samples this association was only significant for the transgender participants. Higher discrimination was also significantly associated with higher likelihood of lifetime self-harm in the full sample (Table 4), but this association was also only significant for the transgender participants.

Higher distress was significantly associated with higher likelihood of suicidality and self-harm in the full sample across all variables except lifetime self-harm (Tables 2–4). The association between distress and both recent and lifetime suicidal ideation was significant for both transgender and cisgender participants (Table 2), whereas only transgender participants had a significant association between distress and both recent suicide attempt and recent self-harm (Tables 3 and 4). In contrast, only cisgender participants had a significant association between distress and lifetime suicide attempt (Table 3).

Higher social support was significantly associated with a lower likelihood of recent suicidal ideation in the full sample (Table 2), but this was only significant for transgender participants. Higher social support was also associated with a lower likelihood of lifetime suicide attempt in the full sample (Table 3), and this was only significant for transgender participants. Higher social support was also associated with a lower likelihood of recent self-harm (Table 4).

Higher resilience was also significantly associated with a lower likelihood of lifetime self-harm for the whole sample (Table 4), but this association did not reach significance for the transgender or cisgender participants. Higher resilience was also significantly associated with a lower likelihood of recent suicidal ideation but only for cisgender participants (Table 2).

Table 2. Variables associated with recent and lifetime suicidal ideation in logistic regressions.

Variable	Recent suicidal ideation (SIDAS)			Lifetime suicidal ideation (single item)		
	Full sample N = 689 Exp(B) OR	Transgender participants n = 382 Exp(B) OR	Cisgender participants n = 307 Exp(B) OR	Full sample N = 689 Exp(B) OR	Transgender participants n = 382 Exp(B) OR	Cisgender participants n = 307 Exp(B) OR
Country	1.32, <i>p</i> =.34	1.48, <i>p</i> =.19	1.46, <i>p</i> =.40	1.40, <i>p</i> =.25	3.32, <i>p</i> =.05	1.03, <i>p</i> =.94
Gender modality	1.19, <i>p</i> =.53	N/a	N/a	2.64, <i>p</i> =.01	N/a	N/a
Gender	1.06, <i>p</i> =.62	1.09, <i>p</i> =.51	0.67, <i>p</i> =.43	0.75, <i>p</i> =.17	0.87, <i>p</i> =.58	0.53, <i>p</i> =.10
Heterosexual	0.68, <i>p</i> =.33	1.59, <i>p</i> =.53	0.36, <i>p</i> =.06	1.27, <i>p</i> =.48	2.56, <i>p</i> =.44	1.23, <i>p</i> =.57
Age	0.99, <i>p</i> =.50	0.99, <i>p</i> =.50	0.98, <i>p</i> =.49	1.02, <i>p</i> =.18	0.98, <i>p</i> =.48	1.03, <i>p</i> =.05
Indigenous	1.09, <i>p</i> =.84	1.09, <i>p</i> =.86	0.96, <i>p</i> =.96	0.90, <i>p</i> =.83	0.46, <i>p</i> =.37	1.24, <i>p</i> =.73
Employed	0.92, <i>p</i> =.71	1.18, <i>p</i> =.57	0.40, <i>p</i> =.04	1.14, <i>p</i> =.69	0.51, <i>p</i> =.23	1.40, <i>p</i> =.46
Studying	0.81, <i>p</i> =.39	0.90, <i>p</i> =.73	0.74, <i>p</i> =.51	0.89, <i>p</i> =.71	0.30, <i>p</i> =.06	1.32, <i>p</i> =.48
Rural	1.29, <i>p</i> =.19	1.07, <i>p</i> =.76	2.84, <i>p</i> =.01	0.85, <i>p</i> =.46	0.53, <i>p</i> =.11	1.07, <i>p</i> =.81
Living alone	1.90, <i>p</i> =.07	1.21, <i>p</i> =.68	4.70, <i>p</i> =.01	1.05, <i>p</i> =.92	0.85, <i>p</i> =.81	1.28, <i>p</i> =.69
Can afford bills	0.89, <i>p</i> =.70	0.92, <i>p</i> =.83	0.88, <i>p</i> =.82	1.45, <i>p</i> =.43	0.81, <i>p</i> =.80	2.33, <i>p</i> =.18
Discrimination (EDS)	1.03, <i>p</i> =.10	1.04, <i>p</i> =.06	1.01, <i>p</i> =.87	1.01, <i>p</i> =.64	1.02, <i>p</i> =.53	1.00, <i>p</i> =.97
Distress (K10)	1.18, <i>p</i><.001	1.19, <i>p</i><.001	1.17, <i>p</i><.001	1.13, <i>p</i><.001	1.15, <i>p</i><.001	1.14, <i>p</i><.001
Social support (MSPSS)	0.76, <i>p</i>=.004	0.71, <i>p</i>=.007	0.76, <i>p</i> =.11	0.89, <i>p</i> =.36	0.90, <i>p</i> =.63	0.88, <i>p</i> =.47
Resilience (BRS)	0.68, <i>p</i> =.02	0.86, <i>p</i> =.43	0.40, <i>p</i>=.003	0.60, <i>p</i> =.02	0.95, <i>p</i> =.88	0.50, <i>p</i> =.01

Country: Australia = 1, Aotearoa/New Zealand = 2; Gender modality: cisgender = 0, transgender = 1; Heterosexual: non-heterosexual = 0, heterosexual = 1; Indigenous: non-Indigenous = 0, Indigenous = 1; Employed: not employed = 0, employed = 1; Studying: not studying = 0, studying = 1; Rural: living in an inner city = 1, living in a suburb = 2, rural/remote = 3; Living alone: living with others = 0, living alone = 1; Can afford bills: can't cover bills = 0, can cover bills = 1. BRS = Brief Resilience Scale; EDS = Everyday Discrimination Scale; Exp(B) = the exponent of the B coefficient; K10 = Kessler-10 distress scale; MSPSS = Multi-Dimensional Scale of Perceived Social Support; SIDAS = Suicidal Ideation Attributes Scale. Bolded terms are significant *p*<.008 (set to account for the number of analyses).

Table 3. Variables associated with recent and lifetime suicide attempt in logistic regressions.

Variable	Recent suicidal attempt (single item)			Lifetime suicide attempt (single item)		
	Full sample N = 680 Exp(B) OR	Transgender participants n = 378 Exp(B) OR	Cisgender participants n = 302 Exp(B) OR	Full sample N = 679 Exp(B) OR	Transgender participants n = 378 Exp(B) OR	Cisgender participants n = 301 Exp(B) OR
Country	1.16, <i>p</i> =.61	1.29, <i>p</i> =.44	0.88, <i>p</i> =.86	1.09, <i>p</i> =.67	1.23, <i>p</i> =.42	1.06, <i>p</i> =.86
Gender modality	2.36, <i>p</i> =.03	N/a	N/a	1.91, <i>p</i>=.005	N/a	N/a
Gender	0.98, <i>p</i> =.87	0.98, <i>p</i> =.88	1.23, <i>p</i> =.79	0.89, <i>p</i> =.25	0.89, <i>p</i> =.29	0.71, <i>p</i> =.36
Heterosexual	2.06, <i>p</i> =.14	5.91, <i>p</i> =.01	0.76, <i>p</i> =.73	0.71, <i>p</i> =.23	3.28, <i>p</i> =.06	0.42, <i>p</i> =.01
Age	0.95, <i>p</i> =.02	0.96, <i>p</i> =.11	0.92, <i>p</i> =.11	1.00, <i>p</i> =.92	1.00, <i>p</i> =.90	1.00, <i>p</i> =.96
Indigenous	2.01, <i>p</i> =.08	1.71, <i>p</i> =.25	2.87, <i>p</i> =.25	1.25, <i>p</i> =.50	1.29, <i>p</i> =.54	1.13, <i>p</i> =.83
Working	1.41, <i>p</i> =.24	1.61, <i>p</i> =.15	0.77, <i>p</i> =.70	0.90, <i>p</i> =.59	1.05, <i>p</i> =.84	0.61, <i>p</i> =.15
Studying	0.76, <i>p</i> =.34	0.78, <i>p</i> =.45	0.70, <i>p</i> =.61	0.96, <i>p</i> =.83	1.01, <i>p</i> =.98	0.89, <i>p</i> =.72
Rural	1.08, <i>p</i> =.74	1.02, <i>p</i> =.93	1.86, <i>p</i> =.30	0.86, <i>p</i> =.34	0.71, <i>p</i> =.08	1.33, <i>p</i> =.28
Living alone	0.93, <i>p</i> =.88	0.81, <i>p</i> =.72	1.36, <i>p</i> =.81	0.93, <i>p</i> =.80	0.57, <i>p</i> =.15	1.92, <i>p</i> =.17
Can afford bills	1.45, <i>p</i> =.33	1.45, <i>p</i> =.39	1.21, <i>p</i> =.83	0.91, <i>p</i> =.72	0.88, <i>p</i> =.71	0.99, <i>p</i> =.99
Discrimination (EDS)	1.03, <i>p</i> =.24	1.03, <i>p</i> =.23	1.03, <i>p</i> =.58	1.09, <i>p</i><.001	1.10, <i>p</i><.001	1.08, <i>p</i> =.01
Distress (K10)	1.11, <i>p</i><.001	1.11, <i>p</i><.001	1.14, <i>p</i> =.01	1.04, <i>p</i><.001	1.03, <i>p</i> =.04	1.06, <i>p</i>=.006
Social support (MSPSS)	0.74, <i>p</i> =.01	0.71, <i>p</i> =.01	0.85, <i>p</i> =.55	0.75, <i>p</i><.001	0.73, <i>p</i>=.003	0.78, <i>p</i> =.06
Resilience (BRS)	1.08, <i>p</i> =.70	1.09, <i>p</i> =.68	0.94, <i>p</i> =.90	0.91, <i>p</i> =.44	0.85, <i>p</i> =.34	1.02, <i>p</i> =.93

Country: Australia = 1, Aotearoa/New Zealand = 2; Gender modality: cisgender = 0, transgender = 1; Heterosexual: non-heterosexual = 0, heterosexual = 1; Indigenous: non-Indigenous = 0, Indigenous = 1; Employed: not employed = 0, employed = 1; Studying: not studying = 0, studying = 1; Rural: living in an inner city = 1, living in a suburb = 2, rural/remote = 3; Living alone: living with others = 0, living alone = 1; Can afford bills: can't cover bills = 0, can cover bills = 1. BRS = Brief Resilience Scale; EDS = Everyday Discrimination Scale; Exp(B) = the exponent of the B coefficient; K10 = Kessler-10 distress scale; MSPSS = Multi-Dimensional Scale of Perceived Social Support. Bolded terms are significant *p*<.008 (set to account for the number of analyses).

Discussion

Suicide and self-harm are pressing issues globally and are particularly pertinent for transgender people. The present study compared transgender and cisgender people on suicidality and self-harm in terms of the prevalence of these phenomena and a range of potential correlates (discrimination, distress, social support, and resilience). The particular novelty of this study is that it provides

robust subsamples of transgender and cisgender people living in Aotearoa/New Zealand and Australia, two English-speaking countries with publically funded healthcare overall and specifically for transgender people accessing gender-affirming treatments with some subtle differences (see Oliphant et al., 2018; Riggs et al., 2015; Telfer et al., 2018). The study therefore provides timely preliminary insights into correlates of

Table 4. Variables associated with recent and lifetime self-harm in logistic regressions.

Variable	Recent self-harm (DSHI)			Lifetime self-harm (DSHI)		
	Full sample N = 689 Exp(B) OR	Transgender participants n = 382 Exp(B) OR	Cisgender participants n = 307 Exp(B) OR	Full sample N = 689 Exp(B) OR	Transgender participants n = 382 Exp(B) OR	Cisgender participants n = 307 Exp(B) OR
Country	0.94, <i>p</i> =.79	0.95, <i>p</i> =.84	1.13, <i>p</i> =.75	1.17, <i>p</i> =.52	1.15, <i>p</i> =.74	1.24, <i>p</i> =.49
Gender modality	1.35, <i>p</i> =.24	N/a	N/a	3.29, <i>p</i><.001	N/a	N/a
Gender	1.09, <i>p</i> =.45	1.16, <i>p</i> =.19	0.44, <i>p</i> =.12	0.72, <i>p</i> =.05	0.77, <i>p</i> =.22	0.57, <i>p</i> =.08
Heterosexual	0.78, <i>p</i> =.49	0.59, <i>p</i> =.47	0.98, <i>p</i> =.96	0.76, <i>p</i> =.31	0.30, <i>p</i> =.08	0.88, <i>p</i> =.67
Age	0.95, <i>p</i><.001	0.95, <i>p</i> =.02	0.95, <i>p</i> =.02	0.96, <i>p</i><.001	0.96, <i>p</i> =.02	0.96, <i>p</i>=.002
Indigenous	0.53, <i>p</i> =.10	0.39, <i>p</i> =.04	1.44, <i>p</i> =.60	0.82, <i>p</i> =.62	0.37, <i>p</i> =.10	1.56, <i>p</i> =.41
Employed	0.99, <i>p</i> =.98	0.90, <i>p</i> =.69	1.04, <i>p</i> =.93	1.53, <i>p</i> =.10	1.43, <i>p</i> =.40	1.77, <i>p</i> =.11
Studying	1.17, <i>p</i> =.46	1.16, <i>p</i> =.57	1.29, <i>p</i> =.52	0.91, <i>p</i> =.71	0.88, <i>p</i> =.77	0.94, <i>p</i> =.84
Rural	1.09, <i>p</i> =.62	1.22, <i>p</i> =.33	0.77, <i>p</i> =.43	1.03, <i>p</i> =.87	1.30, <i>p</i> =.40	0.89, <i>p</i> =.62
Living alone	0.83, <i>p</i> =.59	0.44, <i>p</i> =.07	2.59, <i>p</i> =.09	0.48, <i>p</i> =.03	0.22, <i>p</i>=.003	0.77, <i>p</i> =.56
Can afford bills	0.83, <i>p</i> =.49	0.89, <i>p</i> =.72	0.60, <i>p</i> =.32	0.67, <i>p</i> =.31	0.72, <i>p</i> =.61	0.57, <i>p</i> =.30
Discrimination (EDS)	1.02, <i>p</i> =.27	1.02, <i>p</i> =.22	1.01, <i>p</i> =.80	1.09, <i>p</i><.001	1.12, <i>p</i><.001	1.07, <i>p</i> =.02
Distress (K10)	1.07, <i>p</i><.001	1.09, <i>p</i><.001	1.04, <i>p</i> =.16	1.04, <i>p</i> =.02	1.05, <i>p</i> =.06	1.04, <i>p</i> =.06
Social support (MSPSS)	0.76, <i>p</i>=.001	0.75, <i>p</i> =.01	0.69, <i>p</i> =.02	0.85, <i>p</i> =.11	0.67, <i>p</i> =.02	0.95, <i>p</i> =.71
Resilience (BRS)	0.73, <i>p</i> =.02	0.88, <i>p</i> =.44	0.51, <i>p</i> =.01	0.63, <i>p</i>=.004	0.77, <i>p</i> =.33	0.60, <i>p</i> =.01

Country: Australia = 1, Aotearoa/New Zealand = 2; Gender modality: cisgender = 0, transgender = 1; Heterosexual: non-heterosexual = 0, heterosexual = 1; Indigenous: non-Indigenous = 0, Indigenous = 1; Employed: not employed = 0, employed = 1; Studying: not studying = 0, studying = 1; Rural: living in an inner city = 1, living in a suburb = 2, rural/remote = 3; Living alone: living with others = 0, living alone = 1; Can afford bills: can't cover bills = 0, can cover bills = 1. BRS = Brief Resilience Scale; DSHI = Deliberate Self-Harm Inventory; EDS = Everyday Discrimination Scale; Exp(B) = the exponent of the B coefficient; K10 = Kessler-10 distress scale; MSPSS = Multi-Dimensional Scale of Perceived Social Support. Bolded terms are significant *p*<.008 (set to account for the number of analyses).

suicidality and self-harm for transgender and cisgender people in a region with relatively limited past research on this issue.

Consistent with the existing literature, the findings of this study showed significant differences in the prevalence of suicidality and self-harm based on gender modality, with transgender participants being much more likely to experience these phenomena than their cisgender counterparts. In particular, our comparative analysis indicated that transgender participants were almost twice as likely to have recently attempted suicide compared to cisgender participants. This pattern is consistent with existing research, which overwhelmingly indicates a high prevalence of suicide and self-harm among transgender people (Adams et al., 2017; dickey et al., 2015; Haas et al., 2010; McNeil et al., 2017; Veale et al., 2019; Wolford-Clevenger et al., 2018). These findings also likely reflect the difficulties transgender people may experience accessing gender-affirming treatments in Aotearoa/New Zealand and Australia (Oliphant et al., 2018; Riggs et al., 2015; Telfer et al., 2018). This raises important questions for future international research on these outcomes.

The findings of this study identified a number of potential factors associated with suicidality and self-harm. Unsurprisingly, higher levels of distress were found to be associated with most aspects of

suicidality and self-harm in both transgender and cisgender participants. Conversely, discrimination was found to be associated with suicide attempt and self-harm, but only for transgender participants. This is consistent with international studies (e.g., Haas et al., 2010; McNeil et al., 2017; Riggs et al., 2015; Testa et al., 2015) that suggest discrimination against transgender people has a negative effect on wellbeing and increases suicidality. Our analysis also indicated that lower levels of social support were significantly associated with recent suicidal ideation and lifetime suicide attempt for transgender participants only. This too is consistent with international research (e.g., Kuper et al., 2018; Wilson et al., 2016; Zeluf et al., 2018), indicating the potential importance of social support in a context where gender diversity is heavily stigmatized.

Interestingly, transgender participants living alone were less likely to have self-harmed. Given that discrimination and distress are both associated with self-harm, and that cisgenderism is endemic within society (Riggs et al., 2015), this might be explained by the fact that those living alone are not having to manage discrimination and distress in the home. Despite previous studies emphasizing the role of resilience in wellbeing and suicide prevention among transgender people (e.g., Strauss et al., 2017; Wilson et al., 2016), resilience was not found to be widely associated

with suicidality or self-harm in the present study. This would suggest that the key factors to focus on in the prevention of suicide and self-harm in transgender people are the reduction of discrimination and distress, and the provision of increased social support.

While this study provides some useful and interesting insights into suicidality and self-harm in transgender populations, there are some limitations that need to be borne in mind. In particular, the sample was self-selecting, which may have resulted in some differences in gender, sexual orientation, locale, and indigeneity between the participants living in Aotearoa/New Zealand and Australia. In addition, recruitment of participants was primarily undertaken through community organizations and general advertising on Facebook. Consequently, the sample is over-representative of younger participants and those actively engaged with community organizations or active on social media with a particularly high proportion of non-heterosexual participants in the cisgender subsample, which is expectable given the targeted advertising via social media accounts of LGBTQ support organizations. The resulting sample did not include adequate numbers of people with intersex variations to include this as a variable in analyses and future survey research would benefit from targeted inclusion. Some of the suicidality and self-harm variables had small proportions (Table 1) and therefore the results of the logistic regression analyses should be interpreted with these proportions in mind, and replications need to be conducted to continue testing the relative importance of different correlates. Future research could benefit from a case-control study design using stratified sampling in relation to the suicidality and self-harm variables. This would allow more powerful comparisons of relevant correlates between larger subgroups, for example, transgender people who have never experienced suicidal ideation compare to those who have felt suicidal.

Another limitation is that the survey centered on retrospective accounts and therefore is potentially subject to recall bias. However, this risk is likely to be minimal given that suicide attempts and instances of self-harm are likely to be memorable events and there is little reason for socially

desirable responding in an anonymous survey. Differences in the framing of questions for different measures meant that making comparisons between the prevalence of suicide and self-harm was difficult and future research could use more comparable timeframes and prospective measurement of these variables over time to overcome this using a more intensive longitudinal method while also attempting to avoid self-selection and include participants with a range of levels of suicidality and/or self-harm.

Despite these limitations, the research design of this study provides a robust comparison of suicidality and self-harm in transgender and cisgender people in Aotearoa/New Zealand and Australia. Consistent with previous research in both transgender and cisgender populations, the present study also shows a strong relationship between suicide/self-harm and both discrimination (as a risk factor) and social support (as a protective factor). Measures for the prevention of suicide and self-harm in transgender people therefore need to focus on reducing discrimination and developing social support. Given the high risk of suicide and self-harm in the transgender population, this needs urgent attention in ongoing research in addition to being addressed in clinical practice and social policy.

Acknowledgments

We thank the participants who completed the survey. We also thank Irie Schimanski and others for assistance advertising the survey, and Ben Fletcher for assistance with data coding.

Conflict of interest

The authors declare that they have no conflict of interest.

Ethics approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Ethics approval for the study was granted by the Human Research Ethics Committee of Flinders University.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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