

# BMJ Open Is disability exclusion associated with psychological distress? Australian evidence from a national cross-sectional survey

Jeromey B Temple,<sup>1</sup> Margaret Kelaher<sup>2</sup>

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<sup>1</sup>Demography and Ageing Unit, Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Victoria, Australia

<sup>2</sup>Centre for Health Policy, Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Victoria, Australia

## Correspondence to

Dr Jeromey B Temple;  
jeromey.temple@unimelb.edu.au

## ABSTRACT

**Objective** To examine the association between disability exclusion and psychological distress.

**Design** Cross-sectional study.

**Setting** Population-based study of individuals living in households across Australia.

**Participants** Respondents were persons aged 15 and over living with a disability.

**Primary outcome measures** Reporting an experience of discrimination or avoidance behaviour due to a respondent's disability. High or very high levels of psychological distress measured using the Kessler K10 instrument.

**Methodology** Using the Survey of Disability, Ageing and Carers, we calculated the prevalence of persons with a disability experiencing psychological distress, disaggregated by experiences of disability exclusion, including discrimination and avoidance. Logistic regression models were fitted to examine the association between disability exclusion and psychological distress, once extensive controls and adjustments for survey design and presence of psychosocial disabilities were considered.

**Results** About 62% of persons citing an experience of disability discrimination were in psychological distress, compared with 27% of those citing no discrimination. Furthermore, 53% of those who actively avoided social, familial or economic activities because of their disability experienced psychological distress, compared with 19% of those who did not avoid these situations. After controlling for demographic characteristics and disabling conditions, reporting an experience of disability discrimination or disability avoidance increased the odds of psychological distress by 2.2 (95% CI 1.74 to 2.26) and 2.6 (95% CI 2.28 to 2.97) times, respectively. Those who experienced both avoidance and discrimination were 3.7 (95% CI 2.95 to 4.72) times more likely to be in psychological distress than those experiencing neither. Avoidance and discrimination in healthcare settings were also found to be strongly associated with experiencing psychological distress.

**Conclusions** Given new policy initiatives to improve disability care, coupled with the increasing speed of population ageing, the onus is on governments and its citizenry to address disability exclusion to offset potential mental health impacts.

## Strengths and limitations of this study

- The Survey of Disability and Carers provides a significant sample of almost 10 000 persons living with disabilities in households across Australia, with validated measures of psychological distress and detailed disability exclusion measures.
- These data are cross-sectional, and we cannot and do not draw causal inferences about the relationship between disability exclusion and psychological distress.
- The measures on disability exclusion and psychological distress were not collected from those living in cared accommodation or non-private dwellings.

## INTRODUCTION

The principle that all people are equal in dignity and are entitled to the same fundamental rights is reflected in almost all human rights agreements, policies and law.<sup>1</sup> Discrimination occurs when people are excluded from the full enjoyment of their rights due to nationality, place of residence, sex, national or ethnic origin, colour, religion, language, disability or some other status.<sup>1</sup> Discrimination irrespective of its consequences is a violation of human rights and should be prevented in any reasonable society. The moral imperative to address discrimination is further increased by a mounting body of evidence suggesting that people exposed to discrimination suffer deleterious mental and physical health.<sup>2</sup>

Discrimination is understood to have a negative impact on health for a number of reasons, including restricting access to social and material resources required for health, stress and negative emotions having harmful psychological and physiological effects and injury through motivated assault.<sup>3 4</sup> Avoidance is conceptualised to influence health via reducing access to resources and services. The impetus for avoidance behaviour is to

reduce exposure to discrimination; however, there is little evidence to suggest that this strategy is effective in reducing the impacts of racism in Australia.<sup>5</sup> In some cases, it may be that the avoidance or discrimination itself does not contribute directly to poorer health, but is mediated by other factors along the pathway—for example, if an individual experiences discrimination that prevents him/her from finding adequate employment, the resultant unemployment or underemployment may then contribute to poorer health outcomes.

Most of the empirical research examining the links between discrimination and health have focused on racism and health (eg, refs 3 4). Paradies *et al* conducted a meta-analysis of 293 studies published between 1983 and 2013.<sup>4</sup> They found that racism was associated with poorer mental health (negative mental health:  $r=-0.23$ , 95% CI  $-0.24$  to  $-0.21$ ,  $k=227$ ; positive mental health:  $r=-0.13$ , 95% CI  $-0.16$  to  $-0.10$ ,  $k=113$ ), including depression, anxiety, psychological stress and various other outcomes.<sup>4</sup> There is growing evidence that the pathways between racism and worse health outcomes also apply to other types of discrimination.<sup>2 6</sup> For example, recent Australian and US research shows experiences of ageism are strongly related to poor mental health in the later life course.<sup>7-9</sup>

There is also mounting evidence on the association between disability discrimination and health outcomes. For example, a US study shows that about one in five persons aged over 50 experienced some form of healthcare discrimination and that frequent exposure to discrimination was strongly associated with new or worsening disabilities over a 4-year time period.<sup>10</sup> A Swedish study investigated the association between exposure to differing forms of discrimination (including on the basis of disability) and psychological distress.<sup>11</sup> They found that persons exposed to disability discrimination were between 1.5 and 1.65 times more likely to be in psychological distress relative to those with no reports of discrimination. Apart from being associated with physical and mental health, perceived disability discrimination has also been shown to be associated with poor levels of the individuals' acceptance of disability, which in itself may pose implications for mental health and well-being.<sup>12</sup>

Alongside this body of literature on discrimination and health outcomes, there is considerable evidence on the implications of exposure to discrimination and healthcare seeking and avoidance. In a recent Peruvian study, experiences of discrimination faced by those with a disability was associated with a higher likelihood of not seeking care.<sup>13</sup> The effects of discrimination were also exacerbated for persons with a communication or physical disability. The literature has further highlighted people living with intellectual disabilities as a group who face barriers to accessing healthcare and avoiding health services, in part, due to unfair attitudes and of staff.<sup>14 15</sup> Discrimination, independent of socioeconomic disadvantage has also been shown to be associated with avoidance of healthcare in a Swedish setting, and that avoidance was more likely in the event of frequent experiences of

discrimination.<sup>16</sup> In addition to avoidance, perceived discrimination has also been shown to be associated with treatment delays such as delays in filling prescriptions.<sup>17</sup>

In Australia, people with multiple disabilities, as well as those with physical or psychological disabilities, have been found to face barriers to accessing healthcare and importantly, experiencing a barrier to care has been shown to be associated with low levels of trust in health professionals and perceptions of discrimination in healthcare settings.<sup>18</sup> The ability to access healthcare services in this population is also impacted by poor socioeconomic outcomes of those living with a disability in Australia, who fare poorly on a range of socioeconomic indicators including education, employment, housing vulnerability and a range of financial well-being measures.<sup>19 20</sup> There is also evidence that experiencing discrimination in healthcare settings in Australia is associated with psychological distress. Aboriginal and Torres Strait Islander people exposed to racial discrimination in health settings (OR 4.49; 95% CI 2.28 to 8.86) and non-health settings (OR 2.66; 95% CI 1.39 to 5.08) were more likely than people who did not experience racism to be psychologically distressed.<sup>21</sup> These effects would be expected to be observed for people with disabilities or other chronic conditions with a high reliance on healthcare and other services to prevent their condition worsening their health.

However, the impact of discrimination due to disability on health has rarely been studied in Australian nationally representative data sets. Two measures of the exclusion of persons with a disability have recently been made available by the Australian Bureau of Statistics (ABS); (1) discrimination because of disability and (2) avoidance of social, familial and economic situations or contexts because of one's disability. More specifically, the ABS defines disability discrimination as occurring when people 'felt they had been unfairly considered or treated due to their disability'.<sup>22</sup> Disability avoidance is defined as 'not going or staying away from people or places because of one's disability'.<sup>22</sup> Avoidance is a broader measure of exclusion than discrimination, as it may also include physical and practical barriers to involving oneself in social, economic or other activities. For the first time, the ABS has operationalised measures of disability discrimination and disability avoidance in the 2015 Survey of Disability, Ageing and Carers (SDAC), a nationally representative survey of persons with disabilities, those aged over 65 and their carers.

With the availability of these newly released nationally representative data, we seek to examine the association between measures of disability exclusion and psychological distress, once extensive controls for demographic, economic and health factors have been accounted for.

## METHODS

### Data

Data for this study are from the 2015 SDAC conducted between July and December 2015. The ABS used

multistage sampling techniques to collect information from people with a disability, persons aged 65 years and older and people who care for those with a disability or long-term health condition. Persons living in private dwellings, self-care retirement villages and cared accommodation (long-term cared accommodation) were included in the survey. Earlier SDAC surveys have been conducted periodically by the ABS from 1981 to 2012.

Data for SDAC were collected by the ABS under the provisions of the Census and Statistics Act 1905. Prior to field operations, the survey was submitted to the Australian Privacy Commissioner and tabled in parliament. Confidentiality of these data are guaranteed under the Act and information was provided freely from respondents. Confidentialised data were made available to the authors for this study through the ABS and Universities Australia agreement.

Measures on disability discrimination and avoidance were collected in the household component of the survey, which included those living in private residences and self-care retirement villages. Of the total of 31 957 private dwellings contacted, 25 555 fully responded, yielding a response rate of 80%. Of the 288 persons in self-care retirement villages contacted, 251 responded yielding a response rate of 87.2%. In total, SDAC contains 9763 cases on persons aged 15 and over with a disability who live in households. Accounting for a small number of cases where the Kessler K10 measures were not collected or unable to be determined (n=108), left a final sample size of 9655 persons aged 15 and over with a disability living in households. Characteristics of this sample are available in [table 1](#).

### Measures

For the first time in 2015, the ABS included a module on disability discrimination and disability avoidance. First, respondents were asked ‘In the last 12 months do you feel that you have experienced discrimination or have been treated unfairly by others because of your condition/s?’ For those who responded ‘yes’, a follow-up question was asked: ‘Who treated you unfairly or discriminated against you because of your condition/s?’ A list of multiple responses was provided, that consisted of employer, work colleagues, family or friends, teacher or lecturer, health staff (eg, general practitioner (GP), nurse, hospital staff), bus drivers/rail staff/taxi drivers, restraint/hospitality staff, sales assistants, strangers in the street or ‘others’.

Respondents were then asked ‘In the last 12 months have you avoided situations because of your condition(s)?’ Again, those who responded ‘yes’ were asked the following question: ‘What situation(s) did you avoid because of your condition(s)?’ A list of multiple responses was provided including work, visiting family or friends, school, university or educational facility, medical facilities (eg, GP, dentist, hospital), shops, banks etc, restaurants, cafes or bars, public transport, public park or recreation venue, other social situations, other public places, other.

**Table 1** Characteristics of persons in psychological distress and weighted sample characteristics, 2015

		Weighted distress (%)		Sample n	Weighted %
<b>Exclusion measures</b>					
<b>Discrimination</b>					
No		27.1	–	8825	91.4
Yes		62.5	***	830	8.6
<b>Avoidance</b>					
No		19.3	–	6570	68.1
Yes		53.2	***	3085	31.9
<b>Discrimination and avoidance</b>					
Discrim	Avoid				
No	No	18.8	–	6390	66.3
No	Yes	49.0	***	2435	25.1
Yes	Yes	68.5	***	650	6.8
Yes	No	39.4	***	68	1.8
<b>Disability measures</b>					
Sensory and speech		21.7	***	3105	31.9
Intellectual		54.8	***	690	7.3
Physical restriction		33.3	***	6856	70.1
Psychosocial		69.7	***	1719	18.0
Head injury		47.1	***	601	6.2
Other		43.1	***	4234	43.9
<b>Control variables</b>					
<b>Age</b>					
15–29		44.9	–	567	7.0
30–44		43.2		1223	13.8
45–59		39.4	*	2321	23.4
60–74		25.0	***	3332	33.7
75–84		16.7	***	1590	15.6
85+		12.3	***	622	6.6
<b>Gender</b>					
Male		27.5	–	4424	46.4
Female		32.4	***	5231	53.6
<b>Birthplace</b>					
Australia		29.2	–	7024	73.0
MESB		23.6	***	1223	11.9
Other		39.6	***	1408	15.1
<b>Marital status</b>					
Married		25.8	–	4813	50.5
Separated		43.1	***	415	4.0
Divorced		35.7	***	1345	13.0
Widowed		17.7	***	1247	12.5
Never married		42.5	***	1835	20.0

Continued

Table 1 Continued

	Weighted distress (%)		Sample n	Weighted %
Region of residence				
Major city	31.5	–	5857	63.6
Inner regional	27.0	***	2163	23.3
Other	29.0		1635	13.1
Labour force status				
Employed	23.9	–	2938	31.5
Unemployed	54.7	***	290	3.1
NILF	32.0	***	6427	64.4
Education				
Degree or above	21.2	–	1470	15.9
Certificate	30.7	***	3079	32.5
School only	32.6	***	4842	48.8
Undetermined	31.3	***	264	2.7
K10 Kessler				
High/very	100.0		2861	30.1
Low/moderate	0.00			69.9
Mean distress	30.1			

–Comparison category for test of proportion: \* $P < 0.05$ , \*\*\* $P < 0.001$ . MESB, main English-speaking background; NILF, not in the labour force.

### Measures of psychological distress

In addition to these new measures on discrimination, the SDAC instrument collected detailed measures of the recipient's demographic characteristics and health conditions. Of importance, for the first time in 2015, the ABS included measurement of the Kessler Psychological Distress Scale.<sup>23</sup> Following examples in the literature, we define those experiencing psychological distress as having 'high' or 'very high' psychological distress on the Kessler K10 measure.<sup>21 24</sup> These cut-offs were selected based on the recommended scoring by the ABS and dichotomised consistent with guidelines on the level of distress associated with clinically significant mental health disorders.<sup>25</sup>

### Measurement of disabilities

A range of questions were used to assess disability in SDAC. The conceptual framework for disability in SDAC is consistent with WHO's international classification of functioning, disability and health.<sup>26</sup> The definition of disability is 'any limitation, restriction or impairment which restricts everyday activities and has lasted, or is likely to last, for at least 6 months'.<sup>22</sup> Thus, the measure of disability is not just based on the presence of a health condition, but also on the condition restricting activities in an ongoing manner. The operationalisation of this definition required a large module of over 100 questions which was conducted face to face in the household component of the survey.

Disabilities in SDAC are grouped into six major categories. These include:

- ▶ Sensory—for example, loss of sight, hearing or speech difficulties.
- ▶ Intellectual—difficulty learning or understanding.
- ▶ Physical—for example, chronic or recurrent pain, disfigurement or deformity, blackouts, seizures or loss of consciousness.
- ▶ Psychosocial—for example, nervous or emotional condition, mental illness, memory problems or social/behavioural difficulties restricting everyday activities.
- ▶ Head injury, stroke or acquired brain injury.
- ▶ Other—receiving treatment for other long-term health conditions that restrict everyday activities.

### Control variables

Apart from disability type, we include extensive socio-economic and demographic control variables in our modelling. These include age, gender, country of birth (Australia, English-speaking country, non-English-speaking country), social marital status (married, separated, divorced, widowed, never married), region of residence (major cities, inner regional Australia, other), labour force status (employed, unemployed and not in the labour force) and education (degree or above, certificate, school only). These data were collected by trained interviewers using computer-assisted personal interviews.

### Data analysis

With these new measures available in SDAC, we fit logistic regression models to examine the association between disability exclusion and psychological distress, once extensive controls for demographic and health factors are included. Using the raw logit coefficients, we calculate ORs which measure the change in the odds of being in psychological distress given a change in a covariate, once all other factors in the model are controlled.

As the Kessler K10 screening instrument seeks to measure psychological distress, there is the potential for a confounding effect or endogeneity between psychosocial disabilities and psychological distress. To identify any issues with misspecification or bias in the estimated parameter coefficients, we split the sample into three populations: (1) the full population, (2) persons with no reported psychosocial disability and (3) respondents with a psychosocial disability. ORs are compared across all three populations. We present results for all three populations herein for transparency.

With all models specified, we checked the conditioning of the matrix of independent variables to investigate any collinearity influence.<sup>27</sup> The condition numbers were very small providing support for the model specification. Final goodness of fit for all logistic regression models was confirmed using the Hosmer and Lemeshow test.<sup>28</sup>

### Weighting

Due to the complex survey design, additional adjustments were necessary to generate correct variance estimates.

Unfortunately, the ABS does not provide information on the primary selection unit, due to privacy concerns. However, the ABS provides 60 replicate weights, in addition to a person weight, to adjust for sample design and non-response. Using an algorithm developed by Winter,<sup>29</sup> we employed the delete-one jackknife method to provide correct SEs for the estimated logit coefficients.<sup>29,30</sup> This provides an alternative to the standard Taylor series linearisation methods when only replicate weights are available. All analyses were performed using Stata SE V.15.0.

### Patient and public involvement

This study uses confidentialised data provided to the authors by the ABS. Patient and public involvement is not applicable for this paper.

## RESULTS

Approximately 30% of persons with a disability aged 15 and over were classified as having high or very high psychological distress on the Kessler Scale in 2015 (table 1). Approximately, 8.6% of this population experienced discrimination and almost one-third avoided situations because of their disability (31.9%). The bivariate comparisons show that those who experienced discrimination are significantly more likely to be in psychological distress (62.5% of the discriminated group) than those who did not experience it (27.1%). Similarly, about half of those who engaged in avoidance behaviours were in psychological distress (53.2%) compared with less than one in five who did not avoid situations (19.3%).

Using the measures, we generated a categorical variable with mutually exclusive groupings of avoidance and discrimination. Approximately, 66% of persons with a disability experienced no discrimination or avoidance. About one in four experienced avoidance only (25.1%), just under 7% experienced both discrimination and avoidance (6.8) and about 2% experienced discrimination only (1.8%). Less than one in five of those experiencing no discrimination or avoidance were in psychological distress (18.8%), compared with 40% of those experiencing discrimination only, 49% of those experiencing avoidance only and just under 70% of those reporting both discrimination and avoidance behaviours (68.5%).

Unsurprisingly, about 70% of those with a psychosocial disability were in psychological distress, as were about half of those with an intellectual, head injury or other disability. For those with a physical disability (about 70% of this sample), around one in three were in psychological distress.

Although these differences point to an association between exclusion and psychological distress among persons with a disability, it is important to control for demographic and health factors that are associated with distress, independent of exclusion. For example, in these data we observe that distress is higher among certain demographic groups. Younger persons (relative to

older), women (relative to men), those born in non-English-speaking countries (relative to Australian born), persons separated, divorced or never married (vs married), the unemployed and those not in the labour market (vs the employed) and those with lower levels of education are all at a heightened risk of psychological distress (table 1). The high prevalence of distress among those with a psychosocial disability also lends support to modelling distress in three populations: (1) the full population, (2) persons with no reported psychosocial disability and (3) respondents with a psychosocial disability.

Even when extensive controls for these demographic, economic and health factors were included, disability exclusion was strongly associated with psychological distress (table 2).

In the full sample, persons with a disability who cite an instance of discrimination were about 2.2 times more likely to be in psychological distress, compared with those who did not experience discrimination in the last year (model 1 OR 2.15, 95% CI 1.74 to 2.26,  $p<0.001$ ). Restricting the analysis to the split samples, the estimated OR is slightly higher for the non-psychosocial disability sample (model 2 OR 2.23, 95% CI 1.75 to 2.85,  $p<0.001$ ) and slightly lower for the psychosocial disability sample (model 3 OR 1.81, 95% CI 1.24 to 2.64,  $p<0.001$ ).

Individuals who actively avoided situations because of their disability were 2.6 times more likely to be in psychological distress relative to those who did not avoid situations (model 4 OR 2.60, 95% CI 2.28 to 2.97,  $p<0.001$ ). The ORs for the non-psychosocial disability sample (model 5 OR 2.50, 95% CI 2.13 to 2.94,  $p<0.001$ ) and the psychosocial disability sample (model 6 OR 2.68, 95% CI 1.93 to 3.71,  $p<0.001$ ) were highly comparable.

To examine the relative role of discrimination and avoidance with psychological distress, we include the categorical variable intersecting two measures of exclusion in table 3. In the full sample (model 7), compared with those who had not experienced discrimination or avoidance:

- ▶ Those who had experienced avoidance only were about 2.5 times more likely to experience psychological distress (OR 2.47, 95% CI 2.16 to 2.83).
- ▶ Those who had experienced avoidance and discrimination were just under four times more likely to experience psychological distress (OR 3.73, 95% CI 2.95 to 4.72).
- ▶ Those who had experienced discrimination only were about 1.77 times more likely to experience psychological distress (OR 1.77, 95% CI 1.13 to 2.77).

With this full model specified, we performed post-estimation tests of coefficients which confirmed that experiencing avoidance and discrimination has the strongest association with distress relative to avoidance only ( $F(1,59)=13.54, p<0.01$ ) or discrimination only ( $F(1,59)=10.23, p<0.01$ ). Comparisons across the full sample (model 7), non-psychosocial disability sample (model 8) and psychosocial disability sample (model

**Table 2** Logistic regression models of disability discrimination and avoidance, single measure, 2015

Model	Discrimination			Avoidance			Psychosocial disability	
	Full sample	Psychosocial disability		Full sample	Psychosocial disability		No	Yes
		No	Yes		No	Yes		
	1	2	3	4	5	6		
Single exclusion measures (OR)								
Discrimination	2.15	2.23	1.81					
95% CI	1.74 to 2.66	1.75 to 2.85	1.24 to 2.64					
Avoidance		2.60		2.60	2.50	2.68		
95% CI		2.28 to 2.97		2.28 to 2.97	2.13 to 2.94	1.93 to 3.71		
Disability measures (OR)								
Sensory and speech	0.98	1.09	0.89	0.96	1.05	0.9		
Intellectual	1.57	*** 2.31	*** 1.12	1.6	*** 2.36	*** 1.07		
Physical restriction	1.80	*** 2.02	*** 1.90	*** 1.67	*** 1.83	*** 1.84		***
Psychosocial	5.54	*** NA	NA	4.55	*** NA	NA		
Head injury	0.72	* 0.99	0.58	0.75	* 0.97	0.65		*
Other	2.22	*** 2.42	*** 1.69	2	*** 2.15	*** 1.57		**
n=	9655	7936	1719	9655	7936	1719		

\*P<0.05, \*\*P<0.01, \*\*\*P<0.001.  
NA, not applicable.

**Table 3** Logistic regression models of disability discrimination and avoidance, multiple measure, 2015

Model	Multiple exclusion						
			Psychosocial disability				
			Full sample	No	Yes		
7	8	9					
<b>Multiple exclusion</b>							
Discrim	Avoid						
No	No	–		–		–	
No	Yes	2.47	2.16, 2.83	2.38	2.0, 2.83	2.54	1.85, 3.47
Yes	Yes	3.73	2.95, 4.72	3.63	2.75, 4.78	3.62	2.17, 6.04
Yes	No	1.77	1.13, 2.77	1.81	1.12, 2.92	1.48	0.57, 3.83
<b>Disability measures</b>							
Sensory and speech		0.95		1.03		0.88	
Intellectual		1.56	***	2.28	***	1.07	
Physical restriction		0.66	***	1.81	***	1.81	***
Psychosocial		4.49	***	NA		NA	
Head injury		0.75	*	0.97		0.65	*
Other		1.97	***	2.12	***	1.55	**
n=		9655		7936		1719	

Avoid, avoidance; Discrim, discrimination.

\*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001 .

NA, not applicable.

- omitted category

9) show coefficients are very similar, although a weaker effect is observed for discrimination only in model 9.

Separate regression models were also fitted to examine the association between sources of discrimination and types of situations avoided and psychological distress (table 4).

Of importance to this group of persons with disabilities, we note that 75% of persons actively avoiding medical facilities were in psychological distress. With controls included, persons avoiding medical facilities were 2.7 times more likely (OR 2.69, 95% CI 1.87 to 3.89) to be in psychological distress compared with those who did not avoid such services. Again, the ORs for the non-psychosocial (OR 2.90, 95% CI 1.87 to 4.47) and psychosocial disability sample (OR 2.29, 95% CI 1.33 to 3.96) are similar in size and significance.

We also observe that 70% of persons citing discrimination from health staff were in psychological distress, with this group being two times more likely to be in distress than those who did not cite health staff as a source of discrimination (OR 1.97, 95% CI 1.19 to 3.24). Overall the size, direction and significance of ORs between the three samples measuring avoidance are relatively consistent. For discrimination, as it is a rarer event, there is less consistency with patterns of significance in the psychosocial disability sample which is expected given the smaller sample size (n=1719 relative to n=9655 in the full sample).

## DISCUSSION

Protections against disability discrimination are enshrined in legislation in Australia. The Disability Discrimination Act 1992 is in place to ensure 'equal rights, opportunities and access for people with a disability, as well as making disability discrimination unlawful'.<sup>22</sup> Australia has further ratified the United Nations convention on the rights of persons with disabilities.<sup>31</sup> Yet, results from this study show that approximately 9% of those aged 15 and over living with a disability cited an instance of disability discrimination (unfair treatment). Just under one-third reported avoiding a setting specifically due to an underlying disability.

In this study, we have sought to examine one implication of disability discrimination through an analysis of its association with psychological distress. The effects of discrimination more broadly in causing psychological distress are well established.<sup>2-4</sup> Our study, however, is one of the few to examine the psychological effects of discrimination among disabled people particularly at a population level. Specifically, this study highlights the negative association of discrimination with the mental health of people with disabilities. It also demonstrates that when discrimination occurs in the health system, the resultant psychological distress is considerable. The finding builds on previous research in disability showing that discrimination leads to avoidance of healthcare services.<sup>13</sup>

**Table 4** Source of discrimination and situations avoided, (%) reporting, (%) distress and ORs, 2015

	% Report		Ω	Full sample OR (95% CI)	Psychosocial disability	
	%	%			No OR (95% CI)	Yes OR (95% CI)
<b>Source of discrimination</b>						
Employer	2.09	57.85	***	1.72 (1.15 to 2.55)	1.96 (1.25 to 3.07)	1.3 (0.65 to 2.63)
Work colleagues	1.33	62.19	***	2.69 (1.64 to 4.40)	2.84 (1.54 to 5.22)	2.17 (0.73 to 6.41)
Family or friends	1.96	76.02	***	2.90 (1.65 to 5.13)	4.69 (2.41 to 9.12)	1.45 (0.67 to 3.11)
Teacher or lecturer	0.40	68.02	***	1.32 (0.31 to 5.60)	1.92 (0.25 to 14.98)	0.88 (0.19 to 3.94)
Health staff (GP, nurse, hospital staff)	1.53	69.49	***	1.97 (1.19 to 3.24)	2.51 (1.30 to 4.86)	1.4 (0.68 to 2.84)
Bus drivers/rail staff/taxi drivers	0.34	50.85	**	0.88 (0.33 to 2.36)	0.66 (0.16 to 2.65)	1.14 (0.18 to 7.43)
Restaurant/hospitality staff	0.45	53.12	***	0.96 (0.32 to 2.85)	1.14 (0.23 to 5.59)	0.77 (0.17 to 3.42)
Sales assistants	0.94	57.95	***	0.93 (0.43 to 2.0)	0.81 (0.26 to 2.53)	0.98 (0.33 to 2.95)
Strangers in the street	1.81	64.93	***	1.93 (1.09 to 3.42)	1.96 (1.02 to 3.76)	1.83 (0.80 to 4.19)
Other	2.23	66.70	***	2.31 (1.51 to 3.54)	2.44 (1.50 to 3.95)	1.9 (1.01 to 3.61)
Any discrimination	8.59	62.50	***	2.15 (1.74 to 2.66)	2.23 (1.75 to 2.85)	1.81 (1.24 to 2.64)
<b>Situations avoided</b>						
Work	7.76	61.29	***	2.17 (1.70 to 2.76)	2.28 (1.74 to 2.99)	1.87 (1.17 to 2.99)
Visiting family or friends	12.66	65.51	***	2.69 (2.25 to 3.21)	2.85 (2.30 to 3.52)	2.16 (1.48 to 3.14)
School, university or educational facility	2.64	69.51	***	2.38 (1.55 to 3.63)	2.18 (1.34 to 3.54)	2.26 (1.02 to 4.99)
Medical facilities (GP, dentist, hospital)	3.47	75.10	***	2.69 (1.87 to 3.89)	2.90 (1.87 to 4.47)	2.29 (1.33 to 3.96)
Shops, banks etc	10.56	65.01	***	2.56 (2.14 to 3.06)	2.62 (2.10 to 3.27)	2.26 (1.58 to 3.22)
Restaurants, cafes or bars	9.81	61.69	***	2.22 (1.83 to 2.69)	2.31 (1.81 to 2.95)	1.93 (1.37 to 2.74)
Public transport	7.91	64.08	***	2.35 (1.91 to 2.90)	2.39 (1.78 to 3.20)	2.06 (1.37 to 3.09)
Public park or recreation venue	6.12	62.59	***	2.33 (1.81 to 2.99)	2.41 (1.80 to 3.23)	2.11 (1.36 to 3.33)
Other social situations	15.72	59.17	***	2.41 (2.04 to 2.85)	2.36 (1.97 to 2.84)	2.33 (1.65 to 3.28)
Other public places	8.68	64.14	***	2.60 (2.16 to 3.13)	2.67 (2.13 to 3.36)	2.22 (1.52 to 3.23)
Other	3.83	36.96	*	1.20 (0.90 to 1.60)	1.12 (0.80 to 1.57)	1.54 (0.84 to 2.85)
Any avoidance	31.92	53.18	***	2.60 (2.28 to 2.97)	2.50 (2.13 to 2.94)	2.68 (1.93 to 3.71)

% Distress—percentage of persons in each discrimination/avoidance category reporting high or very high on the Kessler K10 scale. OR; 95% CI for the OR; No is the base category for the test of proportions by distress category; % Report—percentage of all persons aged 15 and over with a disability reporting each specific source/situation; Ω significance tests in this column are for tests of proportions.

\*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.

GP, general practitioner.

The link between discrimination in healthcare settings and poor mental health outcomes is similar to findings in racism research.<sup>21</sup> In the short term, the potential health impacts of discrimination in health settings are significant because such experiences are likely to reduce the quality of healthcare and limit access to health services and other resources that protect and promote health.<sup>32–34</sup> Concerns about the negative impacts of racism on health have led to the development of policy, interventions and training to improve cultural safety.<sup>21</sup> There has not been a similar focus on developing approaches to reduce the discrimination experienced by people with disabilities. In the Australian context, the National Disability Insurance Scheme (NDIS) has led to a rapid expansion in workforce

providing assessments, services and supports to people with disabilities. However, there have not been commensurate training initiatives to ensure that service contacts are non-discriminatory.

We further demonstrate that avoidance behaviours, when acting in tandem with discrimination, are strongly associated with poor mental health outcomes. Avoidance has been shown to exacerbate the effects of racism on psychological effects in a number of populations.<sup>35–37</sup> There are several explanations for this effect. Avoidance may prevent people from receiving help and services that they need which in turn leads to greater psychological distress. Another explanation is that avoidance is disempowering and in itself contributes to greater psychological



distress.<sup>37–39</sup> Or alternatively, it may be that the effects of avoidance are most pronounced when frequent discrimination is experienced.<sup>16</sup> These explanations are not mutually exclusive and may explain why avoidance had more pernicious effects than discrimination. Due to the cross-sectional nature of this study, these explanations cannot be disentangled but are an important target for future research. Nonetheless, the observed interface between discrimination and avoidance has important implications for the design of future studies examining the experiences of exclusion of people with disabilities.

### Limitations

In interpreting these results, it is important to recognise the studies limitations. As noted, the data are cross-sectional. We cannot and do not draw causal inferences about the relationship between disability exclusion and psychological distress. Unfortunately, there is a dearth of nationally representative longitudinal data with measures of disability exclusion and psychological well-being in Australia, in which the relevant pathways between each could be explored. Our measures of discrimination and avoidance are subject to recall bias, and again longitudinal data would be required to negate this effect. Moreover, the measures of interpersonal discrimination we use are subject to additional bias as they are self-reported. For example, some respondents may feel uncomfortable disclosing instances of discrimination.

A further limitation is that the measures on disability exclusion and psychological distress were collected from individuals living in households in the Australian community. It was not possible to observe associations for those living in cared accommodation or other non-private dwellings. Further data collections would be necessary to examine the generalisability of these findings presented herein to individuals living in cared accommodation and other institutions (non-private dwellings). Further studies may also wish to examine whether disability exclusion impacts on psychological well-being and health differently in subpopulations, such as those with specific disability types, or for older persons for which disabilities are more common, or younger persons where it is a rarer event.

### CONCLUSIONS

Noting these limitations and extensions, this study highlights the negative impacts of discrimination and avoidance on the mental health of people with disabilities. It also demonstrates that when discrimination or avoidance occurs in the health system, the resultant psychological distress is considerable. Given new policy initiatives to improve disability care through the NDIS, it is critical to ensure that disabled people are not exposed to discrimination or exposed to events that trigger avoidance as part of their health service contact. There is clearly a need for training initiatives to ensure service contacts are non-discriminatory, as has occurred with healthcare workers with Aboriginal and Torres Strait Islander people.

More generally, the associations between disability exclusion and psychological distress we observe place a greater imperative on citizens and government to address discrimination in all its pervasive forms. This is particularly important in the current point in most high-income countries demographic histories. Accompanying increased longevity and population ageing is an increase in the number of people living with multiple health conditions and disabilities.<sup>40</sup> With the speed of population ageing projected to increase considerably from 2020, there is considerable urgency to address disability exclusion, in part, to forgo potential health impacts.

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**Data sharing statement** Data for this study are available to registered users of Australian Bureau of Statistics microdata. For information about eligible organisations, see <http://www.abs.gov.au/websitedbs/D3310114.nsf/home/Microdata+Entry+Page>

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### REFERENCES

1. UN. *What are human rights?*. New York: United Nations, 2017. <http://www.ohchr.org/EN/Issues/Pages/WhatareHumanRights.aspx>.
2. Lewis TT, Cogburn CD, Williams DR. Self-reported experiences of discrimination and health: scientific advances, ongoing controversies, and emerging issues. *Annu Rev Clin Psychol* 2015;11:407–40.
3. Paradies Y. A systematic review of empirical research on self-reported racism and health. *Int J Epidemiol* 2006;35:888–901.
4. Paradies Y, Ben J, Denson N, *et al*. Racism as a Determinant of Health: A Systematic Review and Meta-Analysis. *PLoS One* 2015;10:e0138511.
5. Ferdinand A, Paradies Y, Kelaher M. *Mental Health Impacts of Racial Discrimination in Victorian Aboriginal Communities: The Localities Embracing and Accepting Diversity (LEAD) Experiences of Racism Survey*. Melbourne: The Lowitja Institute, 2012.
6. Kessler RC, Mickelson KD, Williams DR. The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *J Health Soc Behav* 1999;40:208–30.
7. Lyons A, Alba B, Heywood W, *et al*. Experiences of ageism and the mental health of older adults. *Aging Ment Health* 2017:1–9.
8. Han J, Richardson VE. The relationships among perceived discrimination, self-perceptions of aging, and depressive symptoms: a longitudinal examination of age discrimination. *Aging Ment Health* 2015;19:747–55.
9. Vogt Yuan AS, Yuan A. Perceived Age Discrimination and Mental Health. *Social Forces* 2007;86:291–311.
10. Rogers SE, Thrasher AD, Miao Y, *et al*. Discrimination in Healthcare Settings is Associated with Disability in Older Adults: Health and Retirement Study, 2008–2012. *J Gen Intern Med* 2015;30:1413–20.

11. Wamala S, Boström G, Nyqvist K. Perceived discrimination and psychological distress in Sweden. *Br J Psychiatry* 2007;190:75–6.
12. Li L, Moore D. Acceptance of disability and its correlates. *J Soc Psychol* 1998;138:13–25.
13. Moscoso-Porras MG, Alvarado GF. Association between perceived discrimination and healthcare-seeking behavior in people with a disability. *Disabil Health J* 2018;11.
14. Backer C, Chapman M, Mitchell D. Access to Secondary Healthcare for People with Intellectual Disabilities: A Review of the Literature. *J Appl Res Intellect Disabil* 2009;22:514–25.
15. Ali A, Scior K, Ratti V, et al. Discrimination and other barriers to accessing health care: perspectives of patients with mild and moderate intellectual disability and their carers. *PLoS One* 2013;8:8.
16. Wamala S, Merlo J, Boström G, et al. Perceived discrimination, socioeconomic disadvantage and refraining from seeking medical treatment in Sweden. *J Epidemiol Community Health* 2007;61:409–15.
17. Van Houtven CH, Voils CI, Oddone EZ, et al. Perceived discrimination and reported delay of pharmacy prescriptions and medical tests. *J Gen Intern Med* 2005;20:578–83.
18. Temple JB, Williams R. Multiple health conditions and barriers to healthcare among older Australians: prevalence, reasons and types of barriers. *Aust J Prim Health* 2018;24:82–9.
19. Kavanagh AM, Krnjacki L, Aitken Z, et al. Intersections between disability, type of impairment, gender and socio-economic disadvantage in a nationally representative sample of 33,101 working-aged Australians. *Disabil Health J* 2015;8:191–9.
20. Temple JB, Williams R. Financial well-being of older Australians with multiple health conditions. *Australas J Ageing* 2018;March.
21. Kelaher MA, Ferdinand AS, Paradies Y. Experiencing racism in health care: the mental health impacts for Victorian Aboriginal communities. *Med J Aust* 2014;201:44–7.
22. ABS. *Disability ageing and carers, Australia: Summary of findings*. Canberra: Catalogue Number 4430.0, Australian Bureau of Statistics, 2016.
23. Kessler RC, Andrews G, Colpe LJ, et al. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med* 2002;32:959–76.
24. Andrews G, Slade T. Interpreting scores on the Kessler Psychological Distress Scale (K10). *Aust N Z J Public Health* 2001;25:494–7.
25. ABS. *Use of the Kessler psychological distress scale in ABS Health Surveys, Australia. Catalogue number 4817.0.55.001*. Canberra: Australian Bureau of Statistics, 2012.
26. World Health Organisation. *International classification of functioning, disability and health (ICF)*: World Health Organisation, 2001. <http://www.who.int/classifications/icf/en/>. (accessed 15 Mar 2018).
27. Belsley D, Kuh E, Welsch R. *Regression diagnostics: Identifying influential data and sources of collinearity*. New York: John Wiley & Sons, Inc, 1980.
28. Hosmer DW, Hosmer T, Le Cessie S, et al. A comparison of goodness-of-fit tests for the logistic regression model. *Stat Med* 1997;16:965–80.
29. Winter N. SVR: Stata module to compute estimates with survey replication based standard errors. 2008 <https://ideas.repec.org/c/boc/bocode/s427502.html> (accessed Mar 2017).
30. Wolfar K. *Introduction to Variance Estimation*. New York: Springer-Verlag, 1985.
31. UN. Convention of the rights of persons with disabilities. 2016 <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html> (accessed 15 Mar 2018).
32. van Ryn M, Burgess DJ, Dovidio JF, et al. THE IMPACT OF RACISM ON CLINICIAN COGNITION, BEHAVIOR, AND CLINICAL DECISION MAKING. *Du Bois Rev* 2011;8:199–218.
33. Shavers VL, Fagan P, Jones D, et al. The state of research on racial/ethnic discrimination in the receipt of health care. *Am J Public Health* 2012;102:953–66.
34. Harris R, Cormack D, Tobias M, et al. Self-reported experience of racial discrimination and health care use in New Zealand: results from the 2006/07 New Zealand Health Survey. *Am J Public Health* 2012;102:1012–9.
35. Villegas-Gold R, Yoo HC. Coping with discrimination among Mexican American college students. *J Couns Psychol* 2014;61:404–13.
36. Vines AI, Baird DD, McNeilly M, et al. Social correlates of the chronic stress of perceived racism among Black women. *Ethn Dis* 2006;16:101–7.
37. Fernando S. Racism as a cause of depression. *Int J Soc Psychiatry* 1984;30:41–9.
38. Kaholokula JK, Antonio MC, Ing CK, et al. The effects of perceived racism on psychological distress mediated by venting and disengagement coping in Native Hawaiians. *BMC Psychol* 2017;5:2.
39. Thomas SA, González-Prendes AA. Powerlessness, anger, and stress in African American women: implications for physical and emotional health. *Health Care Women Int* 2009;30:93–113.
40. AIHW. *Chronic disease comorbidity*. Australian Institute of Health and Welfare: Canberra, 2014.