Self-reported wellbeing and health-related quality of life of Aboriginal and Torres Strait Islander people pre and post the first wave of the COVID-19 2020 pandemic

Alana Gall,[1] Abbey Diaz,[1,2] Gail Garvey,[2,3] Kate Anderson,[1,2] Daniel Lindsay,[1,2] Kirsten Howard[3,4]

Abstract

Objective: Quantify change in wellbeing and health-related quality-of-life (HRQoL) in Aboriginal and Torres Strait Islander adults pre and post Australia's initial COVID-19 lockdown.

Methods: Aboriginal and Torres Strait Islander adults completed an online survey at Time 1 (October–November 2019; before the initial Australian COVID-19 outbreak) and Time 2 (August–September 2020; after the first Australian lockdown). We assessed wellbeing using a visual analogue scale (VAS) and HRQoL using the Assessment of Quality of Life (AQoL-4D) instrument. Participants who completed both surveys (n=42) were included to quantify change in outcomes over time and by comorbidity and demographic factors.

Results: Mean reduction in wellbeing over time was 6.4 points (95%CI -14.2 to 1.4) and was associated with age (18–54yo), financial instability and mental health comorbidity. Mean reduction in HRQoL over time was 0.06 (95%CI -0.12 to 0.01) and was associated with financial instability, high physical comorbidity level and mental health comorbidity.

Conclusions: Aboriginal and Torres Strait Islanders aged 18–54yo, who were financially unstable or had elevated comorbidity during COVID lockdowns experienced greater reductions in wellbeing and HRQoL.

Implications for public health: As the COVID-19 pandemic continues in Australia, both urgent and forward planning is needed, especially for the priority groups identified.

Key words: pandemic; COVID-19; quality of life; wellbeing; Indigenous peoples; EQ-VAS; AQoL-4D; VAS

Aboriginal and Torres Strait Islander people constitute three per cent of the Australian population.[1] Aboriginal and Torres Strait Islander peoples' understanding of health and wellbeing is generally holistic and grounded in the cultural value of collectivism, which inextricably ties the wellbeing of the individual to the wellbeing of community, culture and Country (Country is a holistic concept that includes identity, spirituality, culture, people, language, law and ceremony – not just physical land).[2-4] Wellbeing for Aboriginal and Torres Strait Islander people, like other populations, depends on access to resources to satisfy basic needs, work roles and responsibilities, education, and physical and mental health.[3] Aboriginal and Torres Strait Islander people face substantial economic, educational, health and social disadvantages as a result of the continued impact of colonisation, ongoing marginalisation and social injustices (e.g. racism).[5,6] These inequalities persist largely due to past and current government policies and political arrangements that disrupt Aboriginal and Torres Strait Islander people's social structures and societies, which ultimately impacts their wellbeing.[5-7]

The pandemic of the novel coronavirus (SARS-COV-2) and the disease it causes (COVID-19) has had a serious impact on the health and wellbeing of people in almost every country.[8] With rapid global spread of the virus, the response from the Australian federal and state/territories governments was relatively swift. After the first Australian COVID-19 case was reported in late January 2020, lockdown orders and restrictions were in place across most of the country by late March 2020.[9] While most public health restrictions were lifted by May 2020, some remained in place for most of 2020 (Figure 1: abridged timeline of the COVID-19 Pandemic in Australia).[10,11] Following this period, Australia has experienced numerous outbreaks across three waves of the pandemic, which necessitated Victoria and New South Wales going into prolonged lockdowns in 2021, while at the same time the government financial support program called *JobKeeper*, which was implemented in 2020 to support individuals affected by lockdown orders, was terminated in March 2021.[12] Moreover, 2021 saw the first death of an Aboriginal person from COVID-19, with further COVID-19 deaths expected.[13]

Lockdown orders and other pandemic-related restrictions can have a significant impact on peoples' lives and can be particularly devastating for marginalised and under-served populations who may already experience challenges to maintaining their wellbeing.[8] Previous pandemics have had a greater toll on Aboriginal and Torres Strait

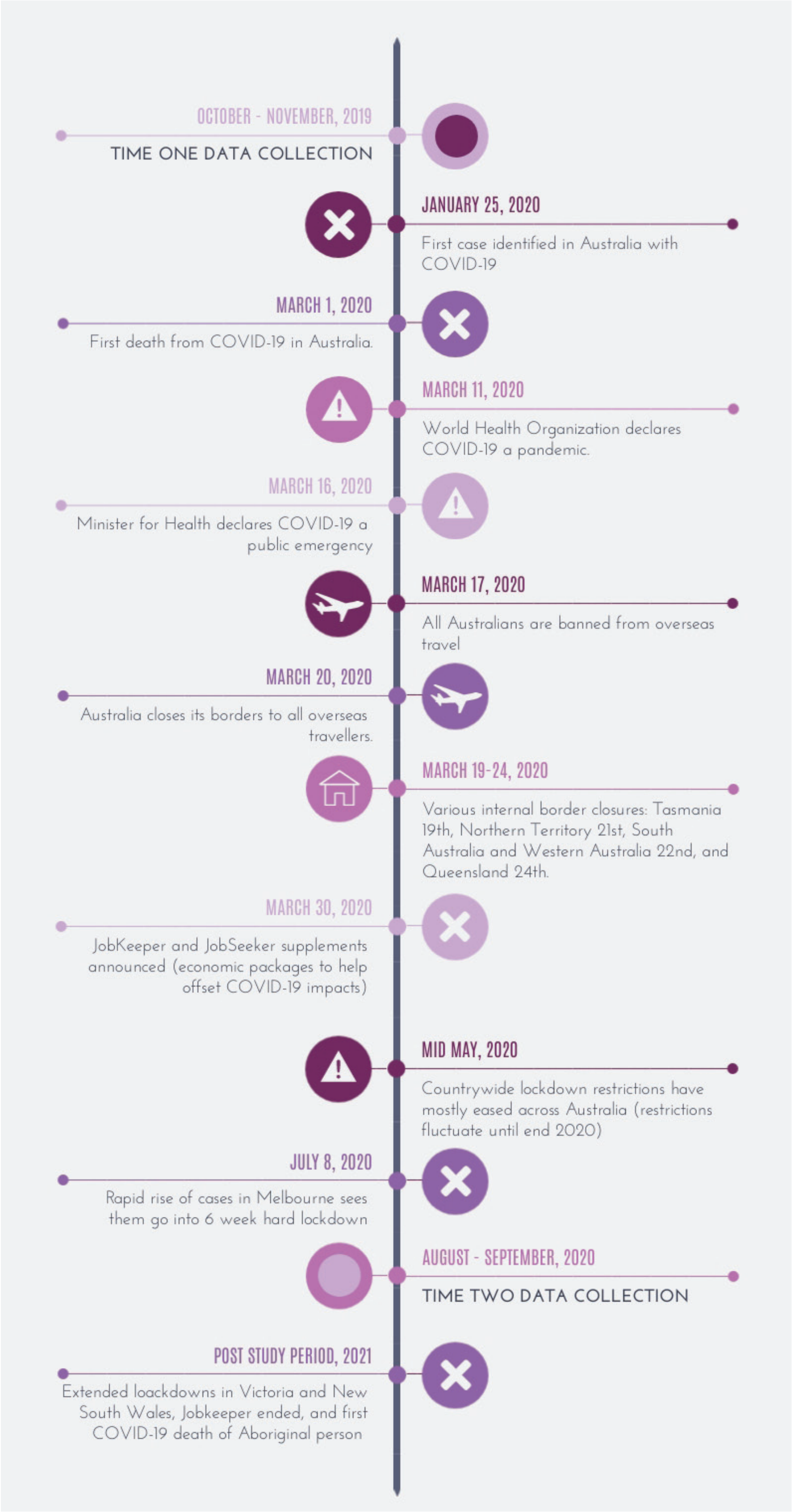
1. Wellbeing and Preventable Chronic Disease Division, Menzies School of Health Research, Charles Darwin University, Casuarina, Northern Territory
2. School of Public Health, University of Queensland, Brisbane, Queensland
3. School of Public Health, Faculty of Medicine & Health, University of Sydney, New South Wales
4. Menzies Centre for Health Policy and Economics, Faculty of Medicine and Health, University of Sydney, New South Wales
Correspondence to: Alana Gall, Menzies School of Health Research, PO Box 41096, Casuarina, Northern Territory, 0811; e-mail: alana.gall@menzies.edu.au

Submitted: June 2021; Revision requested: October 2021; Accepted: November 2021

The authors have stated they have no conflicts of interest.

Aust NZ J Public Health. 2022; 46:170-6; doi: 10.1111/1753-6405.13199

Figure 1: Abridged timeline of the COVID-19 Pandemic in Australia.[10,11]



Islander people and communities than other Australians. For example, the type A H1N1 virus (swine flu) pandemic in 2009 resulted in higher relative rates of infection, hospitalisation and death for Aboriginal and Torres Strait Islander people.[14] This has been attributed to the higher prevalence of risk factors and comorbidities within this population,[15] however, due to the lack of outcome data reported during previous pandemics, these underlying causes are likely more complex, potentially embedded in social and health services structures.[14] During the current pandemic, the success of Indigenous-led strategies to prevent spread of COVID-19 among Aboriginal and Torres Strait Islander people and communities in Australia, and Government's support of these, has been recognised.[16] Only 0.8% of all Australian COVID-19 cases have been among Aboriginal and Torres Strait Islander people.[16] However, as Australia moves into the recovery phase and the COVID-19 vaccination rolls out, the toll on wellbeing needs to be assessed and addressed. This is particularly urgent for Aboriginal and Torres Strait Islander people.[16]

This secondary data analysis was conducted using information collected from two survey waves (Time 1 – pre-COVID-19 pandemic, and Time 2 – after the first wave and lockdown in Australia and during the first extended lockdown in the state of Victoria) from the *What Matters 2 Adults study*,[17] to quantify change in wellbeing and HRQoL for Aboriginal and Torres Strait Islander adults associated with the pandemic, and identify factors associated with wellbeing and HRQoL over time.

Methods

Context

Our team acknowledges the importance of reflexively considering and describing our own backgrounds, perspectives and values that we each bring to the project.[18,19] The first author (AG) is an Aboriginal PhD candidate with experience in qualitative and mixed methods Indigenous health research. The second author (AD) is a non-Indigenous early career researcher with expertise in epidemiology and Indigenous health research. The third author (GG) is a senior Aboriginal researcher with extensive experience in Indigenous health research and psychosocial research. The fourth author (KA) is a non-Indigenous senior qualitative health researcher with experience in Indigenous health research. The fifth author (DL) is a non-Indigenous early career researcher with expertise in quantitative research methods. The last author (KH) is a non-Indigenous senior researcher with expertise in health economic and Indigenous health research.

The current study is a secondary analysis of data collected as part of a larger study, called the What Matters 2 Adults (WM2A) study.[17] The larger study aims to develop a wellbeing measure that is grounded in and underpinned by the values and preferences of Aboriginal and Torres Strait Islander adults. In the broader WM2A study, strategies were implemented to ensure Aboriginal and Torres Strait Islander people's voices were privileged, including the establishment of an Indigenous Project Advisory Group and an Indigenous Researchers Group. The initial decision to include the two measures reported in the current analysis involved input from both of these groups. This current study involved input and leadership from senior and early career Aboriginal researchers.

Design

An online cross-sectional survey was conducted at two time points, as part of a larger study to develop a new preference-based wellbeing measure for Aboriginal and Torres Strait Islander adults.[17] Ethics approval for this study was granted by the Human Research and Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research (NHMRC Reg no. EC00153), The University of Sydney Human Research Ethics Committee (CRICOS Number: 00026A), and the University of Technology Sydney (UTS) Human Research Ethics Committee (TRIM no. RES20/234).

Participants

Participants were recruited via Dynata, an online survey platform with an established nation-wide panel of Aboriginal and Torres Strait Islander people, as well as through investigator networks. Aboriginal and Torres Strait Islander people aged 18 years or older were eligible to participate. Potential participants were emailed study information and prompted to provide online informed consent to commence the online survey. In total, 309 and 354 Aboriginal and Torres Strait Islander people participated in the survey at Time 1 and Time 2, respectively. Of these, 42 participants completed both surveys and were included in this analysis.

Data collection

Once consent was obtained, participants were directed to the online survey. The two surveys were conducted in October–November 2019 (pre-COVID-19 pandemic – Time 1) and August-September 2020 (after the first wave and lockdown in Australia and during the first extended lockdown in the state of Victoria – Time 2). The surveys collected information on wellbeing and HRQoL, as well as socio-demographic, health and economic variables (i.e. age, gender, Indigenous status, main language spoken at home, area, relationship status, household size, highest level education, employment status, financial situation, comorbidities and mental health comorbidities).

Outcome measures

Wellbeing: Data on wellbeing was collected using a visual analogue scale (VAS), where participants were asked to indicate their wellbeing at that moment on a horizontal scale ranging from zero (the worst wellbeing they could imagine) to 100 (the best wellbeing they could imagine) (Supplementary File 1). This is a standard VAS with slight modification to measure wellbeing.

Health-related quality of life: The Assessment of Quality of Life (4 Dimension) measure (AQoL-4D) is a health-related multi-attribute utility instrument that assesses quality of life across four dimensions: independent living (IL-QoL), mental health (MH-QoL), relationships (R-QoL) and senses (S-QoL). These four dimensions each include three items with four response levels for each question, giving 12 questions in total (Supplementary File 2).[20] The AQoL-4D provides both dimension scores and an overall HRQoL score that represents the health state utility ranging from -0.04 to 1.0.[20] Utility scores represent preferences for health states anchored on a 0.0–1.0, dead to full health scale; negative values represent health states worse than death. In accordance with previous population-based norms, an overall utility score greater than 0.90 were defined as excellent HRQoL.[21]

Change in wellbeing and AQoL-4D scores: Mean change in scores from Time 1 to Time 2 was calculated (Time 2 score-Time 1 score). Here, a negative change score indicates a decline in wellbeing/HRQoL over time, while a positive change score indicates an improvement.

Explanatory variables

A priori we decided to focus on examining variation in the change in wellbeing and HRQoL over time by gender, age group, residential remoteness, financial situation (see below), presence/absence of comorbidities and presence/absence of mental health comorbidity. We also described the cohort in terms of Aboriginal and/or Torres Strait Islander identity, household size, relationship status, highest education, employment status and main language spoken at home. Due to the small numbers of participants across categories of variables, categories were collapsed into broad groups: age (18–54yrs, 55–80yrs); gender (male, female); highest level of education (year 12 or below, post high school qual/s); employment status (paid employed, not employed/ unpaid employment); financial situation (not enough, just enough and more than enough, money until next pay); and total number of comorbidities (nil, 1–5, 6 or more). Mental health comorbidity was defined as the presence of anxiety, depression and/or other mental health conditions (yes, no). Dynata coded participant residential postcode as either metropolitan or rural/regional based on the population size residing within that postcode and distance to services as per methods used by the Australian Bureau of Statistics.[22]

Analysis

There were no missing values in our dataset at either timepoint. All analyses were conducted in Stata v15.[23] Participant characteristics at Time 1 were described using frequency (n) and percentage (%) for categorical variables and median and either inter-quartile range (IQR) or range (min-max) for age and household size, which were non-normally distributed continuous variables. Characteristics at Time 2 were also examined and reported if they differed from Time 1. Wellbeing scores and AQoL-4D utility scores approximated a normal distribution and were described using mean and standard deviation (sd). Two-tailed paired t-tests were used to examine differences in wellbeing and AQoL-4D utility scores between Time 1 and Time 2, overall and stratified by sub-groups. Between-group variation in Time 1 scores and differences in mean change scores over time (Time 1 – Time 2) were assessed using two-sample t-tests and ANOVA. Statistical significance was set at $\alpha = 0.05$. There is no evidence for what constitutes a clinically meaningful change in wellbeing score. For AQoL-4D, the minimally important difference in utility has been reported as 0.06.[21]

Results

Participant characteristics

Forty-two participants completed the online survey at both timepoints and were included in analyses. Participant characteristics at Time 1 are described in Table 1. At Time 1, participants had a median age of 55.5 years (IQR 41.0-65.0), approximately 60% were male (n=25), half lived in rural and regional locations (n=21) and 37 (88%) self-reported they had at least one comorbidity, with 23 (55%) reporting they had at least one mental health comorbidity. At Time 1, most participants reported they either did not have enough money (n=17, 40.5%) or just enough money (n=15, 35.7%) to get by until the next payday. At Time 2, 13 (31.0%) participants did not have enough money and 16 (38.1%) had just enough money until their next payday. For all other variables the total number of participants in each category was similar across both timepoints (difference n≤1 person).

Wellbeing

Table 2 presents the wellbeing scores (overall and stratified by participant characteristics) at Time 1 and Time 2, as well as the mean change in scores over time. Overall, wellbeing scores did not significantly change from Time 1 to Time 2 (mean change -6.4, 95%CI -14.2–1.4).

At Time 1, participants aged 55-80 years had higher wellbeing scores than participants aged 18-54 years and experienced a lesser reduction in wellbeing over time compared to participants aged 18-54 years, although these differences were not significant. Higher wellbeing scores were associated with increased financial stability. At Time 1, participants reporting having not enough money had significantly lower wellbeing scores than those reporting more than enough money. Those who reported not having enough money at Time 1 also had a greater, but non-significant, reduction in wellbeing over time compared to those with just enough or more than enough money. At Time 1, participants without mental health comorbidity had higher wellbeing than those with mental health comorbidity and those without a mental health comorbidity experienced a lesser decline in wellbeing from Time 1 to Time 2, although these differences were not statistically significant.

Health-related quality of life - AQoL-4D

Table 3 presents mean HRQoL utility scores (overall and stratified by participant characteristics) at Time 1 and Time 2, and changes in utility scores over time. Overall, the mean difference in HRQoL utility score between Time 1 and Time 2 was -0.06. While not being statistically significant, this difference was consistent with previously reported minimally important differences. When scores from the separate AQoL-4D domains (Relationships; Independent Living; Senses; and Mental Health) were examined, all domain scores decreased from Time 1 to Time 2. While there was a minimally important difference in Relationship scores over time (mean change Time1-Time2: -0.06), this was not statistically significant ($p=0.09$), nor was observed for other dimensions (Mean change: -0.04, -0.01, and -0.01, respectively, all $p<0.05$).At Time 1, HRQoL utility score was associated with financial situation, with utility scores increasing with increasing financial stability, although the only statistically significant difference was between those reporting not enough money and those reporting more than enough money. Those who reported having more than enough money at Time 1 had a greater reduction in HRQoL from Time 1 to Time 2, compared to those who had just enough until next pay day and those who did not have enough until next pay day. At Time 1, there were statistically significant differences in mean HRQoL utility score between those who self-reported having six or more comorbidities, and those who had one to five comorbidities (and those who had none). Wellbeing scores declined over time for those with comorbidity, with the degree of the decline increasing with increasing comorbidity, although these differences were not significant. Similarly, at Time 1 there were statistically significant differences in HRQoL utility score for those with and without mental health comorbidity; HRQoL was higher for those reporting no mental health comorbidity compared to those reporting having a mental health comorbidity. However, both experienced a similar decline over time, which was clinically meaningful, but not statistically significant.

Table 1: Participant characteristics at time point 1 pre-COVID-19 (n=42).

Characteristic	Baseline N (%)
Months between surveys, median (IQR)	9.5 (9.2-9.7)
Age in years, median (IQR*)	55.5 (41.0-65.0)
Age group	
18-54 years	17 (40.5)
55-80 years	25 (59.5)
Gender	
Male	25 (59.5)
Female	17 (40.5)
Indigenous status	
Aboriginal	40 (95.2)
Torres Strait Islander	2 (4.8)
Main language spoken at home	
English	41 (97.6)
Torres Strait Islander language	1 (2.4)
Area	
Metropolitan	21 (50)
Rural/Regional	21 (50)
Relationship status	
Partnered	17 (40.5)
Single	24 (57.1)
Other	1 (2.4)
Household size	
Range	1 to 7
Highest level education	
Grade 12 or below	14 (33.3)
Post high school qual/s	28 (66.7)
Employment status	
Paid employment	16 (38.1)
Not working/unpaid employment	26 (61.9)
Financial situation	
Not enough	17 (40.5)
Just enough	15 (35.7)
More than enough	10 (23.8)
Total comorbidities	
Nil	5 (11.9)
1 - 5	30 (71.4)
6 or more	7 (16.7)
Total mental health comorbidities	
Nil	19 (45.2)
Any	23 (54.8)

Note:
IQR = interquartile range

Figure 2 shows that the proportion of participants reporting the lowest HRQoL scores increased from Time 1 to Time 2 (23.8% to 38.1%, respectively), while the proportion reporting in the highest HRQoL scores decreased (23.8% to 16.7%, respectively).

Discussion

The COVID-19 pandemic has resulted in unprecedented disruption to daily life, with lockdowns and threat of virus-spread isolating many from their family, friends and employment for extended periods of time. For many Aboriginal and Torres Strait Islander people, these public health measures would have resulted in restrictions to accessing Country, cultural practices, and community.[24] For others living in community, the restrictions on movement may have reduced their accessibility to healthcare and affordable and traditional food.[14] Previously, Aboriginal and Torres Strait Islander people have fared worse than non-Indigenous

Australians during pandemics due to social and cultural determinants of health and the lack of political influence.[14,24]

The results of the current study suggest that Aboriginal and Torres Strait Islander people aged 18-54 years, with less financial stability and presence of comorbidity (particularly, very high levels of comorbidity and any mental health comorbidity) may have lower baseline levels of wellbeing and/or HRQoL than other Aboriginal and Torres Strait Islander people. This suggests that these groups were at higher risk of negative impacts on wellbeing and HRQoL due to the lockdowns associated with Australia's first COVID-19 wave in 2020. An exception to this was the finding that Aboriginal and Torres Strait Islander adults who reported having more than enough money at Time 1, had the highest baseline HRQoL but the greatest decline in HRQoL over time.

Our findings of lower wellbeing in respondents aged 18 to 54 years aligned with other reports. In the general Australian population, people aged 18–24 years and 35–50 years were found to be at greater risk for negative emotions (depression, anxiety and stress) when compared to other age groups.[25] A recent Australian study during the third COVID-19 related lockdown found parents who were younger reported having lower wellbeing than other Australian parents.[26] Our results are aslo consistent with Cornell et al. who found that in the general Australian population, those aged 50+ years had statistically significantly higher wellbeing than those aged 18–30 during the COVID-19 pandemic (all p <0.001).[27] This gives rise to the question of whether being aged 50 years and over is somewhat protective of wellbeing for Aboriginal and Torres Strait Islander adults and merits further attention.

We found that respondents reporting lower financial stability had lower baseline wellbeing and HRQoL. The association between financial instability and reduced wellbeing and HRQoL has been described in other populations, however this link is unclear for Aboriginal and Torres Strait Islander people.[28,29] We found that respondents with the least financial stability had greater declines in wellbeing over time, while those with the most financial stability experienced the greatest declines in HRQoL. There is some evidence to suggest that the financial supports offered by the Australian state/territory and federal governments from early in the pandemic (March 11–30 2020) such as the *JobKeeper* scheme which paid employers

Table 2: Mean (SD) wellbeing score for Aboriginal and Torres Strait Islander participants (n=42), at Time 1(T1) and change over time.[a]

	Pre-pandemic (T1)		Changes over time (T1-T2)	
Characteristic at baseline (T1)	**Wellbeing score Mean (SD)**	**P-value (between groups at baseline)[b]**	**Wellbeing score Mean difference (95%CI)**	**P-value (between group change over time)[b]**
Total sample	64.2 (26.7)	n/a	-6.4 (-14.2 - 1.4)	n/a
Gender				
Male (n=25)	66.4 (27.9)	0.52	-4.5 (-13.9 - 5.0)	0.60
Female (n=17)	60.9 (25.3)		-9.1 (-23.7 - 5.5)	
Age group				
18–54 (n=17)	55.1 (28.0)	0.07	-12.1 (-29.4 - 5.3)	0.22
55–80 (n=25)	70.4 (24.5)		-2.5 (-9.3 - 4.3)	
Financial situation				
Not enough (n=17)	52.6 (24.9)	0.02	-12.9 (-28.5 - 2.6)	0.40
Just enough (n=15)	65.8 (31.3)		-0.8 (-12.8 - 11.2)	
More than enough (n=10)	81.4 (5.9)		-3.5 (-17.0 - 10.0)	
Area				
Metropolitan (n=21)	67.4 (24.9)	0.44	-6.4 (-16.7 - 3.8)	1.00
Rural/Regional (n=21)	61.0 (28.6)		-6.3 (-19.0 - 6.4)	
Total comorbidities				
Nil (n=5)	51.4 (38.8)	0.26	1.0 (-36.1 - 38.1)	0.74
1–5 (n=30)	68.4 (24.7)		-6.7 (-15.8 - 2.5)	
6 or more (n=7)	55.0 (24.4)		-10.3 (-35.2 - 14.6)	
Total mental health comorbidities				
Nil (n=19)	69.4 (26.3)	0.26	-2.0 (-13.2 - 9.2)	0.31
Any (n=23)	59.9 (26.9)		-10.0 (-21.4 - 1.5)	

Notes:

a: Negative change scores indicate a decline in score over time

b: Two-tailed two-sample t-test for variables with two categories and ANOVA for variables with three or more categories

Table 3: Mean (SD) AQoL-4D scores for Aboriginal and Torres Strait Islander participants (n=42), at Time 1(T1) and change over time.[a]

	Pre-pandemic (T1)		Changes over time (T1-T2)	
Characteristic at baseline (T1)	**AQoL-4D utility score Mean(SD)**	**P-value (between groups at baseline)[b]**	**AQoL-4D utility score Mean difference (95%CI)**	**P-value (between group change over time)[b]**
Total sample	0.51 (0.28)	n/a	-0.06 (-0.12 - 0.01)	n/a
Gender				
Male (n=25)	0.53 (0.29)	0.70	-0.06 (-0.13 - 0.01)	1.00
Female (n=17)	0.49 (0.28)		-0.06 (-0.19 - 0.07)	
Age group				
18–54 (n=17)	0.46 (0.26)	0.35	-0.04 (-0.17 - 0.08)	0.72
55–80 (n=25)	0.55 (0.30)		-0.07 (-0.14 - 0.01)	
Financial situation				
Not enough (n=17)	0.38 (0.26)	0.01	-0.01 (-0.13 - 0.10)	0.43
Just enough (n=15)	0.54 (0.28)		-0.06 (-0.14 - 0.01)	
More than enough (n=10)	0.71 (0.23)		-0.12 (-0.31 - 0.06)	
Area				
Metropolitan (n=21)	0.55 (0.28)	0.37	-0.06 (-0.18 - 0.05)	0.83
Rural/Regional (n=21)	0.47 (0.29)		-0.05 (-0.12 - 0.02)	
Total comorbidities				
Nil (n=5)	0.60 (0.31)	0.005	-0.04 (-0.50 - 0.42)	0.71
1–5 (n=30)	0.57 (0.27)		-0.05 (-0.12 - 0.03)	
6 or more (n=7)	0.21 (0.11)		-0.12 (-0.24 - 0.01)	
Total mental health comorbidities				
Nil (n=19)	0.65 (0.26)	0.004	-0.06 (-0.16 - 0.04)	1.00
Any (n=23)	0.40 (0.26)		-0.06 (-0.15 - 0.04)	

Notes:

a: Negative change scores indicate a decline in score over time

b: Two-tailed two-sample t-test for variables with two categories and ANOVA for variables with three or more categories

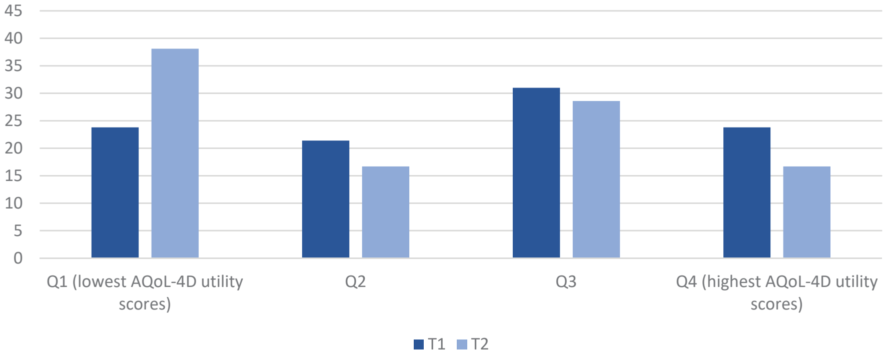
$750 AUD per week to retain staff and the *JobSeeker* scheme which provided ~$550AUD per week for individuals on unemployment or job seeking benefits,[10,11] reduced financial distress, and thus mental distress, among the general population.[30] It is possible that the protective effect may have been more pronounced in those with the least financial stability, and may have provided them with a reprieve from their usual precarious financial situation. However, the lockdown restrictions may have had a greater impact on the HRQoL of those with the most financial stability who may be most confronted by the impact of the social restrictions on their daily lives. However, following this study period the Government stopped the *JobKeeper* support program, which may have provided financial reprieve to those with financial instability. This experience has the potential to change how Australian policymakers perceive the need for and how they provide financial support to underemployed and unemployed individuals beyond the pandemic.

Emotional distress has been found to have increased since the first outbreak of COVID-19[31] and in Australia, anxiety and stress levels were found to be higher among Aboriginal and Torres Strait Islander people during the first Australian COVID-19 wave.[32] In the current study, we found that Aboriginal and Torres Strait Islander respondents with mental health comorbidity were at greater risk of reduced wellbeing and HRQoL before the pandemic and a clinically meaningful decline over time, than those without mental health comorbidity. Similarly, a study of the general Australian population found those with mental health comorbidity were more than five times likely to experience negative emotions during the pandemic than those without mental health comorbidity[25]; a finding also observed elsewhere.[33] This speaks to the importance of policies and programs that address the mental health needs of Aboriginal and Torres Strait Islander communities to build resilience in this population as a preventative measure.

The Australian Government has committed a $2.4 billion health package to protect all Australians from COVID-19, including priority groups such as the elderly, those with chronic conditions and Aboriginal and Torres Strait Islander communities.[8] However, it is important to understand that within-group differences in the Aboriginal and Torres Strait Islander population may warrant priority status during a pandemic and for the planning of preventative measures.[24] For example, a recent report by The Healing Foundation shows that Stolen Generations survivors experienced negative impacts on their physical and mental health and wellbeing due to significant disconnect from Country, family and community during COVID-19 and the public health restrictions that coincided.[34] Furthermore, our findings suggest that Aboriginal and Torres Strait Islander adults who are either under 55 years of age, experience financial instability, have a pre-existing mental health comorbidity, or have six or more comorbidities, should also be considered as priority groups.

In Australia, Aboriginal and Torres Strait Islander people continue to experience poorer health and social disadvantage compared to other Australians. It is therefore essential that pandemic plans aiming to protect Australians from COVID-19 are viewed from an equity lens that incorporates broader aspects of Aboriginal and Torres Strait Islander people's health and wellbeing.[35] Effective pandemic plans for Aboriginal and Torres Strait Islander communities must be developed collaboratively involving all key stakeholders and include the principles of shared decision making, Indigenous leadership and self-determination, and consider aspects of health and wellbeing important to this population.[3,8] Lastly, there are lessons to be learned from the COVID-19 pandemic that highlight the systemic weaknesses that require addressing both during but also outside of pandemics. For instance, the ability of health services to meet the needs of the community during a pandemic, such as the reconfiguration of local clinics to facilitate testing, isolation of suspected cases and preparing staff with infectious disease training, will better equip these clinics to manage other infectious conditions.[35] The pandemic has also highlighted the issue of the high proportion of locum staff working in clinics that service Aboriginal and Torres Strait Islander communities, as these staff have been required to quarantine before commencing clinical activity within the community.[35] This issue of the transience of health staff in community health services also affects the continuity of care and the cultural safety of these services; a pressing issue that goes beyond the critical concerns of staffing during the pandemic. A holistic approach to planning for future pandemics and addressing the system-wide issues of healthcare provision that is guided by Aboriginal and Torres Strait Islander people from the outset and throughout will minimise future harms to wellbeing and HRQoL for Aboriginal and Torres Strait Islander people.

Figure 2: Proportion (%) of Aboriginal and Torres Strait Islander participants in AQoL-4D utility score quartiles (Q) at Time 1 (T1) and Time 2 (T2).



Limitations

Our analysis reports on the Wellbeing-VAS and the AQoL-4D. Despite this study being statistically underpowered, it has highlighted some differences of concern that warrant further investigation. It is important to note that while both VAS and the AQoL-4D have been used previously with Aboriginal and Torres Strait Islander peoples, neither measure has been validated or developed for use with this population.[36-38] Wellbeing is a culturally bound construct, and understanding and incorporating wellbeing from an Aboriginal and Torres Strait Islander perspective in health services, policies and programs is critical to achieving health equity. It has been suggested that future measures are developed *with* and *by* Aboriginal and Torres Strait Islander people, ensuring they include the aspects of wellbeing that are identified as important to their wellbeing.[4,38] Our study is limited by the small sample size, which may impact the generalisability of our results. However, the fact that our study is grounded in Indigenist methodologies, with Indigenous governance and engagement throughout, strengthens our findings. Furthermore, this analysis was conducted with an exploratory intent and pre-post analyses show notable findings that may guide the design of further investigations.

Conclusions

The COVID-19 pandemic in Australia is seeing an increased level of governmental control over the everyday lives of the Australian population. Having access to Country, communities and families is an important aspect of Aboriginal and Torres Strait Islander people's lives. Therefore, it is unsurprising that we found declines in wellbeing and HRQoL in Aboriginal and Torres Strait Islander people during the first COVID-19 lockdown in Australia, and with the continuation of the pandemic this is likely to decrease even further. We recommend that Aboriginal and Torres Strait Islander adults who are aged 18-54 years, experience financial instability, have pre-existing mental health comorbidity, or other comorbidities, are considered as a priority within the overall need for Aboriginal and Torres Strait Islander people as a whole. Considering the ongoing nature of the COVID-19 pandemic, action is ever more pertinent to protect those we have identified as being at increased risk for low wellbeing and HRQoL.

Acknowledgment and funding

We acknowledge Dr Bena Brown for her contributions to early drafts of the manuscript.

The What Matters study is funded by a National Health and Medical Research Council (NHMRC) Project grant (#1125434). This study was also supported by the NHMRC funded Centre of Research Excellence in *Targeted Approaches To Improve Cancer Services for Indigenous Australian Australians* (TACTICS; #1153027). AG is supported by a NHMRC Postgraduate Scholarship (APP1168150) and a TACTICS Postgraduate Scholarship top-up. AD was funded via the NHMRC Centre of Research Excellence in Targeted Approaches To Improve Cancer Services for Aboriginal and Torres Strait Islander Australians (TACTICS; #1153027) and a University of Queensland Faculty of Medicine Fellowship. GG salary was supported by an NHMRC Investigator Grant (#1176651). KA salary was supported by the NHMRC funded What Matters study (#1125434). The views expressed in this publication are those of the authors and do not necessarily reflect the views of the funding agencies.

References

1. Australian Bureau of Statistics. *3238.0.55.001 - Estimates of Aboriginal and Torres Strait Islander Australians*. Canberra (AUST): ABS; 2018.
2. King M, Smith A, Gracey M. Indigenous health part 2: The underlying causes of the health gap. *Lancet*. 2009;374(9683):76-85.
3. Butler TL, Anderson K, Garvey G, Cunningham J, Ratcliffe J, Tong A, et al. Aboriginal and Torres Strait Islander people's domains of wellbeing: A comprehensive literature review. *Soc Sci Med*. 2019;233:138-57.
4. Kite E, Davy C, Gibson O, McBride K, Brown A. Aboriginal and Torres Strait Islander peoples' perceptions of quality of life and wellbeing and how they are measured: A systematic review protocol. *JBI Evid Synth*. 2014;12(7):138-47.
5. Paradies Y. Colonisation, racism and indigenous health. *J Popul Res*. 2016;33(1):83-96.
6. Griffiths K, Coleman C, Lee V, Madden R. How colonisation determines social justice and Indigenous health—a review of the literature. *J Popul Res*. 2016;33(1):9-30.
7. Australian Institute of Health and Welfare. *Indigenous Health and Wellbeing*. Canberra (AUST): AIHW; 2020.
8. Smith JA, Judd J. COVID-19: Vulnerability and the power of privilege in a pandemic. *Health Promot J Austr*. 2020;31(2):158-60.
9. COVID-19 National Incident Room Surveillance Team. COVID-19, Australia: Epidemiology Report 10 (Reporting week to 23:59 AEST 5 April 2020). *Commun Dis Intell (2018)*. 2020;44.
10. Storen R, Corrigan N. *COVID-19: A Chronology of State and territory Government Announcements (Up Until 30 June 2020).* Canberra (AUST): Australian Government Department of Parliamentary Services; 2020.
11. Australian Bureau of Statistics. *One Year of COVID-19: Aussie Jobs, Business and the Economy*. Canberra (AUST): ABS; 2021.
12. Australian Taxation Office. *JobKeeper Key Dates*. Canberra (AUST): Government of Australia; 2021
13. Griffiths K. The first Indigenous COVID death reminds us of the outsized risk NSW communities face. *The Conversation*. 2021;August 31:4.41pm.
14. Gall A, Law C, Massey P, Crooks K, Andrews R, Field E. Outcomes reported for Australian First Nation populations for the Influenza A (H1N1) 2009 pandemic and lessons for future infectious disease emergencies: A systematic review. *Glob Biosecur*. 2020;1(4): Doi: http://doi.org/10.31646/gbio.76.
15. Goggin LS, Carcione D, Mak DB, Dowse GK, Giele CM, Smith DW, et al. Chronic disease and hospitalisation for pandemic (H1N1) 2009 influenza in Indigenous and non-Indigenous Western Australians. *Commun Dis Intell Q Rep*. 2011;35(2):172-6.
16. Dudgeon P, Wright M, Derry K. *A National COVID-19 Pandemic Issues Paper on Mental Health and Wellbeing for Aboriginal and Torres Strait Islander Peoples*. Perth (AUST): University of Western Australia; 2020.
17. Howard K, Anderson K, Cunningham J, Cass A, Ratcliffe J, Whop LJ, et al. What Matters 2 Adults: A study protocol to develop a new preference-based wellbeing measure with Aboriginal and Torres Strait Islander adults (WM2Adults). *BMC Public Health*. 2020;20(1):1739.
18. Alvesson M, Sköldberg K. *Reflexive Methodology: New Vistas for Qualitative Research*. 3rd ed. London (UK): SAGE Publications; 2017.
19. Nilson C. A journey toward cultural competence:The role of researcher reflexivity in indigenous research. *J Transcult Nurs*. 2017;28(2):119-27.
20. Richardson J, Chen G, Iezzi A, Khan MA. *Transformations between the Assessment of Quality of Life AQoL Instruments and Test-retest Reliability*. Melbourne (AUST): Monash University Centre for Health Economics; 2011.
21. Hawthorne G, Korn S, Richardson J. Population norms for the AQoL derived from the 2007 Australian National Survey of Mental Health and Wellbeing. *Aust N Z J Public Health*. 2013;37(1):7-16.
22. Australian Government Department of Health. *Australian Statistical Geography Standard – Remoteness Area*. Canberra (AUST): Government of Australia; 2019.
23. *STATA*: statistical software. Release 15. College Station (TX): Stata Corp; 2017.
24. Power T, Wilson D, Best O, Brockie T, Bourque Bearskin L, Millender E, et al. COVID-19 and Indigenous Peoples: An imperative for action. *J Clin Nurs*. 2020;29(15-16):2737-41.
25. Rossell SL, Neill E, Phillipou A, Tan EJ, Toh WL, Van Rheenen TE, et al. An overview of current mental health in the general population of Australia during the COVID-19 pandemic: Results from the COLLATE project. *Psychiatry Res*. 2021;296:113660.
26. Westrupp EM, Stokes MA, Fuller-Tyszkiewicz M, Berkowitz TS, Capic T, Khor S, et al. Subjective wellbeing in parents during the COVID-19 pandemic in Australia. *J Psychosom Res*. 2021:110482.
27. Cornell S, Nickel B, Cvejic E, Bonner C, McCaffery KJ, Ayre J, et al. Positive outcomes associated with the COVID-19 pandemic in Australia. *Health Promot J Austr*. 2021;10.1002/hpja.494.
28. Huang R, Ghose B, Tang S. Effect of financial stress on self-rereported health and quality of life among older adults in five developing countries: A cross sectional analysis of WHO-SAGE survey. *BMC Geriatr*. 2020;20(1):288.
29. Biddle N. Measuring and analysing the wellbeing of Australia's indigenous population. *Soc Indic Res*. 2014;116(3):713-29.
30. Ferdi Botha, Peter Butterworth, Roger Wilkins. *Heightened Mental Distress: Can Addressing Financial Stress Help?* Carlton (AUST): Melbourne Institute Applied Economic and Social Research; 2020.
31. Geirdal AØ, Ruffolo M, Leung J, Thygesen H, Price D, Bonsaksen T, et al. Mental health, quality of life, wellbeing, loneliness and use of social media in a time of social distancing during the COVID-19 outbreak. A cross-country comparative study. *J Ment Health*. 2021;30(2):148-55.
32. Newby JM, O'Moore K, Tang S, Christensen H, Faasse K. Acute mental health responses during the COVID-19 pandemic in Australia. *PLoS One*. 2020;15(7):e0236562.
33. Rahman MA, Hoque N, Alif SM, Salehin M, Islam SMS, Banik B, et al. Factors associated with psychological distress, fear and coping strategies during the COVID-19 pandemic in Australia. *Global Health*. 2020;16(1):95.
34. Healing Foundation. *Impacts of COVID-19 on Stolen Generations Survivors: April 2021*. Canberra (AUST): Aboriginal and Torres Strait ISlander Healing Foundation; 2021.
35. Crooks K, Casey D, Ward JS. First Nations people leading the way in COVID-19 pandemic planning, response and management. *Med J Aust*. 2020;213(4):151-2.
36. Gilchrist L, Bessarab D, Douglas H, LoGiudice D, Ratcliffe J, Flicker L, et al. The validity of the good spirit, good quality-of-life tool for older Aboriginal Australians: Development and validation of cognitive and quality of life assessments for older indigenous peoples internationally. *Alzheimers Dement*. 2020;16:e040108.
37. Nagel T, Sweet M, Dingwall KM, Puszka S, Hughes JT, Kavanagh DJ, et al. Adapting wellbeing research tools for Aboriginal and Torres Strait Islander people with chronic kidney disease. *BMC Nephrol*. 2020;21(1):130.
38. Le Grande M, Ski C, Thompson D, Scuffham P, Kularatna S, Jackson A, et al. Social and emotional wellbeing assessment instruments for use with Indigenous Australians: A critical review. *Soc Sci Med*. 2017;187:164-73.

Supporting Information

Additional supporting information may be found in the online version of this article:

Supplementary File 1: Wellbeing VAS.

Supplementary File 2: AQoL-4D.