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Psychological, social and financial impact of COVID-19 on culturally and linguistically diverse communities: a cross-sectional Australian study

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Psychological, social and financial impact of COVID-19 on culturally and linguistically diverse communities: a cross-sectional Australian study

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Psychological, social and financial impact of COVID-19 on culturally and linguistically diverse communities: a cross-sectional Australian study

ABSTRACT

Objective: This study aimed to explore the psychological, social, and financial impacts of COVID-19 on culturally and linguistically diverse communities in Australia.

Design: Cross-sectional survey informed by the Framework for Culturally Competent Health Research conducted between March and July, 2021.

Setting: Participants were recruited from Greater Western Sydney, New South Wales, Australia.

Participants: 708 community members who speak a language other than English at home participated (mean age: 45.4years [range 18–91]; 88% [n=622] born outside of Australia).

Outcome measures: Fifteen items regarding impacts of COVID-19, adapted from validated scales, previous surveys or co-designed in partnership with Multicultural Health and interpreter service staff. Logistic regression models (using post-stratification weighted frequencies) identified factors associated with psychological, social, and financial impacts. Surveys were available in English or translated (11 languages).

Results: Even prior to the COVID-19 outbreak in Sydney, 25% of the sample reported feeling nervous or stressed most/all of the time and 22% felt lonely or alone most/all of the time.

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3 One quarter of participants reported negative impacts on their spousal relationships as a
4 result of COVID-19 and most parents reported that their children were less active (64%), had
5 more screen time (63%), and were finding school harder (45%). Mean financial burden was
6 2.9/5 (95%CI=2.8 to 2.9). Regression analyses consistently showed distinct impact patterns
7 for different language groups and more negative outcomes for those with comorbidities.
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18 **Conclusion:** Culturally and linguistically diverse communities experience significant
19 psychological, social and financial impacts of COVID-19, with distinct impact patterns across
20 language groups. A whole-of-government approach with policy and sustainable
21 infrastructure is needed to co-design innovative, tailored and culturally-safe COVID-19
22 support packages.
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Psychological, social and financial impact of COVID-19 on culturally and linguistically diverse communities: a cross-sectional Australian study

ARTICLE SUMMARY

Strengths and limitations of this study

- This is the largest Australian survey exploring the impacts of COVID-19 among people who primarily speak a language other than English, enabled through recruitment methods that are inclusive and reduce barriers to participation (e.g. translated surveys, engagement of interpreters and multicultural health staff who are trusted in their communities, and use of multiple recruitment methods including through community events and networks).
- This study was co-designed by researchers and multicultural health service staff, in alignment with the Framework of Culturally Competent Health Research.
- To reduce survey length and burden on participants we purposefully selected a small number of items from validated measures or our previous research to explore psychological, social and financial impacts, or co-designed them specifically for this study.
- We used convenience sampling methods and self-report may have introduced recall and social desirability bias.
- We are unable to explore changes in impacts of COVID-19 over time.

INTRODUCTION

The COVID-19 pandemic has not impacted all populations equally. Ethnic minority groups in countries across the globe have been disproportionately affected, with higher rates of infection, greater risk of morbidity, higher critical care admissions and mortality, and poorer mental health and financial outcomes (1-6). Such differences reflect pre-existing health disparities and underlying social, economic and political inequalities; ethnic minority groups experience a higher prevalence of comorbidities associated with poor COVID-19 outcomes (e.g. cardiovascular conditions), greater social deprivation and differences in occupational and environmental risk (7-9). The additional burden of structural racism also impacts care seeking and quality of care (7).

While the data tells a clear story of cultural disadvantage in the United States, Canada, the United Kingdom and several Nordic countries, there remains limited evidence of the impact of COVID-19 on culturally and linguistically diverse groups in Australia despite being one of the most culturally diverse nations worldwide. Nationally representative surveys exploring the financial, social and psychological impacts of the pandemic (see, for example, (10)) have not investigated culturally and linguistically diverse populations, and there remains a lack of disaggregated data related to COVID-19. A similar trend is observed worldwide (11).

Research to date (both in Australia and internationally) has also been limited in its engagement and co-production with diverse communities. This has been exacerbated by online recruitment methods (e.g. via social media networks or market research companies) and English-language data collection, which tends to exclude those who speak a language other than English as their primary language.

The few studies which have been conducted have highlighted important impacts of the pandemic for our diverse communities (12, 13). In a study of 656 refugees and asylum seekers from Arabic, Farsi, Tamil or English-speaking backgrounds who had arrived in Australia within the last 10 years, approximately one in five participants reported experiencing employment loss or decline due to COVID-19, with prevalent stressors related to COVID-19 infection including worries about being infected (66.5%), of a loved one being

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3 infected (72.1%) or infecting others (47.7%) (14). Social stressors as a consequence of the
4 pandemic were also common, including school closures (46.7%), reduced social activities
5 (46.6%), and having to remain at home (41.3%), and these stressors predicted increased
6 depression symptoms and disability outcomes (14). However, the experiences of refugees
7 and asylum seekers are unique and may not reflect the experience of migrants or those who
8 speak a language other than English at home who have not been forced to flee their home
9 country. Both perspectives are critically important and necessary to provide a complete
10 picture of impacts of COVID-19 on culturally and linguistically diverse groups in Australia.
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20 Our own Australian surveys (and others – see, (12, 13)) have shown some differences in
21 financial and psychological impacts of COVID-19 those for who spoke a language other than
22 English at home compared to those for whom English is their primary language. A survey of
23 4362 Australians conducted in April 2020, for example, showed that participants who spoke
24 a language other than English at home rated the financial impact of COVID-19 as higher,
25 were more likely to feel nervous or stressed as a result of the pandemic compared with
26 those who primarily spoke English at home (15) and had greater anxiety. However, 75% of
27 participants in this survey were born in Australia and only 274 (6%) reported that they did
28 not speak English as their main language at home. As such, our previous findings are limited
29 in their ability to inform appropriate and tailored support for Australian communities that
30 are typically understudied and underserved, such as those from different cultural and
31 language groups.
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44 The aims of this study were to:

- 45 1. Explore the psychological, social, and financial impact of the COVID-19 pandemic on
46 culturally and linguistically diverse communities in Greater Western Sydney in New
47 South Wales (NSW), Australia.
- 48 2. Examine demographic factors associated with these impacts.
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55 METHODS

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Study design

This study involved a cross-sectional survey with 11 language groups, approved by Western Sydney Local Health District Human Research Ethics Committee (Project number 2020/ETH03085)

Patient and public involvement

This study was co-designed by researchers, bilingual community members and Multicultural Health and Health Care Interpreter Service staff, and informed by the Framework for Culturally Competent Health Research (16).

Setting

The survey was conducted from 21 March to 9 July, 2021. During this period, rollout of the COVID-19 vaccines had begun across Australia, and daily cases in New South Wales (NSW) were very low by international standards, ranging from 0 – 46 positive cases from a population of approximately 8 million people (17). A ‘stay at home’ order across Greater Sydney due to rising cases began on June 23rd (18). On the day the survey closed the NSW daily case count was 45, and 24% of the population had received one COVID-19 vaccination (19).

Participants were recruited from Greater Western Sydney in New South Wales, Australia from three adjoining regions with high cultural diversity: Western Sydney, South Western Sydney, and Nepean Blue Mountains. Up to 39% of residents in these regions were born overseas in non-English speaking countries (20).

Participants

Participants were eligible to take part if they were aged 18 years or over and spoke one of the following as their main language at home: Arabic, Assyrian, Chinese, Croatian, Dari, Dinka, Hindi, Khmer, Samoan, Tongan, Spanish. Through iterative discussions with

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3 Multicultural Health and Health Care Interpreter Service staff in each participating Local
4 Health District, we selected eleven language groups that would provide broad coverage
5 across different global regions, and groups with varying average levels of English language
6 proficiency (based on 2016 Australian census data; (21)), varying access to translated
7 materials, and varying degrees of reading skill in their main language spoken at home.
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13 14 Recruitment

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16 Participants were recruited through bilingual Multicultural Health staff and Health Care
17 Interpreter Service staff. Multicultural Health staff recruited participants through their
18 existing networks, community events and community champions. Health Care Interpreter
19 Service staff recruited participants at the end of a medical appointment and via their
20 community network. The survey was hosted online using the web-based survey platform
21 Qualtrics. Potential participants were offered two means of taking part: completing the
22 survey themselves online (available in English or translated), or with assistance from
23 bilingual staff or an interpreter. To ensure consistency in the phrases used for assisted
24 survey completion, translated versions of the survey were provided to all staff assisting with
25 survey completion. Translations were completed by translators with National Accreditation
26 Authority for Translators and Interpreters (NAATI) accreditation where possible.
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40 Measures

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42 Demographic survey items relevant to this study included age, gender, education, whether
43 born in Australia, years living in Australia, main language spoken at home, self-reported
44 English language proficiency, chronic disease status, and a single-item health literacy
45 screener (22). The socioeconomic status of the area of residence for each individual was
46 defined based on the SEIFA Index of Relative Socioeconomic Advantage and Disadvantage
47 (IRSAD (23)). IRSAD aligns the statistical local area with a decile ranking (1–10),
48 with lower scores indicating greater socioeconomic disadvantage. The IRSAD decile was not
49 available for some participants (n=5), for example, because they had entered digits that did
50 not correspond to a valid Australian postcode. IRSAD decile for these participants was
51 replaced with the median IRSAD decile for speakers of the same language in the sample. For
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3 the analysis, IRSAD deciles were recoded into quintiles, and dichotomised (lowest quintile vs
4 other).
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8 Fifteen items regarding the impacts of COVID-19 were developed for this survey study. See
9 Table 1. Items related to the psychological and financial impacts were adapted from
10 validated scales (24) and/or our previous work (15). Questions regarding social impacts
11 (including impacts on relationships and children) were co-designed in partnership with
12 Multicultural Health and Health Care Interpreter Service staff. Items had fixed yes/no and
13 Likert-type responses. Items were translated into 11 languages.
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Table 1. Survey items, including response options

Item	Response options
Psychological impacts	
Over the past week, how often have you felt	Never / Some of the time / Most of the time / All of the time
- nervous or "stressed" because of COVID-19?	
- alone or lonely because of COVID-19?	
Social impacts	
Do you have a partner (e.g. wife, husband, or someone you are in a romantic or sexual relationship with)?	Yes / No
COVID-19 has changed my relationship with my partner	Very negative effects / Some negative effects / No effects / Some positive effects / Very positive effects
Do you have any children aged less than 18 years?	Yes / No
Since the pandemic started...	Strongly agree / Somewhat agree / Neither agree nor disagree / Somewhat disagree / Strongly disagree
- I or another family member spends more time looking after my child/children	
- My child/children are less physically active	
- My child/children are finding school harder	
- My child/children have more screen time	
- My child/children spend less time with their friends	
Financial impacts	
Has your employment status (work) changed because of COVID-19?	Yes / No
How did your employment status (work) change because of COVID-19?	Have a new job / Lost job / Stood down (not working for pay, but not fired) / Pay cut / Reduction in hours / Not working but still being paid / Other
I worry about the financial problems I will have in the future as a result of the COVID-19 pandemic	Not at all / A little bit / Somewhat / Quite a bit / Very much
I am able to meet my weekly expenses	Not at all / A little bit / Somewhat / Quite a bit / Very much

Analysis

Quantitative data were analysed using IBM SPSS Statistics Version 24. Descriptive statistics were generated for demographic characteristics of the analysed sample. Frequencies were weighted (using post-stratification weighting) to reflect each language group's gender and age group distribution (18-29 years, 30-49 years, 50-69 years, ≥70 years) based on 2016 census data for Western Sydney, South Western Sydney, and Nepean Blue Mountains' combined populations (21). All frequencies presented in the results section are weighted. A single participant indicated their gender as 'other' and was unable to be included in weighted analyses. Total recruitment for the Spanish language group was low (<50), with

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3 notable gaps for some age groups. For this reason, results for this language group are not
4 presented in the statistical analyses, but are included in total frequencies.
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9 Survey items about psychological, financial and relationship impacts were re-coded to
10 reflect the categories presented in Tables 3 and 4, to facilitate a more meaningful
11 interpretation of the results. A mean 'perceived financial burden' score was also calculated
12 by averaging the two questions about financial impacts: a) worry about financial problems
13 and b) ability to meet weekly expenses. Higher scores indicate greater perceived financial
14 burden. Similarly, a mean score for the impact on children was calculated by averaging
15 questions related to four impacts: physical activity, screen time, schooling and time with
16 friends. Higher scores indicate more negative impacts on children.
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25 Multivariable linear regression models were used to analyse perceived financial burden
26 (averaged across two impacts) and impacts on children (averaged across four impacts).
27 Binomial logistic regression models were used to analyse psychological impacts (feeling
28 lonely or alone; feeling nervous or stressed) and impact on relationships. Age group, gender,
29 chronic illness, education, health literacy, English-language proficiency, years lived in
30 Australia, language group and IRSAD quintile were included in each model. Regression
31 models predicting impacts on relationships also controlled for perceived public health threat
32 of COVID-19, perceived financial burden and psychological variables; models predicting
33 psychological impacts controlled for perceived public health threat of COVID-19 and
34 perceived financial burden. All regression models also controlled for whether participants
35 completed the survey before or after 23rd June, when restrictions were announced for all of
36 Greater Sydney (18).
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48 RESULTS

49 Sample characteristics

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52 We had a total of 708 respondents (442 [62.4%] self-completed, 266 [37.6%] received
53 assistance through an interpreter). Sample characteristics are summarised in Table 2. The
54 mean age was 45.4 years (standard error [SE] 0.78; range 18–91 years), and 51% of
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3 respondents were female (n=363). Most participants (88%, n=622) were born in a country
4 other than Australia; 31% reported that they did not speak English well or at all (n=220);
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6 70% had no tertiary qualifications (n=497). Inadequate health literacy was identified for 59%
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8 of the sample (n=290).
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Table 2. Descriptive statistics of analysed sample (N=708).

Variable	N	%
Age group		
18-29	147	20.7
30-49	295	41.8
50-69	193	27.3
>70	72	10.2
Gender*		
Male	344	48.6
Female	363	51.4
Language		
Assyrian	133	18.8
Croatian	121	6.2
Arabic	80	11.3
Chinese	76	10.7
Dinka	63	8.9
Khmer	63	8.9
Dari	44	6.2
Spanish**	43	6.1
Hindi	42	5.9
Samoan/Tongan	42	5.9
English language proficiency (How well do you speak English?)		
Very well/ well	487	68.9
Not well/not at all	220	31.1
Literacy in a language other than English (How well do you read in your main language?)		
Very well/ well	589	83.4
Not well/not at all	118	16.6
Health literacy***		
Adequate	417	58.9
Inadequate	290	41.1
Highest level of education		
Less than year 12(less than high school)	115	16.2
Year 12 (high school graduate)	133	18.9
Certificate level I to IV / Advanced diploma and diploma level	249	35.3
Bachelor degree level and above	210	29.7
Years living in Australia		
5 years or less	120	16.9
6 to 10 years	104	14.7
More than 10 years	398	56.4
Born in Australia	85	12.0
IRSAD quintile		
1 (Lowest)	224	31.7
2	140	19.8
3	125	17.7
4	140	19.8
5 (Highest)	87	12.3
Total	707	

NB: Frequencies are weighted (using post-stratification weighting) to reflect each language group's gender and age group distribution (18-29 years, 30-49 years, 50-69 years, ≥70 years) based on 2016 census data for Western Sydney, South Western Sydney, and Nepean Blue Mountains' combined populations (21).

* 1 respondent indicated 'other/prefer not to say'

** Spanish language group had substantial gaps in recruitment across age groups;

*** Based on the Single Item Literacy Screener (SILS) (22).

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Psychological impacts

Overall, 25.3% of participants reported feeling nervous or stressed most or all of the time over the past week. The oldest age group (70 years or more) had the highest proportion of participants reporting feeling nervous or stressed most or all of the time (35.0%, n=25) while the youngest age group (30 years or below) had the lowest proportion (20.9%, n=31). A higher proportion of females reported increased nervousness or stress (29.0%; n=105) compared to males (21.3%; n=73). 30.7% (n=89) of participants with inadequate health literacy and 21.4% (n=89) of participants with adequate health literacy reported feeling nervous or stressed most or all of the time. In terms of language groups, this ranged from 6% (n=5) for Chinese speakers to 38% (n=24) for Dinka speakers. See Tables 3 and 4. In the multivariable regression model when sociodemographic factors were controlled for, female gender ($p=0.04$), having two or more chronic illnesses ($p<0.001$) and language group ($p<0.001$) remained significantly associated with increased nervousness or stress, as did higher perceived financial burden ($p<0.001$). See Supplementary Table 1.

Overall, 22.3% of participants reported feeling alone or lonely most or all of the time. The oldest age group (70 years or more) had the highest proportion of participants reporting feeling lonely or alone (45.5%, n=33) while those aged 30-49 years had the lowest proportion (17.6%; n=52). Similar proportions of males and females felt alone or lonely most or all of the time (21.8% and 22.8% respectively). 27.8% (n=81) of participants with inadequate health literacy reported feeling alone or lonely most or all of the time; this proportion was 18.5% for participants with adequate health literacy (n=77). In regards to language groups, the range was from 5.6% (n=2) for Hindi speakers to 51.2% (n=32) for Khmer speakers. See Tables 3 and 4. In the multivariable regression model, having two or more chronic illnesses ($p<0.001$) and university education ($p<0.001$) remained as significant correlates of feeling lonely or alone, with statistically significant differences also observed between language groups ($p<0.001$).

Social impacts

Of the 399 participants who responded to the question regarding impacts of COVID-19 on their relationship with their partner, one quarter (25.5%) reported negative effects; 62.9% said that the pandemic had no effect and 11.7% said that it had had positive effects. We observed significant differences in reporting of negative impacts on relationships across language groups ($p<0.001$) and across age groups such that those aged <30 years had a significantly higher proportion of people reporting negative impacts compared to each other age group (30-49: $p<0.001$; 50-69: $p<0.001$; 70 and above: $p=0.02$). Those in the most disadvantaged IRSAD quintile reported more negative impacts compared to those in higher quintiles ($p<0.01$). We also observed significant differences in reporting of negative impacts on relationships based on financial burden ($p<0.001$) and psychological variables (alone/lonely - $p<0.001$; nervous/stressed - $p<0.001$).

Of the two hundred and sixty-two participants who reported having children aged less than 18 years, 72.8% reported spending more time looking after their children as a result of the pandemic ($n=191$). The majority agreed (somewhat or strongly) that COVID-19 has meant that their children spent less time with friends (68.5%), are less physically active (64.2%), and have more screen time (63.3%). Across the entire sample, 44.9% agreed that their children were finding school harder. Mean perceived negative impact on children was rated 3.5 (out of 5; 95% CI= 3.3 to 3.7). Reporting of negative impacts on children was significantly associated with the most disadvantaged IRSAD quintile ($p=0.02$) and with chronic illness, with participants with one ($p=0.01$) or two or more ($p<0.001$) chronic illnesses significantly more likely to report negative impacts compared to those without chronic illness. Reporting of negative impacts on children also varied significantly across language groups ($p<0.001$). See Supplementary Table 2.

Financial impacts

Overall, 38.6% of participants reported that their employment status has changed because of COVID-19. This was most commonly a reduction in hours of employment. See Figure 1. In total, 63.3% of participants reported somewhat or more worry about financial problems as a

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3 result of the COVID-19 pandemic, and 53.7% reported that they were having difficulty
4 meeting their financial expenses.
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8 --- Figure 1 here ---
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10 Mean perceived financial burden was 2.9 on a five-point scale (95% Confidence Interval
11 [CI]=2.8 to 2.9). Perceived financial burden was similar across genders, health literacy
12 categories and age groups with the exception of the oldest age group (70+ years) which had
13 a lower mean financial burden score of 2.4 (95% CI= 2.3 to 2.6). In the multivariable
14 regression model, mean perceived financial burden was significantly lower for the oldest
15 age group compared to the youngest after controlling for other sociodemographic factors
16 (p<0.001).
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25 As well as differences by age, we also observed significant differences in mean perceived
26 financial burden across language groups (p<0.001) (Supplementary Table 3). People with
27 one chronic illness (p=0.01) or two or more (p<0.001) reported significantly more financial
28 burden compared to those without chronic illness.
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Table 3. Psychological, social and financial impacts by gender, age group, health literacy, IRSAD quintile and number of comorbidities (n=707)*

	Gender		Age group				Health literacy		IRSAD quintile		Comorbidities**		
	Male	Female	<30	30-49	50-69	70+**	Inadequate	Adequate	Lowest	Not lowest	0	1	2+
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Psychological impacts													
Nervous or stressed	73 (21.3)	105 (29.0)	31 (20.9)	65 (22.0)	58 (29.9)	25 (35.0)	89 (30.7)	89 (21.4)	61 (27.2)	118 (24.4)	85 (20.1)	46 (29.5)	48 (36.6)
Alone or lonely	75 (21.8)	83 (22.8)	30 (20.2)	52 (17.6)	44 (22.6)	33 (45.5)	81 (27.8)	77 (18.5)	44 (19.7)	114 (23.5)	73 (17.4)	37 (23.7)	48 (36.5)
Social impacts***													
Negative impact on relationship	49 (23.7)	53 (27.3)	23 (47.7)	39 (19.7)	32 (27.2)	8 (21.6)	49 (27.8)	53 (23.6)	14 (12.8)	88 (30.3)	54 (23.9)	23 (25.8)	24 (29.5)
More time looking after children	99 (77.2)	92 (68.6)	8 (64.8)	148 (74.1)	34 (70.2)	-	76 (75.7)	114 (71.0)	61 (72.8)	130 (72.8)	128 (69.9)	41 (84.9)	22 (71.4)
More screen time	85 (66.4)	81 (60.2)	6 (46.1)	131 (65.5)	28 (59.0)	-	65 (64.4)	101 (62.5)	51 (60.9)	115 (64.4)	109 (59.6)	37 (78.4)	19 (61.8)
Less physically active	92 (71.6)	76 (57.0)	5 (39.7)	139 (69.5)	23.5 (48.9)	-	60 (59.3)	108 (67.2)	50 (60.0)	118 (66.1)	118 (64.3)	30 (63.2)	20 (64.8)
Less time with friends	91 (71.1)	89 (66.2)	6 (51.0)	148 (73.7)	25 (52.4)	-	72 (71.6)	107 (66.7)	57 (68.0)	123 (68.8)	118 (64.3)	39 (82.6)	22 (72.3)
Finding school harder	61 (47.7)	56 (42.2)	4 (32.0)	91 (45.5)	22 (46.7)	-	45 (44.7)	72 (45.0)	36 (43.3)	81 (45.6)	79 (43.2)	28 (59.3)	10 (32.7)
Financial impacts													
Employment status changed	139 (40.5)	134 (36.8)	76 (51.8)	134 (45.5)	58 (30.0)	5 (6.3)	101 (35.7)	172 (41.3)	70 (31.4)	202 (41.9)	182 (43.1)	62 (39.9)	30 (22.6)
Worried about financial problems	128 (37.1)	161 (44.2)	65 (44.1)	135 (45.9)	76 (39.5)	12 (16.6)	104 (35.8)	184 (44.3)	288 (40.8)	201 (41.6)	166 (39.5)	73 (47.0)	49 (37.4)
Unable to meet weekly expenses	80 (23.2)	75 (20.8)	32 (21.9)	64 (21.8)	47 (24.6)	11 (15.7)	64 (21.9)	91 (22.0)	49 (21.7)	107 (22.1)	93 (22.0)	30 (19.4)	33 (24.8)
	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)
Mean negative impact on children#	3.6 (3.2, 4.0)	3.5 (3.3, 3.7)	2.9 (2.1, 3.8)	3.7 (3.5, 3.8)	3.2 (2.5, 3.9)	-	3.5 (3.1, 3.9)	3.6 (3.3, 3.8)	3.4 (3.0, 3.9)	3.6 (3.4, 3.8)	3.5 (3.2, 3.7)	3.8 (3.6, 4.0)	3.4 (2.7, 4.1)
Mean financial burden†	2.8 (2.7, 3.0)	2.9 (2.8, 3.0)	2.8 (2.6, 3.1)	2.9 (2.8, 3.0)	2.9 (2.8, 3.1)	2.4 (2.3, 2.6)	2.8 (2.7, 3.0)	2.9 (2.8, 3.0)	2.8 (2.7, 3.0)	2.9 (2.8, 3.0)	2.8 (2.7, 2.9)	3.0 (2.8, 3.2)	2.9 (2.7, 3.0)

*1 respondent indicated 'other/prefer not to say' and is not included in weighted analyses presented in this table

**Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

***Total number of participants that responded to the question regarding the impacts of COVID-19 on their relationship with their partner = 399; Total number of participants reporting having children = 262. Impacts on children are not reported for age group 70+ due to small numbers

†Composite score comprising impact on screen time, physical activity, time with friends and schooling. Scale range: 1-5. Higher scores indicate more negative impact.

‡Scale range: 1-5. Higher scores indicate greater perceived financial burden.

Table 4. Psychological, social and financial impacts, by language group (n=707)*

	Arabic	Assyrian	Chinese	Croatian	Dari	Dinka	Hindi	Khmer	Samoan / Tongan	Spanish	All
Variable	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Psychological impacts											
Nervous or stressed	14 (17.9)	22 (16.9)	5 (6.0)	40 (33.4)	14 (31.9)	24 (38.0)	6 (13.4)	36 (57.1)	12 (29.0)	5 (11.9)	179 (25.3)
Alone or lonely	19 (23.5)	13 (9.5)	5 (6.1)	50 (41.1)	8 (17.8)	15 (24.4)	2 (5.6)	32 (51.2)	8 (19.1)	6 (14.2)	158 (22.3)
Social impacts**											
Negative impact on relationship	3 (6.7)	2 (2.7)	8 (20.1)	40 (38.2)	10 (32.9)	6 (18.9)	5 (14.7)	8 (45.3)	0 (0.0)	5 (31.4)	102 (25.5)
More time looking after children	12 (69.8)	40 (80.4)	25 (87.0)	33 (93.8)	17 (83.7)	25 (66.3)	7 (36.7)	16 (90.2)	13 (72.6)	4 (20.9)	191 (72.8)
More screen time	13 (73.6)	30 (60.6)	23 (81.0)	34 (97.3)	8 (39.2)	24 (64.7)	9 (49.4)	10 (56.3)	14 (81.0)	1 (3.5)	166 (63.3)
Less physically active	15 (87.2)	22 (44.8)	25 (88.9)	32 (91.4)	6 (28.4)	24 (63.3)	11 (60.9)	15 (85.3)	13 (76.2)	5 (23.1)	168 (64.2)
Less time with friends	8 (49.4)	28 (55.5)	25 (87.0)	34 (97.3)	14 (66.9)	27 (72.9)	8 (44.9)	17 (100.0)	14 (79.8)	4 (20.9)	180 (68.6)
Finding school harder	12 (72.5)	21 (42.5)	9 (32.3)	22 (63.4)	3 (13.4)	18 (49.5)	4 (21.8)	17 (77.5)	14 (79.8)	-	118 (44.9)
Financial impacts											
Employment status changed	29 (36.1)	24 (18.2)	30 (39.8)	51 (41.9)	25 (56.7)	25 (40.3)	20 (48.0)	38 (59.7)	18 (42.8)	13 (29.7)	272.8 (38.6)
Worried about financial problems	19 (23.7)	39 (29.0)	14 (18.4)	57 (46.8)	26 (59.5)	39 (62.3)	17 (40.4)	45 (71.3)	23 (56.3)	9 (21.4)	288 (40.8)
Unable to meet weekly expenses	12 (14.8)	39 (28.4)	21 (27.3)	5 (3.9)	8 (18.7)	15 (24.5)	3 (7.4)	30 (47.7)	15 (36.9)	6 (14.9)	155 (21.9)
	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)	M (95% CI)
Mean negative impact on children***	3.6 (3.2, 4.0)	3.4 (3.1, 3.6)	4.1 (3.8, 4.3)	4.3 (4.1, 4.5)	2.9 (2.3, 3.4)	3.7 (3.3, 4.1)	3.1 (2.6, 3.5)	4.1 (3.9, 4.3)	4.1 (3.7, 4.5)	1.8 (0.7, 2.9)	3.5 (3.3, 3.7)
Mean financial burden†	2.7 (2.5, 3.0)	2.7 (2.6, 2.9)	2.6 (2.3, 2.9)	2.7 (2.6, 2.9)	3.4 (3.2, 3.6)	3.1 (2.8, 3.3)	2.8 (2.6, 3.0)	3.6 (3.4, 3.8)	3.0 (2.6, 3.5)	2.1 (1.7, 2.6)	2.9 (2.8, 2.9)

*1 respondent indicated 'other/prefer not to say' and is not included in weighted analyses presented in this table

**Total number of participants that responded to the question regarding the impacts of COVID-19 on their relationship with their partner = 399; Total number of participants reporting having children = 262.

***Composite score comprising impact on screen time, physical activity, time with friends and schooling. Scale range: 1-5. Higher scores indicate more negative impact

†Scale range: 1-5. Higher scores indicate greater perceived financial burden.

DISCUSSION

This is the largest Australian survey exploring the impacts of COVID-19 among people who primarily speak a language other than English. Even prior to the July 2021 COVID-19 outbreak in New South Wales, which has disproportionately impacted the communities and geographical areas included in this study, we observed broad negative psychological, social and financial impacts of the pandemic. Over one quarter of the sample reported feeling nervous or stressed most or all of the time, and twenty-two percent felt lonely or alone most or all of the time. Over half worried about financial problems and reported being somewhat or less able to meet their weekly expenses. One quarter of participants reported negative impacts on their spousal relationship and the majority of participants with children under 18 years reported that even out of lockdown their children spent less time with friends as a result of the pandemic (68.5%), were less physically active (64.2%) and had more screen time (63.3%). Regression analyses consistently showed distinct patterns of COVID-19 impacts for different language groups and more negative outcomes for those living with chronic illness and comorbidities.

The impacts of COVID-19 have been explored across a number of countries with different population groups. Direct comparisons are difficult on account of varying survey items, different data collection timepoints, and wide-ranging case numbers, morbidity and mortality from COVID-19 worldwide. However, psychological impacts found in this study are comparable to our national survey conducted in April 2020, at the outset of the pandemic when stay at home orders had been in place for 3 weeks. In this earlier study, we found that 26% of participants reported feeling nervous or stressed most or all of the time, and 27%

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3 percent felt lonely or alone most or all of the time (15). Nationally-representative data from
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5 the Australian Bureau of Statistics similarly showed that in June 2021, one in five (20%)
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7 Australians experienced high or very high levels of psychological distress in the last four
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9 weeks, and 28% of people 18 years and over reported feeling nervous in that survey (10).
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12 Previous work has also confirmed negative impacts of COVID on children's social
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14 connectedness and amount of screen time (25, 26). This is the first time to demonstrate
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16 these impacts among a large sample of people who speak a language other than English at
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18 home.
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24 Implications

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27 A multi-level, whole-of-government approach to address the impacts of COVID-19 for
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29 culturally and linguistically-diverse communities. This must necessarily involve a host of
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31 coherent multisectoral actions. Policy and sustainable infrastructure is needed to ensure the
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33 readiness of the system to map and meet evolving needs of a multicultural society and
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35 support meaningful engagement of communities to co-design innovative, tailored and
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37 culturally-safe support packages (27). Qualitative studies have highlighted a large number of
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39 community-driven initiatives and actions that have emerged as a response to COVID-19, as
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41 well as embodied and communal ways of coping (28). Using a strengths-based perspective,
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43 we must acknowledge the multiple capacities and resources of our culturally and
44
45 linguistically diverse communities and provide properly-resourced opportunities to work
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47 directly with them to address unique challenges that they face. Timely, understandable and
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49 culturally-appropriate information about financial, social and mental health resources and
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51 services must be prioritised in line with Lancet Migration's call for responsible, transparent
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53 and migrant-inclusive public information strategies (29).
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Strengths and limitations

This study was co-designed by researchers and multicultural health service staff, and enabled through recruitment methods that are inclusive and reduce barriers to participation, such as translated versions of the survey, engagement of interpreters and multicultural health staff who are trusted in their communities, and use of multiple recruitment methods (including through community events and networks). This approach wholly aligns with the Framework of Culturally Competent Health Research (16). However, practical constraints limited the number of languages we could include, and restricted data collection to three regions in Greater Sydney only. We also used convenience sampling methods.

To reduce survey length and burden on participants we purposefully selected a small number of items from validated measures or our previous research to explore psychological, social and financial impacts, or co-designed them specifically for this study. Self-report may have introduced recall and social desirability bias.

Finally, the results of this study reflect a particular point in time when there were very low numbers of community-acquired cases of COVID-19 in Australia, and for the most part, no government-imposed restrictions on movement and activities in New South Wales. It is likely that psychological wellbeing outcomes and financial and social stress have worsened since the July 2021 outbreak and the imposition of stay-at-home orders, in line with previous research (25, 30). We are unable to explore changes in impacts over time in this study.

Conclusion

Culturally and linguistically diverse communities experience significant impacts of COVID-19, with distinct patterns of impacts for different language groups. We must work with communities to address unique challenges they face and tailor interventions and supports accordingly. As COVID-19 continues to disproportionately impact the most culturally and linguistically diverse communities in Sydney and worldwide, responses must too reflect the diversity of our communities through co-production and tailored support packages.

FIGURE LEGENDS

Figure 1. Change in employment

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COMPETING INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

AUTHORS' CONTRIBUTIONS

Muscat DM - Formal analysis, Investigation; Data Curation; Writing - Original Draft; **Ayre J** - Conceptualization, Methodology, Formal analysis, Investigation; Data Curation; Writing - Review & Editing; Project administration; **Mac O** - Formal analysis, Investigation; Data Curation; Writing - Review & Editing; Project administration; **Batcup C** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; Project administration; **Cvejic E** - Formal analysis, Writing - Review & Editing; **Pickles K**; Conceptualization, Methodology, Writing - Review & Editing; **Dolan H** - Conceptualization, Methodology, Writing - Review & Editing; **Bonner C** - Conceptualization, Methodology, Writing - Review & Editing; **Mouwad D** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Zachariah D** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Turalic U** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Santalucia Y** -

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3 Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Chen T** -
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5 Conceptualization, Methodology, Investigation; Writing - Review & Editing
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7 **Vasic G** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **McCaffery**
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9 **KJ** - Conceptualization, Methodology, Formal analysis, Writing - Review & Editing; Project
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11 administration.
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15 DATA SHARING

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18 Deidentified participant data are available from the first author (ORCID identifier: 0000-0001-
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20 6106-6298) upon reasonable request.
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23 ETHICS STATEMENT

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26 This study was approved by Western Sydney Local Health District Human Research Ethics
27
28 Committee (Project number 2020/ETH03085). All participants provided informed consent to
29
30 participate. This manuscript does not contain any personal or medical information about an
31
32 identifiable individual.
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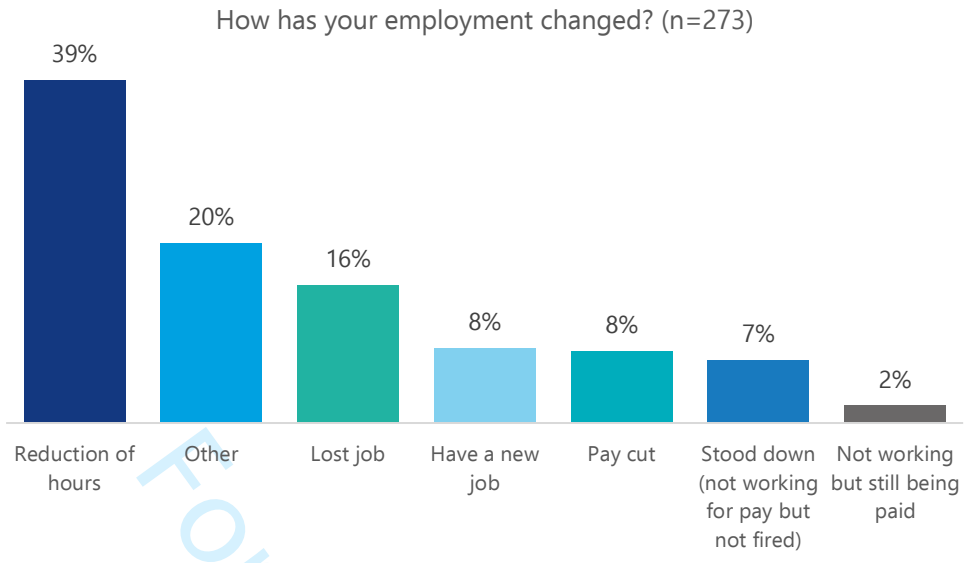


Figure 1. Change in employment

Supplementary Table 1. Multiple regression model of factors associated with negative psychological impacts (n=707)*

Predictor	Nervous/Stressed				Alone/Lonely			
	Unadjusted analysis		Adjusted analysis		Unadjusted analysis		Adjusted analysis	
	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value
Gender*								
Male	Reference		Reference		Reference		Reference	
Female	1.51 (1.03 to 2.22)	0.03	1.59 (1.03 to 2.45)	0.04	1.05 (0.70 to 1.60)	0.80	1.01 (0.65 to 1.57)	0.97
Age group		0.06		0.65		<0.001		0.36
18-29	Reference		Reference		Reference		Reference	
30-49	1.07 (0.59 to 1.95)	0.82	0.76 (0.39 to 1.48)	0.42	0.84 (0.42 to 1.70)	0.63	1.54 (0.78 to 3.06)	0.22
50-69	1.62 (0.89 to 2.95)	0.12	0.99 (0.47 to 2.11)	0.99	1.16 (0.57 to 2.33)	0.68	1.41 (0.62 to 3.23)	0.42
>70	2.04 (1.00 to 4.15)	0.05	1.09 (0.41 to 2.88)	0.87	3.30 (1.53 to 7.12)	<0.001	0.93 (0.35 to 2.48)	0.88
Comorbidity**		<0.001		0.01		<0.001		<0.001
0	Reference		Reference		Reference	<0.001	Reference	
1	0.60 (0.39 to 0.94)	0.03	1.34 (0.77 to 2.32)	0.30	1.48 (0.90 to 2.44)	0.12	0.80 (0.45 to 1.44)	0.460
2+	0.44 (0.27 to 0.70)	<0.001	2.39 (1.35 to 4.24)	<0.001	2.74 (1.67 to 4.51)	<0.001	0.34 (0.18 to 0.64)	<0.001
Lowest ISRAD quintile	1.16 (0.77 to 1.74)	0.47	1.41 (0.86 to 2.31)	0.17	0.80 (0.51 to 1.24)	0.32	1.08 (0.64 to 1.84)	0.77
University education	0.47 (0.30 to 0.73)	<0.001	1.28 (0.71 to 2.32)	0.41	0.43 (0.26 to 0.74)	<0.001	1.10 (0.58 to 2.08)	<0.001
Adequate health literacy	0.62 (0.42 to 0.90)	0.01	0.68 (0.39 to 1.19)	0.18	0.59 (0.39 to 0.9)	0.01	1.17 (0.67 to 2.04)	0.57
English-language proficiency	0.54 (0.37 to 0.78)	<0.001	0.88 (0.50 to 1.57)	0.68	0.49 (0.33 to 0.74)	<0.001	0.93 (0.51 to 1.72)	0.83
Years living in Australia		0.12		0.70		0.42		0.870
5 years or less	Reference		Reference		Reference		Reference	
6 to 10 years	1.36 (0.70 to 2.64)	0.36	1.22 (0.58 to 2.53)	0.60	1.26 (0.58 to 2.72)	0.56	0.88 (0.42 to 1.84)	0.73
More than 10 years	1.27 (0.74 to 2.18)	0.38	1.19 (0.61 to 2.34)	0.61	1.22 (0.63 to 2.37)	0.56	1 (0.51 to 1.95)	0.99
Born in Australia	0.51 (0.21 to 1.26)	0.14	0.73 (0.25 to 2.18)	0.58	0.60 (0.21 to 1.70)	0.34	1.38 (0.43 to 4.39)	0.59
Language group***	-	<0.001	-	<0.001	-	<0.001	-	<0.001
Perceived public health threat	1.15 (1.08 to 1.22)	<0.001	1.08 (0.99 to 1.18)	0.07	1.12 (1.05 to 1.20)	<0.001	0.93 (0.85 to 1.03)	0.15
Mean financial burden	1.96 (1.55 to 2.48)	<0.001	1.82 (1.42 to 2.33)	<0.001	-	-	-	-

NB: All regression models also control for date of survey completion (binary variable, before/after 23 June when restrictions in Greater Sydney were imposed).

*1 respondent indicated 'other/prefer not to say' and is not included in weighted analysis

**Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

***Individual comparisons for language group not presented as there is no specific contrast that is pragmatically relevant. Khmer was selected as the reference language group as this subsample was of adequate size (n>50) and had the highest proportion of people reporting negative psychological impacts.

Supplementary Table 2. Multiple regression model of factors associated with negative social impacts

Predictor	Negative impact on relationships (n=399)*				Negative impact on children (n=262)**			
	Unadjusted analysis		Adjusted analysis		Unadjusted analysis		Adjusted analysis	
	OR (95% CI)	P value	OR (95% CI)	P value	B(95%CI)	P value	B (95% CI)	P value
Gender								
Male	Reference		Reference		Reference		Reference	
Female	1.16 (0.65 to 2.09)	0.62	1.21 (0.72 to 2.03)	0.47	-0.12 (-0.54 to 0.31)	0.59	-0.17 (-0.41 to 0.08)	0.18
Age group		0.15		0.03		0.13		0.12
18-29	Reference		Reference		Reference		Reference	
30-49	0.32 (0.09 to 1.09)	0.07	0.27 (0.11 to 0.65)	<0.001	0.75 (-0.13 to 1.62)	0.10	0.70 (-0.03 to 1.43)	0.06
50-69	0.57 (0.13 to 2.41)	0.44	0.41 (0.17 to 0.98)	<0.001	0.32 (-0.78 to 1.41)	0.57	0.46 (-0.35 to 1.27)	0.26
>70	0.40 (0.07 to 2.30)	0.30	0.30 (0.11 to 0.86)	0.02	0 (-1.32 to 1.33)	1.00	0.44 (-1.40 to 2.28)	0.64
Chronic illness***		0.63		0.70		0.15		<0.001
0	Reference		Reference		Reference		Reference	
1	0.81 (0.39 to 1.68)	0.57	1.11 (0.61 to 2.00)	0.74	0.33 (-0.02 to 0.68)	0.070	0.37 (0.09 to 0.65)	0.01
2+	1.28 (0.50 to 3.24)	0.60	1.33 (0.68 to 2.60)	0.40	-0.07 (-0.82 to 0.68)	0.850	0.76 (0.27 to 1.26)	<0.001
Lowest IRSAD quintile	0.34 (0.14 to 0.82)	0.02	0.34 (0.17 to 0.66)	<0.001	-0.17 (-0.67 to 0.33)	0.50	0.40 (0.07 to 0.72)	0.02
University education	1.87 (0.68 to 5.13)	0.23	0.50 (0.25 to 1.02)	0.06	-0.12 (-0.53 to 0.29)	0.57	-0.02 (-0.36 to 0.32)	0.91
Adequate health literacy	0.41 (0.21 to 0.81)	0.01	0.80 (0.48 to 1.35)	0.41	0.08 (-0.38 to 0.53)	0.75	0.22 (-0.08 to 0.53)	0.15
English-language proficiency	1.46 (0.66 to 3.21)	0.35	1.02 (0.61 to 1.71)	0.95	-0.31 (-0.64 to 0.02)	0.06	-0.11 (-0.41 to 0.19)	0.46
Years living in Australia		0.13		0.53		0.91		0.99
5 years or less	Reference		Reference		Reference		Reference	
6 to 10 years	1.14 (0.45 to 2.93)	0.78	1.78 (0.73 to 4.34)	0.21	0.04 (-0.64 to 0.71)	0.91	-0.09 (-0.57 to 0.39)	0.72
More than 10 years	0.47 (0.18 to 1.20)	0.12	1.01 (0.53 to 1.93)	0.98	-0.07 (-0.46 to 0.32)	0.73	-0.03 (-0.41 to 0.36)	0.89
Born in Australia	0.41 (0.08 to 2.15)	0.29	1.06 (0.34 to 3.35)	0.92	-0.34 (-1.4 to 0.72)	0.52	0 (-0.59 to 0.59)	1.00
Language group#		<0.001		<0.001		<0.001		<0.001
Perceived public health threat†	0.97 (0.85 to 1.10)	0.59	1.06 (0.99 to 1.15)	0.10	-	-	-	-
Mean financial burden†	1.70 (1.14 to 2.54)	0.01	1.88 (1.38 to 2.56)	<0.001	-	-	-	-
Feeling lonely / alone†	0.98 (0.40 to 2.40)	0.96	0.37 (0.21 to 0.64)	<0.001	-	-	-	-
Feeling nervous / stressed†	0.33 (0.14 to 0.77)	0.01	0.29 (0.17 to 0.49)	<0.001	-	-	-	-

NB: All regression models also control for date of survey completion (binary variable, before/after 23 June when restrictions in Greater Sydney were imposed).

*Total number of participants that responded to the question regarding the impacts of COVID-19 on their relationship with their partner

**Total number of participants reporting having children

***Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

#Individual comparisons for language group not presented as there is no specific contrast that is pragmatically relevant. Khmer was selected as the reference language group as this subsample was of adequate size (n>50) and had the highest proportion of people reporting negative impacts on relationships.

†Variable not included in the regression model of factors associated with negative impacts on children

Supplementary Table 3. Multiple regression model of factors associated with financial burden (n=707)*

	Unadjusted analysis		Adjusted analysis	
	B (95% CI)	P value	B (95% CI)	P value
Gender				
Male	Reference		Reference	
Female	0.03 (-0.15 to 0.21)	0.77	0.01 (-0.13 to 0.15)	0.89
Age group		<0.001		<0.001
18-29	Reference		Reference	
30-49	0.07 (-0.19 to 0.34)	0.58	0.08 (-0.15 to 0.32)	0.49
50-69	0.09 (-0.20 to 0.38)	0.54	0.03 (-0.22 to 0.29)	0.80
>70	-0.40 (-0.67 to -0.12)	0.01	-0.51 (-0.82 to -0.20)	<0.001
Comorbidity**		0.14		<0.001
0	Reference		Reference	
1	0.21 (0 to 0.41)	0.05	0.26 (0.06 to 0.46)	0.01
2+	0.07 (-0.12 to 0.26)	0.48	0.35 (0.15 to 0.54)	<0.001
Lowest IRSAD quintile	-0.01 (-0.21 to 0.18)	0.91	-0.06 (-0.22 to 0.11)	0.50
University education	-0.27 (-0.46 to -0.09)	<0.001	-0.18 (-0.36 to 0.01)	0.06
Adequate health literacy	0.05 (-0.13 to 0.24)	0.56	0.14 (-0.06 to 0.33)	0.16
English-language proficiency	-0.09 (-0.25 to 0.07)	0.27	-0.12 (-0.32 to 0.08)	0.24
Years living in Australia		0.01		0.24
5 years or less	Reference		Reference	
6 to 10 years	0.14 (-0.11 to 0.38)	0.27	0.05 (-0.19 to 0.30)	0.67
More than 10 years	-0.17 (-0.37 to 0.02)	0.07	-0.12 (-0.32 to 0.09)	0.26
Born in Australia	-0.33 (-0.77 to 0.11)	0.14	-0.21 (-0.61 to 0.19)	0.31
Language group***	-	<0.001	-	<0.001

NB: All regression models also control for date of survey completion (binary variable, before/after 23 June when restrictions in Greater Sydney were imposed).

*1 respondent indicated 'other/prefer not to say' and is not included in weighted analysis

**Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

***Individual comparisons for language group not presented as there is no specific contrast that is pragmatically relevant. Khmer was selected as the reference language group as this subsample was of adequate size (n>50).

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For peer review only

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2-3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7-9
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-9
Bias	9	Describe any efforts to address potential sources of bias	9-10
Study size	10	Explain how the study size was arrived at	NA [#]
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	9
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	9
		(b) Describe any methods used to examine subgroups and interactions	9
		(c) Explain how missing data were addressed	
		(d) If applicable, describe analytical methods taking account of sampling strategy	9
		(e) Describe any sensitivity analyses	9
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	10
		(b) Give reasons for non-participation at each stage	NA [#]
		(c) Consider use of a flow diagram	NA [#]
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	10-11
		(b) Indicate number of participants with missing data for each variable of interest	Tables 2, 3, S1, S2, S3

Outcome data	15*	Report numbers of outcome events or summary measures	13-17
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	13-17
		(b) Report category boundaries when continuous variables were categorized	13-17
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA [#]
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	13-17
Discussion			
Key results	18	Summarise key results with reference to study objectives	18
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	20
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	18-19
Generalisability	21	Discuss the generalisability (external validity) of the study results	20
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	NA [#]

*Give information separately for exposed and unexposed groups.

Not available

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Psychological, social, and financial impacts of COVID-19 on culturally and linguistically diverse communities in Sydney, Australia

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Psychological, social, and financial impacts of COVID-19 on culturally and linguistically diverse communities in Sydney, Australia

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Psychological, social, and financial impacts of COVID-19 on culturally and linguistically diverse communities in Sydney, Australia

ABSTRACT

Objective: To explore the psychological, social, and financial outcomes of COVID-19 – and the socio-demographic predictors of those outcomes – among culturally and linguistically-diverse communities in Sydney, Australia.

Design: Cross-sectional survey informed by the Framework for Culturally Competent Health Research conducted between March and July, 2021.

Setting: Participants who primarily speak a language other than English at home were recruited from Greater Western Sydney, New South Wales.

Participants: 708 community members (mean age: 45.4years [range 18–91]). 88% (n=622) were born outside of Australia, 31% (n=220) did not speak English well or at all, and 59% (n=290) had inadequate health literacy.

Outcome measures: Thirteen items regarding COVID-19-related psychological, social, and financial outcomes were adapted from validated scales, previous surveys or co-designed in partnership with Multicultural Health and interpreter service staff. Logistic regression models (using post-stratification weighted frequencies) were used to identify socio-demographic predictors of outcomes. Surveys were available in English or translated (11 languages).

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6 **Results:** This analysis, conducted prior to the 2021 COVID-19 outbreak in Sydney, showed
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8 that 25% of the sample reported feeling nervous or stressed most/all of the time and 22%
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10 felt lonely or alone most/all of the time. One quarter of participants reported negative
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12 impacts on their spousal relationships as a result of COVID-19 and most parents reported
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14 that their children were less active (64%), had more screen time (63%), and were finding
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16 school harder (45%). Mean financial burden was 2.9/5 (95%CI=2.8 to 2.9). Regression
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18 analyses consistently showed more negative outcomes for those with comorbidities and
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20 differences across language groups.
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28 **Conclusion:** Culturally and linguistically-diverse communities experience significant
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30 psychological, social and financial impacts of COVID-19. A whole-of-government approach is
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32 needed to support rapid co-design of culturally-safe support packages in response to COVID-
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34 19 and other national health emergencies, tailored appropriately to specific language
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36 groups and accounting for pre-existing health disparities.
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Psychological, social, and financial impacts of COVID-19 on culturally and linguistically diverse communities in Sydney, Australia

ARTICLE SUMMARY

Strengths and limitations of this study

- This is the largest Australian survey exploring COVID-19-related psychological, social, and financial outcomes, and the sociodemographic correlates of these outcomes, among people who primarily speak a language other than English.
- This study was co-designed by researchers and multicultural health service staff, in alignment with the Framework of Culturally Competent Health Research and enabled through recruitment methods that are inclusive and reduce barriers to participation (e.g. translated surveys; engagement of trusted interpreters and multicultural health staff; use of multiple recruitment methods including through community events and networks).
- To reduce survey length and burden on participants we purposefully selected a small number of items from validated measures or our previous research to explore psychological, social and financial outcomes or co-designed them specifically for this study.
- We used convenience sampling methods and self-report may have introduced recall and social desirability bias.
- We are unable to explore changes in COVID-19-related outcomes over time.

INTRODUCTION

The COVID-19 pandemic has not impacted all populations equally. People from racial and cultural minority groups in countries across the globe have been disproportionately affected, with higher rates of infection, greater risk of morbidity, higher critical care admissions and mortality, and poorer mental health and financial outcomes (1-6). Such differences reflect pre-existing health disparities and underlying social, economic and political inequalities; racial and cultural minority communities experience a higher prevalence of comorbidities associated with poor COVID-19 outcomes (e.g. cardiovascular conditions), greater social deprivation and differences in occupational and environmental risk (7-9). The additional burden of structural racism also impacts care seeking and quality of care (7).

While the data tells a clear story of cultural disadvantage in the United States, Canada, the United Kingdom and several Nordic countries, there remains limited evidence of the impact of COVID-19 on culturally and linguistically diverse groups in Australia despite being one of the most culturally diverse nations worldwide. Currently, people living in Australia identify with more than 270 ancestries, with almost seven million people migrating to Australia since 1945 (10). In 2020, 29.8% of Australia's population were born overseas (11), a level that is higher than most countries within the Organisation for Economic Co-operation and Development (OECD) (12).

Nationally representative Australian surveys exploring the financial, social and psychological impacts of the pandemic (see, for example, (13)) often systematically exclude culturally and linguistically diverse populations, and there remains a lack of disaggregated data related to COVID-19. A similar trend is observed worldwide (14). Research to date (both in Australia and internationally) has also been limited in its engagement with diverse communities. This has been exacerbated by online recruitment methods (e.g. via social media networks or market research companies) and English-language data collection, which tend to prohibit participation of those who speak a language other than English as their primary language.

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3 The few studies which have been conducted have highlighted important impacts of the
4 pandemic for our diverse communities (15, 16). In a study of 656 refugees and asylum
5 seekers who had arrived in Australia within the last 10 years (most commonly from Iraq
6 (58.7%, n=385) and Syria (16.9%, n=111)), approximately one in five participants reported
7 experiencing employment loss or decline due to COVID-19, with prevalent stressors related
8 to COVID-19 infection including worries about being infected (66.5%), of a loved one being
9 infected (72.1%) or infecting others (47.7%) (17). Social stressors as a consequence of the
10 pandemic were also common, including school closures (46.7%), reduced social activities
11 (46.6%), and having to remain at home (41.3%), and these stressors predicted increased
12 depression symptoms and disability outcomes (17).
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23 Our own Australian surveys (and others – see, (15, 16)) have also shown some differences in
24 financial and psychological impacts of COVID-19 among those for who spoke a language
25 other than English at home compared to those for whom English is their primary language.
26 A survey of 4362 Australians conducted in April 2020, for example, showed that participants
27 who spoke a language other than English at home rated the financial impact of COVID-19 as
28 higher, were more likely to feel nervous or stressed as a result of the pandemic compared
29 with those who primarily spoke English at home (18) and had greater anxiety. However, 75%
30 of participants in this survey were born in Australia and only 274 (6%) reported that they did
31 not speak English as their main language at home. As such, our previous findings are limited
32 in their ability to inform appropriate and tailored support for Australian communities that
33 are typically understudied and underserved, such as those from different cultural and
34 language groups.
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47 There also remains limited data about the socio-demographic predictors of COVID-19-
48 related psychological, social, and financial outcomes in culturally and linguistically-diverse
49 communities. A myriad of socio-demographic factors put communities at increased risk for
50 worsened COVID-19 outcomes. Language barriers, for example, are a well-established driver
51 of inequitable outcomes in health care, often arising from worsened patient experience,
52 unmet informational needs and discrimination (19). Further, the population whose main
53 language is not English are also at greater likelihood of having lower socioeconomic status
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(20) and lower health literacy (21) among other socio-demographic risk factors which can compound the impact of health emergencies including COVID-19.

The aims of this study were to:

1. Explore the psychological, social, and financial impact of the COVID-19 pandemic on culturally and linguistically diverse communities in Greater Western Sydney in New South Wales (NSW), Australia.
2. Examine demographic factors associated with these impacts.

METHODS

Study design

This study involved a cross-sectional survey with 11 language groups, approved by Western Sydney Local Health District Human Research Ethics Committee (Project number 2020/ETH03085)

Patient and public involvement

This study was co-designed by researchers, bilingual community members and Multicultural Health and Health Care Interpreter Service staff, and informed by the Framework for Culturally Competent Health Research (22) which identifies four components of culturally competent health research. The application of this Framework to the current study is outlined in Box 1.

Box 1. Application of the Framework for Culturally Competent Health Research

- a) **Assemble a culturally competent team:** The research team included Multicultural Health and Health Care Interpreter Service staff and bilingual community members from Western Sydney who have extensive experience working with culturally and linguistically diverse communities. Many share the language skills and cultural background of community members in western Sydney.

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- b) **Address community need:** Outcome measures for this survey study were developed in partnership with Multicultural Health and Health Care Interpreter Service staff as well as bilingual community members. This included the selection of broad outcome domains (psychological, social and financial impacts) as well as individual questions. The survey was reviewed by the entire study team as well as all bilingual community members involved in data collection before implementation to ensure relevance, readability, and clarity of items for community members. Multicultural Health and Health Care Interpreter Service staff also played a key role in the selection of language groups for this study. The goal was to select groups based on several variables including perceived need and size of the community in western Sydney, while allowing for diversity in regard to time since migration and English-language proficiency.
- c) **Address health inequities:** Multicultural Health and Health Care Interpreter Service staff worked in partnership with researchers to influence decisions about research questions and design as well as interpretation and dissemination of findings. Findings were presented as 2-page infographics and disseminated to communities through local networks, as well as in the peer-reviewed literature.
- d) **Address differences in power:** This study built on enduring partnerships between researchers, health services and multicultural community organizations that have spanned multiple research projects. The goal for this study and others has been to bring together a range of health staff, consumers and researchers to co-create value together from the outset, placing high value on different types of knowledge, particularly the lived experiences of community members and contextually specific knowledge of our health services partners. Wherever feasible, the goal has been to redistribute knowledge-based power and replace it with mutual learning between all participants.

Setting

The survey was conducted from 21 March to 9 July, 2021. During this period, rollout of the COVID-19 vaccines had begun across Australia, and daily cases in New South Wales (NSW) were very low by international standards, ranging from 0 – 46 positive cases from a population of approximately 8 million people (23). A ‘stay at home’ order across Greater Sydney due to rising cases began on June 23rd (24). On the day the survey closed the NSW daily case count was 45, and 24% of the population had received one COVID-19 vaccination (25).

Participants were recruited from Greater Western Sydney in New South Wales, Australia from three adjoining regions with high cultural diversity: Western Sydney (47% of residents

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3 born overseas (26)), South Western Sydney (43% of residents born overseas (27)), and
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5 Nepean Blue Mountains (24% of residents born overseas (28)).
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8 **Participants**

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12 Participants were eligible to take part if they were aged 18 years or over and spoke one of
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14 the following as their main language at home: Arabic, Assyrian, Chinese, Croatian, Dari,
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16 Dinka, Hindi, Khmer, Samoan, Tongan, Spanish. Through iterative discussions with
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18 Multicultural Health and Health Care Interpreter Service staff in each participating Local
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20 Health District, we selected eleven language groups that would provide broad coverage
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22 across different global regions, and groups with varying average levels of English language
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24 proficiency (based on 2016 Australian census data; (29)), varying access to translated
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26 materials, and varying degrees of reading skill in their main language spoken at home.
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28 **Recruitment**

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31 Participants were recruited through bilingual Multicultural Health staff and Health Care
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33 Interpreter Service staff. Multicultural Health staff recruited participants through their
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35 existing networks, community events and community champions. Health Care Interpreter
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37 Service staff recruited participants at the end of a medical appointment and via their
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39 community network. The survey was hosted online using the web-based survey platform
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41 Qualtrics. Potential participants were offered two means of taking part: completing the
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43 survey themselves online (available in English or translated), or with assistance from
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45 bilingual staff or an interpreter who read the questions to them and recorded their
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47 responses. To ensure consistency in the phrases used for assisted survey completion,
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49 translated versions of the survey were provided to all staff assisting with survey completion.
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51 Translations were completed by translators with National Accreditation Authority for
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53 Translators and Interpreters (NAATI) accreditation where possible.
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Measures

This survey formed part of a larger study that examined COVID-19-related behaviour and intentions, information sources, and impacts. Survey items reported here are those which were included in the current analysis. All other items are reported elsewhere (30-32).

Demographic survey items relevant to this study included age, gender, education, whether born in Australia, years living in Australia, main language spoken at home, self-reported English language proficiency and a single-item health literacy screener (33). Chronic disease status was determined by asking participants to self-report if their doctor had ever told them they had had one or more of the following: respiratory disease, stroke, asthma, diabetes, chronic obstructive pulmonary disease, depression, anxiety, high blood pressure, cancer or heart disease. The socioeconomic status of the area of residence for each individual was defined based on the SEIFA Index of Relative Socioeconomic Advantage and Disadvantage (IRSAD (34)). IRSAD aligns the statistical local area with a decile ranking (1–10), with lower scores indicating greater socioeconomic disadvantage. The IRSAD decile was not available for some participants (n=5), for example, because they had entered digits that did not correspond to a valid Australian postcode. IRSAD decile for these participants was replaced with the median IRSAD decile for speakers of the same language in the sample. For the analysis, IRSAD deciles were recoded into quintiles, and dichotomised (lowest quintile vs other).

Thirteen items regarding the impacts of COVID-19 were selected for this survey study in partnership with Multicultural Health and Health Care Interpreter Service staff. See Table 1. Items related to financial impacts were adapted from the COmprehensive Score for financial Toxicity (COST) scale (35). We adapted two items (FT3 'I worry about the financial problems I will have in the future as a result of my illness or treatment' and FT7 'I am able to meet my monthly expenses') to be relevant to the COVID-19 context. Psychological items were taken verbatim from our previous COVID-19 work (18). Questions regarding social impacts (including impacts on relationships and children) were co-designed with Multicultural

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3 Health and Health Care Interpreter Service staff based on local information priorities. All
4 items had fixed yes/no and Likert-type responses. Items were translated into 11 languages.
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6 The readability of the thirteen items (excluding response options) in English was Grade 7 as
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8 assessed using the Hemingway Editor.
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Table 1. Survey items related to study outcomes, including response options

Item	Response options
Psychological impacts	
Over the past week, how often have you felt	Never / Some of the time / Most of the time / All of the time
- nervous or "stressed" because of COVID-19?	
- alone or lonely because of COVID-19?	
Social impacts	
Do you have a partner (e.g. wife, husband, or someone you are in a romantic or sexual relationship with)?	Yes / No
COVID-19 has changed my relationship with my partner	Very negative effects / Some negative effects / No effects / Some positive effects / Very positive effects
Do you have any children aged less than 18 years?	Yes / No
Since the pandemic started...	Strongly agree / Somewhat agree / Neither agree nor disagree / Somewhat disagree / Strongly disagree
- I or another family member spends more time looking after my child/children	
- My child/children are less physically active	
- My child/children are finding school harder	
- My child/children have more screen time	
- My child/children spend less time with their friends	
Financial impacts	
Has your employment status (work) changed because of COVID-19?	Yes / No
How did your employment status (work) change because of COVID-19?	Have a new job / Lost job / Stood down (not working for pay, but not fired) / Pay cut / Reduction in hours / Not working but still being paid / Other
I worry about the financial problems I will have in the future as a result of the COVID-19 pandemic	Not at all / A little bit / Somewhat / Quite a bit / Very much
I am able to meet my weekly expenses	Not at all / A little bit / Somewhat / Quite a bit / Very much

Analysis

Quantitative data were analysed using IBM SPSS Statistics Version 24. Descriptive statistics were generated for demographic characteristics of the analysed sample. Frequencies were weighted (using post-stratification weighting) to reflect each language group's gender and age group distribution (18-29 years, 30-49 years, 50-69 years, ≥70 years) based on 2016 census data for Western Sydney, South Western Sydney, and Nepean Blue Mountains' combined populations (29). All frequencies presented in the results section are weighted. A single participant indicated their gender as 'other' and was unable to be included in weighted analyses. Total recruitment for the Spanish language group was low (<50), with

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3 notable gaps for some age groups. For this reason, results for this language group are not
4 presented in the statistical analyses, but are included in total frequencies.
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9 Survey items about psychological, financial and social impacts were re-coded to facilitate a
10 more meaningful interpretation of the results (see tables in the Results section). A mean
11 'perceived financial burden' score was also calculated by averaging the two questions about
12 financial impacts: a) worry about financial problems and b) ability to meet weekly expenses
13 (reverse coded). Higher scores indicate greater perceived financial burden (range: 1-5).
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15 Similarly, a mean score for the impact on children was calculated by averaging questions
16 related to four impacts: physical activity, screen time, schooling and time with friends.
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18 Higher scores indicate more negative impacts on children (range: 1-5). Cronbach's Alpha for
19 this scale was 0.805, indicating a high level of internal consistency.
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27 Unadjusted and adjusted regression analyses were then conducted to explore the predictors
28 of COVID-19-related psychological, social, and financial outcomes. Linear regression models
29 were used to analyse perceived financial burden (averaged across two impacts) and impacts
30 on children (averaged across four impacts). Logistic regression models were used to analyse
31 psychological impacts (feeling lonely or alone; feeling nervous or stressed) and impact on
32 relationships. Age group, gender, chronic illness, education, health literacy, English-language
33 proficiency, years lived in Australia, language group and IRSAD quintile were included in
34 each adjusted regression model. Models predicting impacts on relationships also controlled
35 for perceived public health threat of COVID-19, perceived financial burden and
36 psychological variables; models predicting psychological impacts controlled for perceived
37 public health threat of COVID-19 and perceived financial burden. All regression models also
38 controlled for whether participants completed the survey before or after 23rd June, when
39 restrictions were announced for all of Greater Sydney (24). In line with recommendations,
40 bivariable significance was not used as a criterion for variable selection in multivariable
41 modelling (36, 37). The significance level used to determine significant differences was 0.05.
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55 RESULTS

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Sample characteristics

We had a total of 708 respondents (442 [62.4%] self-completed, 266 [37.6%] received assistance through an interpreter). Sample characteristics are summarised in Table 2. The mean age was 45.4 years (standard error [SE] 0.78; range 18–91 years), and 51% of respondents were female (n=363). Most participants (88%, n=622) were born in a country other than Australia; 31% reported that they did not speak English well or at all (n=220); 29.7% had a university bachelor degree level or higher. Inadequate health literacy was identified for 59% of the sample (n=290).

Table 2. Descriptive statistics of analysed sample (N=708)

Variable	N	%
Age group		
18-29	147	20.7
30-49	295	41.8
50-69	193	27.3
>70	72	10.2
Gender^a		
Male	344	48.6
Female	363	51.4
Language		
Assyrian	133	18.8
Croatian	121	6.2
Arabic	80	11.3
Chinese	76	10.7
Dinka	63	8.9
Khmer	63	8.9
Dari	44	6.2
Spanish ^b	43	6.1
Hindi	42	5.9
Samoan/Tongan	42	5.9
English language proficiency (How well do you speak English?)		
Very well/ well	487	68.9
Not well/not at all	220	31.1
Literacy in a language other than English (How well do you read in your main language?)		
Very well/ well	589	83.4
Not well/not at all	118	16.6
Health literacy^c		
Adequate	417	58.9
Inadequate	290	41.1
Highest level of education		
Less than year 12 (less than high school)	115	16.2
Year 12 (high school graduate)	133	18.9
Certificate level I to IV / Advanced diploma and diploma level	249	35.3
University bachelor degree level and above	210	29.7
Years living in Australia		
5 years or less	120	16.9
6 to 10 years	104	14.7
More than 10 years	398	56.4
Born in Australia	85	12.0
IRSAD quintile		
1 (Lowest)	224	31.7
2	140	19.8
3	125	17.7
4	140	19.8
5 (Highest)	87	12.3
Children less than 18 years	262	37.0
Interpreter assistance completing the survey	266	37.6
Total	707	

NB: Frequencies are weighted (using post-stratification weighting) to reflect each language group's gender and age group distribution (18-29 years, 30-49 years, 50-69 years, ≥70 years) based on 2016 census data for Western Sydney, South Western Sydney, and Nepean Blue Mountains' combined populations (29).

^a n=1 respondent excluded from the weighted analyses included in this table; weighted frequencies have been rounded to whole numbers for clarity

^b Spanish language group had substantial gaps in recruitment across age groups;

^c Based on the Single Item Literacy Screener (SILS) (33).

Psychological impacts

Overall, 25.3% of participants reported feeling nervous or stressed most or all of the time over the past week. This ranged across language groups from 6% (n=5) for Chinese speakers to 38% (n=24) for Dinka speakers. 30.7% (n=89) of participants with inadequate health literacy and 21.4% (n=89) of participants with adequate health literacy reported feeling nervous or stressed most or all of the time. This was 21.4% for those who self-reported that they speak English well or very well, compared to 33.7% of those who speak English not well or not at all. See Table 3, which also outlines further sociodemographic differences. In the multivariable regression model when sociodemographic factors were controlled for, language group ($p<0.001$), female gender ($p=0.04$) and having two or more chronic illnesses ($p<0.001$) remained significantly associated with increased nervousness or stress, as did higher perceived financial burden ($p<0.001$). See Supplementary Table 1.

Overall, 22.3% of participants reported feeling alone or lonely most or all of the time. In regards to language groups, the range was from 5.6% (n=2) for Hindi speakers to 51.2% (n=32) for Khmer speakers. 27.8% (n=81) of participants with inadequate health literacy reported feeling alone or lonely most or all of the time; this proportion was 18.5% for participants with adequate health literacy (n=77). This was 18.3% for those who self-reported that they speak English well or very well, compared to 31.3% of those who speak English not well or not at all. See Table 4. After multivariate adjustment, having two or more chronic illnesses ($p<0.001$) and university education ($p<0.001$) remained as significant correlates of feeling lonely or alone, with statistically significant differences also observed between language groups ($p<0.001$).

Table 3. Psychological impacts by gender, age group, health literacy, IRSAD quintile and number of comorbidities (n=707)^a

	Nervous or stressed	Alone or lonely
	n (%)	n (%)
Total	179 (25.3)	158 (22.3)
Gender		
Male	73 (21.3)	75 (21.8)
Female	105 (29.0)	83 (22.8)
Age group		
<30	31 (20.9)	30 (20.2)
30-49	65 (22.0)	52 (17.6)
50-69	58 (29.9)	44 (22.6)
70+	25 (35.0)	33 (45.5)
Health literacy		
Inadequate	89(30.7)	81 (27.8)
Adequate	89 (21.4)	77 (18.5)
IRSAD quintile		
Lowest	61 (27.2)	44 (19.7)
Not lowest	118 (24.4)	114 (23.5)
Comorbidities^b		
0	85 (20.1)	73 (17.4)
1	46 (29.5)	37 (23.7)
2	48 (36.6)	48 (36.5)
Language		
Assyrian	22 (16.9)	13 (9.5)
Croatian	40 (33.4)	50 (41.1)
Arabic	14 (17.9)	19 (23.5)
Chinese	5 (6.0)	5 (6.1)
Dinka	24 (38.0)	15 (24.4)
Khmer	36 (57.1)	32 (51.2)
Dari	14 (31.9)	8 (17.8)
Spanish ^b	5 (11.9)	6 (14.2)
Hindi	6 (13.4)	2 (5.6)
Samoan/Tongan	12 (29.0)	6 (14.2)
English language proficiency		
Very well/ well	104 (21.4)	89 (18.3)
Not well/not at all	74 (33.7)	69 (31.3)

^a n=1 respondent excluded from the weighted analyses included in this table; weighted frequencies have been rounded to whole numbers for clarity

^b Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

Social impacts

Of the 399 participants who responded to the question regarding impacts of COVID-19 on their relationship with their partner, one quarter (25.5%) reported negative effects; 62.9% said that the pandemic had no effect and 11.7% said that it had had positive effects. We observed significant differences in reporting of negative impacts on relationships across language groups ($p < 0.001$) and across age groups such that those aged <30 years had a significantly higher proportion of people reporting negative impacts compared to each other age group (30-49: $p < 0.001$; 50-69: $p < 0.001$; 70 and above: $p = 0.02$). Those in the most

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3 disadvantaged IRSAD quintile reported more negative impacts compared to those in higher
4 quintiles ($p<0.01$). We also observed significant differences in reporting of negative impacts
5 on relationships based on financial burden ($p<0.001$) and psychological variables
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7 (alone/lonely – $p<0.001$; nervous/stressed – $p<0.001$).
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12 Of the two hundred and sixty-two participants who reported having children aged less than
13 18 years, 72.8% reported spending more time looking after their children as a result of the
14 pandemic ($n=191$). The majority agreed (somewhat or strongly) that COVID-19 has meant
15 that their children spent less time with friends (68.5%), are less physically active (64.2%),
16 and have more screen time (63.3%). Across the entire sample, 44.9% agreed that their
17 children were finding school harder. Mean perceived negative impact on children was rated
18 3.5 (out of 5; 95% CI= 3.3 to 3.7). In the multivariate analysis, reporting of negative impacts
19 on children varied significantly across language groups ($p<0.001$). Reporting of negative
20 impacts on children was significantly associated with the most disadvantaged IRSAD quintile
21 ($p=0.02$) and with chronic illness, with participants with one ($p=0.01$) or two or more
22 ($p<0.001$) chronic illnesses significantly more likely to report negative impacts compared to
23 those without chronic illness. See Supplementary Table 2.
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Table 4. Social impacts by gender, age group, health literacy, IRSAD quintile and number of comorbidities (n=707)^a

	Negative impact on relationship ^b	More time looking after children ^c	More screen time ^c	Less physically active ^c	Less time with friends ^c	Finding school harder ^c	Mean negative impact on children ^d
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	M(95% CI)
Total	101 (25.5)	191 (72.8)	166 (63.3)	168 (64.2)	180 (68.5)	118 (44.9)	3.5 (3.3, 3.7)
Gender							
Male	49 (23.7)	99 (77.2)	85 (66.4)	92 (71.6)	91 (71.1)	61 (47.7)	3.6 (3.2, 4.0)
Female	63 (27.3)	92 (68.6)	81 (60.2)	76 (57.0)	89 (66.2)	56 (42.2)	3.5 (3.3, 3.7)
Age group							
<30	23 (47.7)	8 (64.8)	6 (46.1)	5 (39.7)	6 (51.0)	4 (32.0)	2.9 (2.1, 3.8)
30-49	39 (19.7)	148 (74.1)	131 (65.6)	139 (69.5)	148 (73.7)	91 (45.5)	3.7 (3.5, 3.8)
50-69	32 (27.2)	34 (70.2)	28 (59.0)	24 (48.9)	25 (52.4)	22 (46.7)	3.2 (2.5, 2.9)
70+	8 (21.6)	-	-	-	-	-	-
Health literacy							
Inadequate	49 (27.8)	76 (75.7)	64 (64.4)	60 (59.3)	72 (71.6)	45 (44.7)	3.5 (3.1, 3.9)
Adequate	53 (22.6)	114 (71.0)	101 (62.5)	108 (67.2)	107 (66.7)	72 (45.0)	3.6 (3.3, 3.8)
IRSAD quintile							
Lowest	14 (12.8)	61 (72.8)	51 (60.9)	50 (60.0)	57 (68.0)	36 (43.3)	3.4 (3.0, 3.9)
Not lowest	88 (30.3)	130 (72.8)	115 (64.4)	118 (66.1)	123 (68.8)	81 (45.6)	3.6 (3.4, 3.8)
Comorbidities^e							
0	54 (23.9)	128 (69.9)	109 (59.6)	118 (64.3)	118 (64.3)	79 (43.2)	3.5 (3.2, 3.7)
1	23 (25.8)	41 (84.9)	37 (78.4)	30 (63.2)	39 (82.6)	28 (59.3)	3.8 (3.6, 4.0)
2	24 (29.5)	22 (71.4)	19 (61.8)	20 (64.8)	22 (72.3)	10 (32.7)	3.4 (2.7, 4.1)
Language							
Assyrian	2 (2.7)	40 (80.4)	30 (60.4)	22 (49.5)	28 (55.5)	21 (42.5)	3.4 (3.1, 3.6)
Croatian	40 (38.2)	33 (93.8)	34 (97.3)	32 (91.4)	34 (97.3)	22 (63.4)	4.3 (4.1, 4.5)
Arabic	3 (6.7)	12 (69.8)	13 (73.6)	15 (87.2)	8 (49.4)	12 (72.5)	3.6 (3.2, 4.0)
Chinese	8 (20.1)	25 (87.0)	23 (81.0)	25 (88.9)	25 (87.0)	9 (32.3)	4.1 (3.8, 4.3)
Dinka	6 (18.9)	25 (66.3)	24 (64.7)	24 (63.3)	27 (72.9)	18 (49.5)	3.7 (3.3, 4.1)
Khmer	8 (45.3)	16 (90.2)	10 (56.3)	15 (85.3)	17 (100.0)	13 (77.5)	4.1 (3.9, 4.3)
Dari	10 (32.9)	17 (83.7)	8 (39.2)	6 (28.4)	14 (66.9)	3 (13.4)	2.9 (2.3, 3.4)
Spanish	5 (16.6)	4 (20.9)	1 (3.5)	5 (23.1)	4 (20.9)	0 (0)	1.8 (0.7, 2.9)
Hindi	5 (14.7)	7 (36.7)	9 (49.4)	12 (76.2)	8 (44.9)	4 (21.8)	3.1 (2.6, 3.5)
Samoan/Tongan	15 (68.2)	13 (72.6)	14 (81.0)	13 (76.2)	14 (79.8)	14 (79.8)	4.1 (3.7, 4.5)
English language proficiency							

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Very well/well	65 (25.6)	144 (69.5)	123 (59.2)	133 (64.3)	135 (65.3)	89 (43.0)	3.5 (3.2, 3.7)
Not well/not at all	37 (25.2)	47 (85.5)	43 (78.7)	35 (63.5)	44 (81.0)	29 (52.0)	3.8 (3.6, 4.0)

^an=1 respondent excluded from the weighted analyses included in this table; weighted frequencies have been rounded to whole numbers for clarity
^bTotal number of participants that responded to the question regarding the impacts of COVID-19 on their relationship with their partner = 399
^cTotal number of participants reporting having children = 262. Impacts on children are not reported for age group 70+ due to small numbers
^dComposite score comprising impact on screen time, physical activity, time with friends and schooling. Scale range: 1-5. Higher scores indicate more negative impact.
^eHealth conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

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Financial impacts

Overall, 38.6% of participants reported that their employment status has changed because of COVID-19. This was most commonly a reduction in hours of employment. See Figure 1. In total, 63.6% of participants reported somewhat or more worry about financial problems as a result of the COVID-19 pandemic, and 53.7% reported that they were having difficulty meeting their financial expenses.

--- Figure 1 here ---

Mean perceived financial burden was 2.9 on a five-point scale (95% Confidence Interval [CI]=2.8 to 2.9). As shown in Table 5 and Supplementary Table 3, perceived financial burden was similar across health literacy and language proficiency categories. Financial burden differed across language groups and was highest for Khmer speakers (M=3.6; 95%CI 3.4 to 3.8) and lowest for Spanish speakers (M=2.1; 95%CI 1.7 to 2.6).

In the multivariable regression model, we also observed significant differences in mean perceived financial burden across language groups ($p<0.001$). As well as differences by language, mean perceived financial burden was significantly lower for the oldest age group compared to the youngest after controlling for other sociodemographic factors ($p<0.001$). People with one chronic illness ($p=0.01$) or two or more ($p<0.001$) reported significantly more financial burden compared to those without chronic illness.

Table 5. Financial impacts by gender, age group, health literacy, IRSAD quintile and number of comorbidities (n=707)^a

	Employment status changed	Worried about financial problems	Unable to meet weekly expenses	Mean financial burden ^b
	n (%)	n (%)	n (%)	M (95% CI)
Total	273 (38.6)	450 (63.6)	380 (53.7)	2.9 (2.8, 2.9)
Gender				
Male	139 (40.5)	128 (37.1)	80 (23.2)	2.8 (2.7, 3.0)
Female	134 (36.8)	161 (44.2)	75 (20.8)	2.9 (2.8, 3.0)
Age group				
<30	76 (51.8)	65 (44.1)	32 (21.9)	2.8 (2.6, 3.1)
30-49	134 (45.5)	135 (45.9)	64 (21.8)	2.9 (2.8, 3.0)
50-69	58 (30.0)	76 (39.5)	47 (24.6)	2.9 (2.8, 3.1)
70+	5 (6.3)	12 (16.6)	11 (15.7)	2.4 (2.3, 2.6)
Health literacy				
Inadequate	101 (35.7)	104 (35.8)	64 (21.9)	2.8 (2.7, 3.0)
Adequate	172 (41.3)	184 (44.3)	91 (22.0)	2.9 (2.8, 3.0)
IRSAD quintile				
Lowest	70 (31.4)	288 (40.8)	49 (21.7)	2.8 (2.7, 3.0)
Not lowest	202 (41.9)	201 (41.6)	107 (22.1)	2.9 (2.8, 3.0)
Comorbidities^c				
0	182 (43.1)	166 (39.5)	93 (22.0)	2.8 (2.7, 2.9)
1	62 (39.9)	73 (47.0)	30 (19.4)	3.0 (2.8, 3.2)
2	30 (22.6)	49 (37.4)	33 (24.8)	2.9 (2.7, 3.0)
Language				
Assyrian	24 (18.2)	39 (29.0)	39 (29.4)	2.7 (2.6, 2.9)
Croatian	51 (41.9)	57 (46.8)	5 (3.9)	2.7 (2.6, 2.9)
Arabic	29 (36.1)	19 (23.7)	12 (14.8)	2.7 (2.5, 3.0)
Chinese	20 (39.8)	14 (18.4)	21 (27.3)	2.6 (2.3, 2.9)
Dinka	25 (40.3)	39 (62.3)	15 (24.5)	3.1 (2.8, 3.3)
Khmer	38 (59.7)	45 (71.3)	30 (47.7)	3.6 (3.4, 3.8)
Dari	25 (56.7)	26 (59.5)	8 (18.7)	3.4 (3.2, 3.6)
Spanish ^d	13 (29.7)	9 (21.4)	6 (14.9)	2.1 (1.7, 2.6)
Hindi	20 (48.0)	17 (40.4)	3 (7.4)	2.8 (2.6, 2.9)
Samoan/Tongan	18 (42.8)	24 (56.3)	15 (36.9)	3.0 (2.6, 3.5)
English language proficiency				
Very well/well	211 (43.2)	201 (41.2)	100 (20.5)	2.8 (2.7, 2.9)
Not well/not at all	62 (28.3)	88 (39.9)	55 (25.2)	2.9 (2.8, 3.0)

^a n=1 respondent excluded from the weighted analyses included in this table; weighted frequencies have been rounded to whole numbers for clarity

^b Composite score comprising worry about financial problems and inability to meet weekly expenses. Scale range: 1-5. Higher scores indicate greater perceived financial burden.

^c Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

^d Spanish language group had substantial gaps in recruitment across age groups.

DISCUSSION

This is the largest Australian survey exploring COVID-19-related psychological, social, and financial outcomes, and the sociodemographic predictors of those outcomes, among people who primarily speak a language other than English. Even prior to the July 2021 COVID-19 outbreak in New South Wales, which disproportionately impacted the communities and geographical areas included in this study, we observed broad negative psychological, social and financial impacts of the pandemic. Over one quarter of the sample reported feeling nervous or stressed most or all of the time, and twenty-two percent felt lonely or alone most or all of the time. Over half worried about financial problems and reported being somewhat or less able to meet their weekly expenses. One quarter of participants reported negative impacts on their spousal relationship and the majority of participants with children under 18 years reported that even out of lockdown their children spent less time with friends as a result of the pandemic (68.5%), were less physically active (64.2%) and had more screen time (63.3%). Regression analyses consistently showed distinct patterns of COVID-19 impacts for different language groups and more negative outcomes for those living with chronic illness and comorbidities.

The impacts of COVID-19 have been explored across a number of countries with different population groups. Direct comparisons are difficult on account of varying survey items, different data collection timepoints, and wide-ranging case numbers, morbidity and mortality from COVID-19 across geographical contexts. However, since the beginning of the pandemic, studies have spotlighted socio-demographic disparities in outcomes worldwide (38) and broad impacts for culturally and linguistically diverse groups (39). A cross-sectional

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3 survey among culturally and linguistically diverse communities in Greater Western Sydney
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5 (n=198) conducted earlier in the pandemic (August - September 2020), for example, similarly
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7 identified financial and social impacts, with 40% of participants indicating that their financial
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9 situation and ability to access social services were “worse” as a result of COVID-19 (39). Our
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11 findings build on this by offering further nuance (e.g. highlighting associated worry about
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13 financial problems) and elucidating a range of other impacts including additional impacts on
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15 children. Our study also uniquely showcases differences in outcomes across language
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17 groups.
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25 In comparing our findings to Australian studies which did not specifically focus on culturally
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27 and linguistically diverse communities, we also see some similarities. Nationally-
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29 representative data from the Australian Bureau of Statistics, for instance, showed that in
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31 June 2021, one in five (20%) Australians experienced high or very high levels of psychological
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33 distress in the last four weeks, and 28% of people 18 years and over reported feeling
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35 nervous in that survey (13). Previous work has also confirmed negative impacts of COVID on
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37 children’s social connectedness and amount of screen time (40, 41). The psychological
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39 impacts found in this study are also comparable to our national survey conducted
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41 in April 2020, at the outset of the pandemic when stay at home orders had been in place for
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43 3 weeks. In this earlier study, we found that 26% of participants reported feeling nervous or
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45 stressed most or all of the time, and 27% percent felt lonely or alone most or all of the time
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47 (18). Similar proportions of negative outcomes over time may reflect a pattern of community
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49 resilience, which has been referred to elsewhere (39). Alternatively, given that case numbers
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51 and community restrictions were low at the time of data collection in the current study, our
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3 findings could also reflect the inadequate COVID response for culturally and linguistically
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5 diverse communities.
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10 **Implications**

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14 Our findings showcase a broad range of impacts of COVID-19 among culturally and
15
16 linguistically-diverse Australian communities. A multi-level, whole-of-government approach
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18 is needed to address these, with policy and sustainable infrastructure to disseminate timely,
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20 understandable and culturally-appropriate information about financial, social and mental
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22 health resources and services and to co-design tailored support packages for different
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24 language groups (42). Qualitative studies have highlighted a large number of community-
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26 driven initiatives and actions that have emerged as a response to COVID-19, as well as
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28 embodied and communal ways of coping (43). Using a strengths-based perspective, we must
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30 acknowledge the multiple capacities and resources of our culturally and linguistically diverse
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32 communities and provide properly-resourced opportunities to work directly with them to
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34 address unique challenges that they face, as identified in this study. Our findings reinforce
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36 the need to prioritise support for community members living with comorbidities who are
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38 likely to bear a disproportionate impact.
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48 **Strengths and limitations**

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51 This study was co-designed by researchers and multicultural health service staff, and
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53 enabled through recruitment methods that are inclusive and reduce barriers to
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55 participation, such as translated versions of the survey, engagement of interpreters and
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57 multicultural health staff who are trusted in their communities, and use of multiple
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3 recruitment methods (including through community events and networks). This approach
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5 wholly aligns with the Framework of Culturally Competent Health Research (22). However,
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7 practical constraints limited the number of languages we could include, and restricted data
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9 collection to three regions in Greater Sydney only. We also used convenience sampling
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11 methods.
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18 To reduce survey length and burden on participants we purposefully selected a small
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20 number of items from validated measures or our previous research to explore psychological,
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22 social and financial impacts, or co-designed them specifically for this study. Self-report may
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24 have introduced recall and social desirability bias.
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30 Finally, the results of this study reflect a particular point in time when there were very low
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32 numbers of community-acquired cases of COVID-19 in Australia, and for the most part, no
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34 government-imposed restrictions on movement and activities in New South Wales. It is likely
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36 that psychological wellbeing outcomes and financial and social stress have worsened since
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38 the July 2021 outbreak and the imposition of stay-at-home orders, in line with previous
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40 research (40, 44). We are unable to explore changes in impacts over time in this study.
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48 Conclusion

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51 Culturally and linguistically diverse communities experience significant impacts of COVID-19,
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53 with distinct patterns of impacts for different language groups. We must work with
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55 communities to address unique challenges they face and tailor interventions and supports
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57 accordingly. As COVID-19 continues to disproportionately impact the most culturally and
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3 linguistically diverse communities in Sydney and worldwide, responses must too reflect the
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5 diversity of our communities through co-production and tailored support packages.
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FIGURE LEGENDS

Figure 1. Change in employment

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COMPETING INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

AUTHORS' CONTRIBUTIONS

Muscat DM - Formal analysis, Investigation; Data Curation; Writing - Original Draft; **Ayre J** - Conceptualization, Methodology, Formal analysis, Investigation; Data Curation; Writing - Review & Editing; Project administration; **Mac O** - Formal analysis, Investigation; Data Curation; Writing - Review & Editing; Project administration; **Batcup C** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; Project administration; **Cvejic E** - Formal analysis, Writing - Review & Editing; **Pickles K**; Conceptualization, Methodology, Writing - Review & Editing; **Dolan H** - Conceptualization, Methodology, Writing - Review & Editing; **Bonner C** - Conceptualization, Methodology, Writing - Review & Editing; **Mouwad D** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Zachariah D** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Turalic U** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Santalucia Y** -

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3 Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Chen T** -
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5 Conceptualization, Methodology, Investigation; Writing - Review & Editing
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7 **Vasic G** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **McCaffery**
8
9 **KJ** - Conceptualization, Methodology, Formal analysis, Writing - Review & Editing; Project
10 administration.
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15 DATA SHARING

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18 Deidentified participant data are available from the first author (ORCID identifier: 0000-0001-
19 6106-6298) upon reasonable request.
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23 ETHICS STATEMENT

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26 This study was approved by Western Sydney Local Health District Human Research Ethics
27 Committee (Project number 2020/ETH03085). All participants provided informed consent to
28 participate. This manuscript does not contain any personal or medical information about an
29 identifiable individual.
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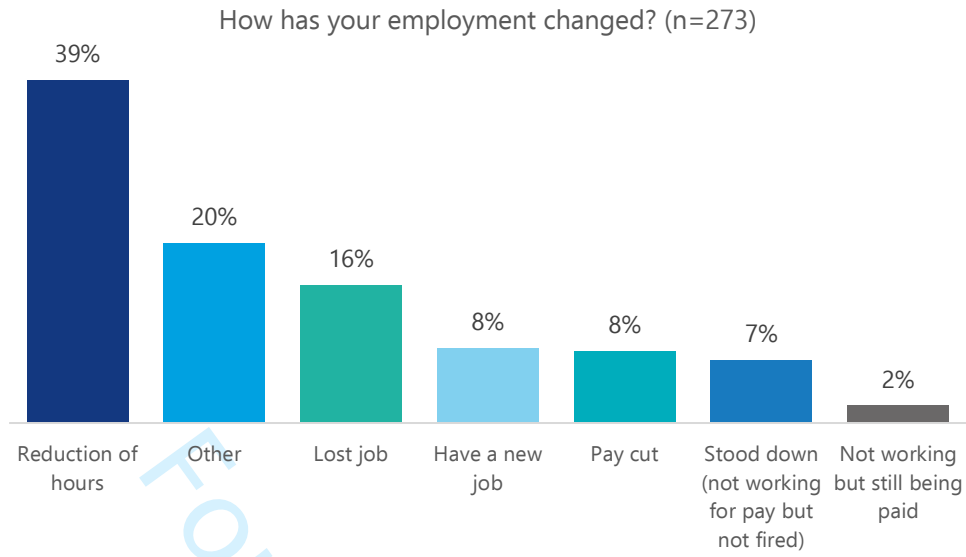


Figure 1. Change in employment

Supplementary Table 1. Multiple regression model of factors associated with negative psychological impacts (n=707)^a

Predictor	Nervous/Stressed				Alone/Lonely			
	Unadjusted analysis ^b		Adjusted analysis ^c		Unadjusted analysis ^b		Adjusted analysis ^c	
	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value
Gender^a								
Male	Reference		Reference		Reference		Reference	
Female	1.51 (1.03 to 2.22)	0.03	1.59 (1.03 to 2.45)	0.04	1.05 (0.70 to 1.60)	0.80	1.01 (0.65 to 1.57)	0.97
Age group		0.06		0.65		<0.001		0.36
18-29	Reference		Reference		Reference		Reference	
30-49	1.07 (0.59 to 1.95)	0.82	0.76 (0.39 to 1.48)	0.42	0.84 (0.42 to 1.70)	0.63	1.54 (0.78 to 3.06)	0.22
50-69	1.62 (0.89 to 2.95)	0.12	0.99 (0.47 to 2.11)	0.99	1.16 (0.57 to 2.33)	0.68	1.41 (0.62 to 3.23)	0.42
>70	2.04 (1.00 to 4.15)	0.05	1.09 (0.41 to 2.88)	0.87	3.30 (1.53 to 7.12)	<0.001	0.93 (0.35 to 2.48)	0.88
Comorbidity^d		<0.001		0.01		<0.001		<0.001
0	Reference		Reference		Reference		Reference	
1	0.60 (0.39 to 0.94)	0.03	1.34 (0.77 to 2.32)	0.30	1.48 (0.90 to 2.44)	0.12	0.80 (0.45 to 1.44)	0.460
2+	0.44 (0.27 to 0.70)	<0.001	2.39 (1.35 to 4.24)	<0.001	2.74 (1.67 to 4.51)	<0.001	0.34 (0.18 to 0.64)	<0.001
Lowest ISRAD quintile	1.16 (0.77 to 1.74)	0.47	1.41 (0.86 to 2.31)	0.17	0.80 (0.51 to 1.24)	0.32	1.08 (0.64 to 1.84)	0.77
University education	0.47 (0.30 to 0.73)	<0.001	1.28 (0.71 to 2.32)	0.41	0.43 (0.26 to 0.74)	<0.001	1.10 (0.58 to 2.08)	<0.001
Adequate health literacy	0.62 (0.42 to 0.90)	0.01	0.68 (0.39 to 1.19)	0.18	0.59 (0.39 to 0.9)	0.01	1.17 (0.67 to 2.04)	0.57
English-language proficiency	0.54 (0.37 to 0.78)	<0.001	0.88 (0.50 to 1.57)	0.68	0.49 (0.33 to 0.74)	<0.001	0.93 (0.51 to 1.72)	0.83
Years living in Australia		0.12		0.70		0.42		0.870
5 years or less	Reference		Reference		Reference		Reference	
6 to 10 years	1.36 (0.70 to 2.64)	0.36	1.22 (0.58 to 2.53)	0.60	1.26 (0.58 to 2.72)	0.56	0.88 (0.42 to 1.84)	0.73
More than 10 years	1.27 (0.74 to 2.18)	0.38	1.19 (0.61 to 2.34)	0.61	1.22 (0.63 to 2.37)	0.56	1 (0.51 to 1.95)	0.99
Born in Australia	0.51 (0.21 to 1.26)	0.14	0.73 (0.25 to 2.18)	0.58	0.60 (0.21 to 1.70)	0.34	1.38 (0.43 to 4.39)	0.59
Language group^e	-	<0.001	-	<0.001	-	<0.001	-	<0.001
Perceived public health threat	1.15 (1.08 to 1.22)	<0.001	1.08 (0.99 to 1.18)	0.07	1.12 (1.05 to 1.20)	<0.001	0.93 (0.85 to 1.03)	0.15
Mean financial burden	1.96 (1.55 to 2.48)	<0.001	1.82 (1.42 to 2.33)	<0.001	-	-	-	-

NB: All regression models also control for date of survey completion (binary variable, before/after 23 June when restrictions in Greater Sydney were imposed).

^a n=1 respondent excluded from the weighted analyses presented in this table

^b Unadjusted analyses do not control for co-variables; statistics represent the regression of each predictor on psychological outcomes with no other co-variables included in the model.

^c Adjusted analyses control for all covariates listed in this table.

^d Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

^e Individual comparisons for language group not presented as there is no specific contrast that is pragmatically relevant. Khmer was selected as the reference language group as this subsample was of adequate size (n>50) and had the highest proportion of people reporting negative psychological impacts.

Supplementary Table 2. Multiple regression model of factors associated with negative social impacts

Predictor	Negative impact on relationships (n=399) ^a				Negative impact on children (n=262) ^b			
	Unadjusted analysis ^c		Adjusted analysis ^d		Unadjusted analysis ^c		Adjusted analysis ^e	
	OR (95% CI)	P value	OR (95% CI)	P value	B(95%CI)	P value	B (95% CI)	P value
Gender								
Male	Reference		Reference		Reference		Reference	
Female	1.16 (0.65 to 2.09)	0.62	1.21 (0.72 to 2.03)	0.47	-0.12 (-0.54 to 0.31)	0.59	-0.17 (-0.41 to 0.08)	0.18
Age group		0.15		0.03		0.13		0.12
18-29	Reference		Reference		Reference		Reference	
30-49	0.32 (0.09 to 1.09)	0.07	0.27 (0.11 to 0.65)	<0.001	0.75 (-0.13 to 1.62)	0.10	0.70 (-0.03 to 1.43)	0.06
50-69	0.57 (0.13 to 2.41)	0.44	0.41 (0.17 to 0.98)	<0.001	0.32 (-0.78 to 1.41)	0.57	0.46 (-0.35 to 1.27)	0.26
>70	0.40 (0.07 to 2.30)	0.30	0.30 (0.11 to 0.86)	0.02	0 (-1.32 to 1.33)	1.00	0.44 (-1.40 to 2.28)	0.64
Chronic illness^f		0.63		0.70		0.15		<0.001
0	Reference		Reference		Reference		Reference	
1	0.81 (0.39 to 1.68)	0.57	1.11 (0.61 to 2.00)	0.74	0.33 (-0.02 to 0.68)	0.07	0.37 (0.09 to 0.65)	0.01
2+	1.28 (0.50 to 3.24)	0.60	1.33 (0.68 to 2.60)	0.40	-0.07 (-0.82 to 0.68)	0.85	0.76 (0.27 to 1.26)	<0.001
Lowest IRSAD quintile	0.34 (0.14 to 0.82)	0.02	0.34 (0.17 to 0.66)	<0.001	-0.17 (-0.67 to 0.33)	0.50	0.40 (0.07 to 0.72)	0.02
University education	1.87 (0.68 to 5.13)	0.23	0.50 (0.25 to 1.02)	0.06	-0.12 (-0.53 to 0.29)	0.57	-0.02 (-0.36 to 0.32)	0.91
Adequate health literacy	0.41 (0.21 to 0.81)	0.01	0.80 (0.48 to 1.35)	0.41	0.08 (-0.38 to 0.53)	0.75	0.22 (-0.08 to 0.53)	0.15
English-language proficiency	1.46 (0.66 to 3.21)	0.35	1.02 (0.61 to 1.71)	0.95	-0.31 (-0.64 to 0.02)	0.06	-0.11 (-0.41 to 0.19)	0.46
Years living in Australia		0.13		0.53		0.91		0.99
5 years or less	Reference		Reference		Reference		Reference	
6 to 10 years	1.14 (0.45 to 2.93)	0.78	1.78 (0.73 to 4.34)	0.21	0.04 (-0.64 to 0.71)	0.91	-0.09 (-0.57 to 0.39)	0.72
More than 10 years	0.47 (0.18 to 1.20)	0.12	1.01 (0.53 to 1.93)	0.98	-0.07 (-0.46 to 0.32)	0.73	-0.03 (-0.41 to 0.36)	0.89
Born in Australia	0.41 (0.08 to 2.15)	0.29	1.06 (0.34 to 3.35)	0.92	-0.34 (-1.4 to 0.72)	0.52	0 (-0.59 to 0.59)	1.00
Language group^g		<0.001		<0.001		<0.001		<0.001
Perceived public health threat	0.97 (0.85 to 1.10)	0.59	1.06 (0.99 to 1.15)	0.10	-	-	-	-
Mean financial burden	1.70 (1.14 to 2.54)	0.01	1.88 (1.38 to 2.56)	<0.001	-	-	-	-
Feeling lonely / alone	0.98 (0.40 to 2.40)	0.96	0.37 (0.21 to 0.64)	<0.001	-	-	-	-
Feeling nervous / stressed	0.33 (0.14 to 0.77)	0.01	0.29 (0.17 to 0.49)	<0.001	-	-	-	-

NB: All regression models also control for date of survey completion (binary variable, before/after 23 June when restrictions in Greater Sydney were imposed).

^aTotal number of participants that responded to the question regarding the impacts of COVID-19 on their relationship with their partner

^bTotal number of participants reporting having children

^cUnadjusted analyses do not control for co-variables; statistics represent the regression of each predictor on social outcomes with no other co-variables included in the model.

^dAdjusted analyses exploring factors associated with negative impacts on relationships control for all covariates listed in this table.

^eAdjusted analyses exploring factors associated with negative impacts on children do not control for perceived public health threat, financial burden or psychological outcomes (lonely/alone; nervous/stressed).

^fHealth conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

^gIndividual comparisons for language group not presented as there is no specific contrast that is pragmatically relevant. Khmer was selected as the reference language group as this subsample was of adequate size (n>50) and had the highest proportion of people reporting negative impacts on relationships.

Supplementary Table 3. Multiple regression model of factors associated with financial burden (n=707)^a

	Unadjusted analysis ^b		Adjusted analysis ^c	
	B (95% CI)	P value	B (95% CI)	P value
Gender				
Male	Reference		Reference	
Female	0.03 (-0.15 to 0.21)	0.77	0.01 (-0.13 to 0.15)	0.89
Age group		<0.001		<0.001
18-29	Reference		Reference	
30-49	0.07 (-0.19 to 0.34)	0.58	0.08 (-0.15 to 0.32)	0.49
50-69	0.09 (-0.20 to 0.38)	0.54	0.03 (-0.22 to 0.29)	0.80
>70	-0.40 (-0.67 to -0.12)	0.01	-0.51 (-0.82 to -0.20)	<0.001
Comorbidity^d		0.14		<0.001
0	Reference		Reference	
1	0.21 (0 to 0.41)	0.05	0.26 (0.06 to 0.46)	0.01
2+	0.07 (-0.12 to 0.26)	0.48	0.35 (0.15 to 0.54)	<0.001
Lowest IRSAD quintile	-0.01 (-0.21 to 0.18)	0.91	-0.06 (-0.22 to 0.11)	0.50
University education	-0.27 (-0.46 to -0.09)	<0.001	-0.18 (-0.36 to 0.01)	0.06
Adequate health literacy	0.05 (-0.13 to 0.24)	0.56	0.14 (-0.06 to 0.33)	0.16
English-language proficiency	-0.09 (-0.25 to 0.07)	0.27	-0.12 (-0.32 to 0.08)	0.24
Years living in Australia		0.01		0.24
5 years or less	Reference		Reference	
6 to 10 years	0.14 (-0.11 to 0.38)	0.27	0.05 (-0.19 to 0.30)	0.67
More than 10 years	-0.17 (-0.37 to 0.02)	0.07	-0.12 (-0.32 to 0.09)	0.26
Born in Australia	-0.33 (-0.77 to 0.11)	0.14	-0.21 (-0.61 to 0.19)	0.31
Language group^e	-	<0.001	-	<0.001

NB: All regression models also control for date of survey completion (binary variable, before/after 23 June when restrictions in Greater Sydney were imposed).

^a n=1 respondent excluded from the weighted analyses presented in this table

^b Unadjusted analyses do not control for co-variables; statistics represent the regression of each predictor on financial burden with no other co-variables included in the model.

^c Adjusted analyses control for all covariates listed in this table.

^d Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

^e Individual comparisons for language group not presented as there is no specific contrast that is pragmatically relevant. Khmer was selected as the reference language group as this subsample was of adequate size (n>50).

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For peer review only

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2-3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7-9
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-9
Bias	9	Describe any efforts to address potential sources of bias	9-10
Study size	10	Explain how the study size was arrived at	NA [#]
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	9
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	9
		(b) Describe any methods used to examine subgroups and interactions	9
		(c) Explain how missing data were addressed	
		(d) If applicable, describe analytical methods taking account of sampling strategy	9
		(e) Describe any sensitivity analyses	9
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	10
		(b) Give reasons for non-participation at each stage	NA [#]
		(c) Consider use of a flow diagram	NA [#]
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	10-11
		(b) Indicate number of participants with missing data for each variable of interest	Tables 2, 3, S1, S2, S3

Outcome data	15*	Report numbers of outcome events or summary measures	13-17
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	13-17
		(b) Report category boundaries when continuous variables were categorized	13-17
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA [#]
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	13-17
Discussion			
Key results	18	Summarise key results with reference to study objectives	18
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	20
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	18-19
Generalisability	21	Discuss the generalisability (external validity) of the study results	20
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	NA [#]

*Give information separately for exposed and unexposed groups.

Not available

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Psychological, social, and financial impacts of COVID-19 on culturally and linguistically diverse communities in Sydney, Australia

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Psychological, social, and financial impacts of COVID-19 on culturally and linguistically diverse communities in Sydney, Australia

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Psychological, social, and financial impacts of COVID-19 on culturally and linguistically diverse communities in Sydney, Australia

ABSTRACT

Objective: To explore the psychological, social, and financial outcomes of COVID-19 – and the socio-demographic predictors of those outcomes – among culturally and linguistically-diverse communities in Sydney, Australia.

Design: Cross-sectional survey informed by the Framework for Culturally Competent Health Research conducted between March and July, 2021.

Setting: Participants who primarily speak a language other than English at home were recruited from Greater Western Sydney, New South Wales.

Participants: 708 community members (mean age: 45.4years [range 18–91]). 88% (n=622) were born outside of Australia, 31% (n=220) did not speak English well or at all, and 59% (n=290) had inadequate health literacy.

Outcome measures: Thirteen items regarding COVID-19-related psychological, social, and financial outcomes were adapted from validated scales, previous surveys or co-designed in partnership with Multicultural Health and interpreter service staff. Logistic regression models (using post-stratification weighted frequencies) were used to identify socio-demographic predictors of outcomes. Surveys were available in English or translated (11 languages).

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6 **Results:** In this analysis, conducted prior to the 2021 COVID-19 outbreak in Sydney, 25% of
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8 the sample reported feeling nervous or stressed most/all of the time and 22% felt lonely or
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10 alone most/all of the time. One quarter of participants reported negative impacts on their
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12 spousal relationships as a result of COVID-19 and most parents reported that their children
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14 were less active (64%), had more screen time (63%), and were finding school harder (45%).
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16 Mean financial burden was 2.9/5 (95%CI=2.8 to 2.9). Regression analyses consistently
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18 showed more negative outcomes for those with comorbidities and differences across
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20 language groups.
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28 **Conclusion:** Culturally and linguistically-diverse communities experience significant
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30 psychological, social and financial impacts of COVID-19. A whole-of-government approach is
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32 needed to support rapid co-design of culturally-safe support packages in response to COVID-
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34 19 and other national health emergencies, tailored appropriately to specific language
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36 groups and accounting for pre-existing health disparities.
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Psychological, social, and financial impacts of COVID-19 on culturally and linguistically diverse communities in Sydney, Australia

ARTICLE SUMMARY

Strengths and limitations of this study

- This is the largest Australian survey exploring COVID-19-related psychological, social, and financial outcomes, and the sociodemographic correlates of these outcomes, among people who primarily speak a language other than English.
- This study was co-designed by researchers and multicultural health service staff, in alignment with the Framework of Culturally Competent Health Research and enabled through recruitment methods that are inclusive and reduce barriers to participation (e.g. translated surveys; engagement of trusted interpreters and multicultural health staff; use of multiple recruitment methods including through community events and networks).
- To reduce survey length and burden on participants we purposefully selected a small number of items from validated measures or our previous research to explore psychological, social and financial outcomes or co-designed them specifically for this study.
- We used convenience sampling methods and self-report may have introduced recall and social desirability bias.
- We are unable to explore changes in COVID-19-related outcomes over time.

INTRODUCTION

The COVID-19 pandemic has not impacted all populations equally. People from racial and cultural minority groups in countries across the globe have been disproportionately affected, with higher rates of infection, greater risk of morbidity, higher critical care admissions and mortality, and poorer mental health and financial outcomes (1-6). Such differences reflect pre-existing health disparities and underlying social, economic and political inequalities; racial and cultural minority communities experience a higher prevalence of comorbidities associated with poor COVID-19 outcomes (e.g. cardiovascular conditions), greater social deprivation and differences in occupational and environmental risk (7-9). The additional burden of structural racism also impacts care seeking and quality of care (7).

While the data tells a clear story of cultural disadvantage in the United States, Canada, the United Kingdom and several Nordic countries, there remains limited evidence of the impact of COVID-19 on culturally and linguistically diverse groups in Australia despite being one of the most culturally diverse nations worldwide. Currently, people living in Australia identify with more than 270 ancestries, with almost seven million people migrating to Australia since 1945 (10). In 2020, 29.8% of Australia's population were born overseas (11), a level that is higher than most countries within the Organisation for Economic Co-operation and Development (OECD) (12).

Nationally representative Australian surveys exploring the financial, social and psychological impacts of the pandemic (see, for example, (13)) often systematically exclude culturally and linguistically diverse populations, and there remains a lack of disaggregated data related to COVID-19. A similar trend is observed worldwide (14). Research to date (both in Australia and internationally) has also been limited in its engagement with diverse communities. This has been exacerbated by online recruitment methods (e.g. via social media networks or market research companies) and English-language data collection, which tend to prohibit participation of those who speak a language other than English as their primary language.

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3 The few studies which have been conducted have highlighted important impacts of the
4 pandemic for our diverse communities (15, 16). In a study of 656 refugees and asylum
5 seekers who had arrived in Australia within the last 10 years (most commonly from Iraq
6 (58.7%, n=385) and Syria (16.9%, n=111)), approximately one in five participants reported
7 experiencing employment loss or decline due to COVID-19, with prevalent stressors related
8 to COVID-19 infection including worries about being infected (66.5%), of a loved one being
9 infected (72.1%) or infecting others (47.7%) (17). Social stressors as a consequence of the
10 pandemic were also common, including school closures (46.7%), reduced social activities
11 (46.6%), and having to remain at home (41.3%), and these stressors predicted increased
12 depression symptoms and disability outcomes (17).
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23 Our own Australian surveys (and others – see, (15, 16)) have also shown some differences in
24 financial and psychological impacts of COVID-19 among those for who spoke a language
25 other than English at home compared to those for whom English is their primary language.
26 A survey of 4362 Australians conducted in April 2020, for example, showed that participants
27 who spoke a language other than English at home rated the financial impact of COVID-19 as
28 higher, were more likely to feel nervous or stressed as a result of the pandemic compared
29 with those who primarily spoke English at home (18) and had greater anxiety. However, 75%
30 of participants in this survey were born in Australia and only 274 (6%) reported that they did
31 not speak English as their main language at home. As such, our previous findings are limited
32 in their ability to inform appropriate and tailored support for Australian communities that
33 are typically understudied and underserved, such as those from different cultural and
34 language groups.
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47 There also remains limited data about the socio-demographic predictors of COVID-19-
48 related psychological, social, and financial outcomes in culturally and linguistically-diverse
49 communities. A myriad of socio-demographic factors put communities at increased risk for
50 worsened COVID-19 outcomes. Language barriers, for example, are a well-established driver
51 of inequitable outcomes in health care, often arising from worsened patient experience,
52 unmet informational needs and discrimination (19). Further, the population whose main
53 language is not English are also at greater likelihood of having lower socioeconomic status
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3 (20) and lower health literacy (21) among other socio-demographic risk factors which can
4 compound the impact of health emergencies including COVID-19.
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8 The aims of this study were to:
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- 10 1. Explore the psychological, social, and financial impact of the COVID-19 pandemic on
11 culturally and linguistically diverse communities in Greater Western Sydney in New
12 South Wales (NSW), Australia.
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14 2. Examine demographic factors associated with these impacts.
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20 **METHODS**

21 **Study design**

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24 This study involved a cross-sectional survey with 11 language groups, approved by Western
25 Sydney Local Health District Human Research Ethics Committee (Project number
26 2020/ETH03085)
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35 **Patient and public involvement**

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38 This study was co-designed by researchers, bilingual community members and Multicultural
39 Health and Health Care Interpreter Service staff, and informed by the Framework for
40 Culturally Competent Health Research (22) which identifies four components of culturally
41 competent health research. The application of this Framework to the current study is
42 outlined in Box 1.
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Box 1. Application of the Framework for Culturally Competent Health Research

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- a) **Assemble a culturally competent team:** The research team included Multicultural Health and Health Care Interpreter Service staff and bilingual community members from Western Sydney who have extensive experience working with culturally and linguistically diverse communities. Many share the language skills and cultural background of community members in western Sydney.
- b) **Address community need:** Outcome measures for this survey study were developed in partnership with Multicultural Health and Health Care Interpreter Service staff as well as bilingual community members. This included the selection of broad outcome domains (psychological, social and financial impacts) as well as individual questions. The survey was reviewed by the entire study team as well as all bilingual community members involved in data collection before implementation to ensure relevance, readability, and clarity of items for community members. Multicultural Health and Health Care Interpreter Service staff also played a key role in the selection of language groups for this study. The goal was to select groups based on several variables including perceived need and size of the community in western Sydney, while allowing for diversity in regard to time since migration and English-language proficiency.
- c) **Address health inequities:** Multicultural Health and Health Care Interpreter Service staff worked in partnership with researchers to influence decisions about research questions and design as well as interpretation and dissemination of findings. Findings were presented as 2-page infographics and disseminated to communities through local networks, as well as in the peer-reviewed literature.
- d) **Address differences in power:** This study built on enduring partnerships between researchers, health services and multicultural community organizations that have spanned multiple research projects. The goal for this study and others has been to bring together a range of health staff, consumers and researchers to co-create value together from the outset, placing high value on different types of knowledge, particularly the lived experiences of community members and contextually specific knowledge of our health services partners. Wherever feasible, the goal has been to redistribute knowledge-based power and replace it with mutual learning between all participants.

Setting

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The survey was conducted from 21 March to 9 July, 2021. The first case of COVID-19 in Australia was detected in January 2020; a national emergency with social distancing rules and closure of "non-essential" services followed in March 2020. Peaks of infection occurred

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3 in March 2020, and May-June 2020, and vaccinations begun in February 2021. During the
4 study period, daily cases in New South Wales (NSW) were very low by international
5 standards, ranging from 0 – 46 positive cases from a population of approximately 8 million
6 people (23). A 'stay at home' order across Greater Sydney due to rising cases began on June
7 23rd 2021 (24). On the day the survey closed the NSW daily case count was 45, and 24% of
8 the population had received one COVID-19 vaccination (25).
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16 Participants were recruited from Greater Western Sydney in New South Wales, Australia
17 from three adjoining regions with high cultural diversity: Western Sydney (47% of residents
18 born overseas (26)), South Western Sydney (43% of residents born overseas (27)), and
19 Nepean Blue Mountains (24% of residents born overseas (28)).
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25 Participants

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28 Participants were eligible to take part if they were aged 18 years or over and spoke one of
29 the following as their main language at home: Arabic, Assyrian, Chinese, Croatian, Dari,
30 Dinka, Hindi, Khmer, Samoan, Tongan, Spanish. Through iterative discussions with
31 Multicultural Health and Health Care Interpreter Service staff in each participating Local
32 Health District, we selected eleven language groups that would provide broad coverage
33 across different global regions, and groups with varying average levels of English language
34 proficiency (based on 2016 Australian census data; (29)), varying access to translated
35 materials, and varying degrees of reading skill in their main language spoken at home.
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45 Recruitment

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47 Participants were recruited through bilingual Multicultural Health staff and Health Care
48 Interpreter Service staff. Multicultural Health staff recruited participants through their
49 existing networks, community events and community champions. Health Care Interpreter
50 Service staff recruited participants at the end of a medical appointment and via their
51 community network. The survey was hosted online using the web-based survey platform
52 Qualtrics. Potential participants were offered two means of taking part: completing the
53 survey themselves online (available in English or translated), or with assistance from
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3 bilingual staff or an interpreter who read the questions to them and recorded their
4 responses. To ensure consistency in the phrases used for assisted survey completion,
5 translated versions of the survey were provided to all staff assisting with survey completion.
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7 Translations were completed by translators with National Accreditation Authority for
8 Translators and Interpreters (NAATI) accreditation where possible.
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15 Measures

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18 This survey formed part of a larger study that examined COVID-19-related behaviour and
19 intentions, information sources, and impacts. Survey items reported here are those which
20 were included in the current analysis. All other items are reported elsewhere (30-32).
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26 Demographic survey items relevant to this study included age, gender, education, whether
27 born in Australia, years living in Australia, main language spoken at home, self-reported
28 English language proficiency and a single-item health literacy screener (33). Chronic disease
29 status was determined by asking participants to self-report if their doctor had ever told
30 them they had had one or more of the following: respiratory disease, stroke, asthma,
31 diabetes, chronic obstructive pulmonary disease, depression, anxiety, high blood pressure,
32 cancer or heart disease. The socioeconomic status of the area of residence for each
33 individual was defined based on the SEIFA Index of Relative Socioeconomic Advantage and
34 Disadvantage (IRSAD (34)). IRSAD aligns the statistical local area with a decile ranking (1–
35 10), with lower scores indicating greater socioeconomic disadvantage. The IRSAD decile was
36 not available for some participants (n=5), for example, because they had entered digits that
37 did not correspond to a valid Australian postcode. IRSAD decile for these participants was
38 replaced with the median IRSAD decile for speakers of the same language in the sample. For
39 the analysis, IRSAD deciles were recoded into quintiles, and dichotomised (lowest quintile vs
40 other).
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55 Thirteen items regarding the impacts of COVID-19 were selected for this survey study in
56 partnership with Multicultural Health and Health Care Interpreter Service staff. See Table 1.
57 Items related to financial impacts were adapted from the COmprehensive Score for financial
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3 Toxicity (COST) scale (35). We adapted two items (FT3 'I worry about the financial problems
4 I will have in the future as a result of my illness or treatment' and FT7 'I am able to meet my
5 monthly expenses') to be relevant to the COVID-19 context. Psychological items were taken
6 verbatim from our previous COVID-19 work (18). Questions regarding social impacts
7 (including impacts on relationships and children) were co-designed with Multicultural
8 Health and Health Care Interpreter Service staff based on local information priorities. All
9 items had fixed yes/no and Likert-type responses. Items were translated into 11 languages.
10 The readability of the thirteen items (excluding response options) in English was Grade 7 as
11 assessed using the Hemingway Editor.
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Table 1. Survey items related to study outcomes, including response options

Item	Response options
Psychological impacts	
Over the past week, how often have you felt	Never / Some of the time / Most of the time / All of the time
- nervous or "stressed" because of COVID-19?	
- alone or lonely because of COVID-19?	
Social impacts	
Do you have a partner (e.g. wife, husband, or someone you are in a romantic or sexual relationship with)?	Yes / No
COVID-19 has changed my relationship with my partner	Very negative effects / Some negative effects / No effects / Some positive effects / Very positive effects
Do you have any children aged less than 18 years?	Yes / No
Since the pandemic started...	Strongly agree / Somewhat agree / Neither agree nor disagree / Somewhat disagree / Strongly disagree
- I or another family member spends more time looking after my child/children	
- My child/children are less physically active	
- My child/children are finding school harder	
- My child/children have more screen time	
- My child/children spend less time with their friends	
Financial impacts	
Has your employment status (work) changed because of COVID-19?	Yes / No
How did your employment status (work) change because of COVID-19?	Have a new job / Lost job / Stood down (not working for pay, but not fired) / Pay cut / Reduction in hours / Not working but still being paid / Other
I worry about the financial problems I will have in the future as a result of the COVID-19 pandemic	Not at all / A little bit / Somewhat / Quite a bit / Very much
I am able to meet my weekly expenses	Not at all / A little bit / Somewhat / Quite a bit / Very much

Analysis

Quantitative data were analysed using IBM SPSS Statistics Version 24. Descriptive statistics were generated for demographic characteristics of the analysed sample. Frequencies were weighted (using post-stratification weighting) to reflect each language group's gender and age group distribution (18-29 years, 30-49 years, 50-69 years, ≥70 years) based on 2016 census data for Western Sydney, South Western Sydney, and Nepean Blue Mountains' combined populations (29). All frequencies presented in the results section are weighted. A single participant indicated their gender as 'other' and was unable to be included in weighted analyses. Total recruitment for the Spanish language group was low (<50), with

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3 notable gaps for some age groups. For this reason, results for this language group are not
4 presented in the statistical analyses, but are included in total frequencies.
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9 Survey items about psychological, financial and social impacts were re-coded to facilitate a
10 more meaningful interpretation of the results (see tables in the Results section). A mean
11 'perceived financial burden' score was also calculated by averaging the two questions about
12 financial impacts: a) worry about financial problems and b) ability to meet weekly expenses
13 (reverse coded). Higher scores indicate greater perceived financial burden (range: 1-5).
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15 Similarly, a mean score for the impact on children was calculated by averaging questions
16 related to four impacts: physical activity, screen time, schooling and time with friends.
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18 Higher scores indicate more negative impacts on children (range: 1-5). Cronbach's Alpha for
19 this scale was 0.805, indicating a high level of internal consistency.
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27 Unadjusted and adjusted regression analyses were then conducted to explore the predictors
28 of COVID-19-related psychological, social, and financial outcomes. Linear regression models
29 were used to analyse perceived financial burden (averaged across two impacts) and impacts
30 on children (averaged across four impacts). Logistic regression models were used to analyse
31 psychological impacts (feeling lonely or alone; feeling nervous or stressed) and impact on
32 relationships. Age group, gender, chronic illness, education, health literacy, English-language
33 proficiency, years lived in Australia, language group and IRSAD quintile were included in
34 each adjusted regression model. Models predicting impacts on relationships also controlled
35 for perceived public health threat of COVID-19, perceived financial burden and
36 psychological variables; models predicting psychological impacts controlled for perceived
37 public health threat of COVID-19 and perceived financial burden. All regression models also
38 controlled for whether participants completed the survey before or after 23rd June, when
39 restrictions were announced for all of Greater Sydney (24). In line with recommendations,
40 bivariable significance was not used as a criterion for variable selection in multivariable
41 modelling (36, 37). The significance level used to determine significant differences was 0.05.
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55 RESULTS

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Sample characteristics

We had a total of 708 respondents (442 [62.4%] self-completed, 266 [37.6%] received assistance through an interpreter). Sample characteristics are summarised in Table 2. The mean age was 45.4 years (standard error [SE] 0.78; range 18–91 years), and 51% of respondents were female (n=363). Most participants (88%, n=622) were born in a country other than Australia; 31% reported that they did not speak English well or at all (n=220); 29.7% had a university bachelor degree level or higher. Inadequate health literacy was identified for 59% of the sample (n=290).

Table 2. Descriptive statistics of analysed sample (N=708)

Variable	N	%
Age group		
18-29	147	20.7
30-49	295	41.8
50-69	193	27.3
>70	72	10.2
Gender^a		
Male	344	48.6
Female	363	51.4
Language		
Assyrian	133	18.8
Croatian	121	6.2
Arabic	80	11.3
Chinese	76	10.7
Dinka	63	8.9
Khmer	63	8.9
Dari	44	6.2
Spanish ^b	43	6.1
Hindi	42	5.9
Samoan/Tongan	42	5.9
English language proficiency (How well do you speak English?)		
Very well/ well	487	68.9
Not well/not at all	220	31.1
Literacy in a language other than English (How well do you read in your main language?)		
Very well/ well	589	83.4
Not well/not at all	118	16.6
Health literacy^c		
Adequate	417	58.9
Inadequate	290	41.1
Highest level of education		
Less than year 12 (less than high school)	115	16.2
Year 12 (high school graduate)	133	18.9
Certificate level I to IV / Advanced diploma and diploma level	249	35.3
University bachelor degree level and above	210	29.7
Years living in Australia		
5 years or less	120	16.9
6 to 10 years	104	14.7
More than 10 years	398	56.4
Born in Australia	85	12.0
IRSAD quintile		
1 (Lowest)	224	31.7
2	140	19.8
3	125	17.7
4	140	19.8
5 (Highest)	87	12.3
Children less than 18 years	262	37.0
Interpreter assistance completing the survey	266	37.6
Total	707	

NB: Frequencies are weighted (using post-stratification weighting) to reflect each language group's gender and age group distribution (18-29 years, 30-49 years, 50-69 years, ≥70 years) based on 2016 census data for Western Sydney, South Western Sydney, and Nepean Blue Mountains' combined populations (29).

^a n=1 respondent excluded from the weighted analyses included in this table; weighted frequencies have been rounded to whole numbers for clarity

^b Spanish language group had substantial gaps in recruitment across age groups;

^c Based on the Single Item Literacy Screener (SILS) (33).

Psychological impacts

Overall, 25.3% of participants reported feeling nervous or stressed most or all of the time over the past week. This ranged across language groups from 6% (n=5) for Chinese speakers to 38% (n=24) for Dinka speakers. 30.7% (n=89) of participants with inadequate health literacy and 21.4% (n=89) of participants with adequate health literacy reported feeling nervous or stressed most or all of the time. This was 21.4% for those who self-reported that they speak English well or very well, compared to 33.7% of those who speak English not well or not at all. See Table 3, which also outlines further sociodemographic differences. In the multivariable regression model when sociodemographic factors were controlled for, language group ($p<0.001$), female gender ($p=0.04$) and having two or more chronic illnesses ($p<0.001$) remained significantly associated with increased nervousness or stress, as did higher perceived financial burden ($p<0.001$). See Supplementary Table 1.

Overall, 22.3% of participants reported feeling alone or lonely most or all of the time. In regards to language groups, the range was from 5.6% (n=2) for Hindi speakers to 51.2% (n=32) for Khmer speakers. 27.8% (n=81) of participants with inadequate health literacy reported feeling alone or lonely most or all of the time; this proportion was 18.5% for participants with adequate health literacy (n=77). This was 18.3% for those who self-reported that they speak English well or very well, compared to 31.3% of those who speak English not well or not at all. See Table 4. After multivariate adjustment, having two or more chronic illnesses ($p<0.001$) and university education ($p<0.001$) remained as significant correlates of feeling lonely or alone, with statistically significant differences also observed between language groups ($p<0.001$).

Table 3. Psychological impacts by gender, age group, health literacy, IRSAD quintile and number of comorbidities (n=707)^a

	Nervous or stressed	Alone or lonely
	n (%)	n (%)
Total	179 (25.3)	158 (22.3)
Gender		
Male	73 (21.3)	75 (21.8)
Female	105 (29.0)	83 (22.8)
Age group		
<30	31 (20.9)	30 (20.2)
30-49	65 (22.0)	52 (17.6)
50-69	58 (29.9)	44 (22.6)
70+	25 (35.0)	33 (45.5)
Health literacy		
Inadequate	89(30.7)	81 (27.8)
Adequate	89 (21.4)	77 (18.5)
IRSAD quintile		
Lowest	61 (27.2)	44 (19.7)
Not lowest	118 (24.4)	114 (23.5)
Comorbidities^b		
0	85 (20.1)	73 (17.4)
1	46 (29.5)	37 (23.7)
2	48 (36.6)	48 (36.5)
Language		
Assyrian	22 (16.9)	13 (9.5)
Croatian	40 (33.4)	50 (41.1)
Arabic	14 (17.9)	19 (23.5)
Chinese	5 (6.0)	5 (6.1)
Dinka	24 (38.0)	15 (24.4)
Khmer	36 (57.1)	32 (51.2)
Dari	14 (31.9)	8 (17.8)
Spanish ^b	5 (11.9)	6 (14.2)
Hindi	6 (13.4)	2 (5.6)
Samoan/Tongan	12 (29.0)	6 (14.2)
English language proficiency		
Very well/ well	104 (21.4)	89 (18.3)
Not well/not at all	74 (33.7)	69 (31.3)

^a n=1 respondent excluded from the weighted analyses included in this table; weighted frequencies have been rounded to whole numbers for clarity

^b Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

Social impacts

Of the 399 participants who responded to the question regarding impacts of COVID-19 on their relationship with their partner, one quarter (25.5%) reported negative effects; 62.9% said that the pandemic had no effect and 11.7% said that it had had positive effects. We observed significant differences in reporting of negative impacts on relationships across language groups ($p < 0.001$) and across age groups such that those aged <30 years had a significantly higher proportion of people reporting negative impacts compared to each other age group (30-49: $p < 0.001$; 50-69: $p < 0.001$; 70 and above: $p = 0.02$). Those in the most

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3 disadvantaged IRSAD quintile reported more negative impacts compared to those in higher
4 quintiles ($p<0.01$). We also observed significant differences in reporting of negative impacts
5 on relationships based on financial burden ($p<0.001$) and psychological variables
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7 (alone/lonely – $p<0.001$; nervous/stressed – $p<0.001$).
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12 Of the two hundred and sixty-two participants who reported having children aged less than
13 18 years, 72.8% reported spending more time looking after their children as a result of the
14 pandemic ($n=191$). The majority agreed (somewhat or strongly) that COVID-19 has meant
15 that their children spent less time with friends (68.5%), are less physically active (64.2%),
16 and have more screen time (63.3%). Across the entire sample, 44.9% agreed that their
17 children were finding school harder. Mean perceived negative impact on children was rated
18 3.5 (out of 5; 95% CI= 3.3 to 3.7). In the multivariate analysis, reporting of negative impacts
19 on children varied significantly across language groups ($p<0.001$). Reporting of negative
20 impacts on children was significantly associated with the most disadvantaged IRSAD quintile
21 ($p=0.02$) and with chronic illness, with participants with one ($p=0.01$) or two or more
22 ($p<0.001$) chronic illnesses significantly more likely to report negative impacts compared to
23 those without chronic illness. See Supplementary Table 2.
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Table 4. Social impacts by gender, age group, health literacy, IRSAD quintile and number of comorbidities (n=707)^a

	Negative impact on relationship ^b	More time looking after children ^c	More screen time ^c	Less physically active ^c	Less time with friends ^c	Finding school harder ^c	Mean negative impact on children ^d
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	M(95% CI)
Total	101 (25.5)	191 (72.8)	166 (63.3)	168 (64.2)	180 (68.5)	118 (44.9)	3.5 (3.3, 3.7)
Gender							
Male	49 (23.7)	99 (77.2)	85 (66.4)	92 (71.6)	91 (71.1)	61 (47.7)	3.6 (3.2, 4.0)
Female	63 (27.3)	92 (68.6)	81 (60.2)	76 (57.0)	89 (66.2)	56 (42.2)	3.5 (3.3, 3.7)
Age group							
<30	23 (47.7)	8 (64.8)	6 (46.1)	5 (39.7)	6 (51.0)	4 (32.0)	2.9 (2.1, 3.8)
30-49	39 (19.7)	148 (74.1)	131 (65.6)	139 (69.5)	148 (73.7)	91 (45.5)	3.7 (3.5, 3.8)
50-69	32 (27.2)	34 (70.2)	28 (59.0)	24 (48.9)	25 (52.4)	22 (46.7)	3.2 (2.5, 2.9)
70+	8 (21.6)	-	-	-	-	-	-
Health literacy							
Inadequate	49 (27.8)	76 (75.7)	64 (64.4)	60 (59.3)	72 (71.6)	45 (44.7)	3.5 (3.1, 3.9)
Adequate	53 (22.6)	114 (71.0)	101 (62.5)	108 (67.2)	107 (66.7)	72 (45.0)	3.6 (3.3, 3.8)
IRSAD quintile							
Lowest	14 (12.8)	61 (72.8)	51 (60.9)	50 (60.0)	57 (68.0)	36 (43.3)	3.4 (3.0, 3.9)
Not lowest	88 (30.3)	130 (72.8)	115 (64.4)	118 (66.1)	123 (68.8)	81 (45.6)	3.6 (3.4, 3.8)
Comorbidities^e							
0	54 (23.9)	128 (69.9)	109 (59.6)	118 (64.3)	118 (64.3)	79 (43.2)	3.5 (3.2, 3.7)
1	23 (25.8)	41 (84.9)	37 (78.4)	30 (63.2)	39 (82.6)	28 (59.3)	3.8 (3.6, 4.0)
2	24 (29.5)	22 (71.4)	19 (61.8)	20 (64.8)	22 (72.3)	10 (32.7)	3.4 (2.7, 4.1)
Language							
Assyrian	2 (2.7)	40 (80.4)	30 (60.4)	22 (49.5)	28 (55.5)	21 (42.5)	3.4 (3.1, 3.6)
Croatian	40 (38.2)	33 (93.8)	34 (97.3)	32 (91.4)	34 (97.3)	22 (63.4)	4.3 (4.1, 4.5)
Arabic	3 (6.7)	12 (69.8)	13 (73.6)	15 (87.2)	8 (49.4)	12 (72.5)	3.6 (3.2, 4.0)
Chinese	8 (20.1)	25 (87.0)	23 (81.0)	25 (88.9)	25 (87.0)	9 (32.3)	4.1 (3.8, 4.3)
Dinka	6 (18.9)	25 (66.3)	24 (64.7)	24 (63.3)	27 (72.9)	18 (49.5)	3.7 (3.3, 4.1)
Khmer	8 (45.3)	16 (90.2)	10 (56.3)	15 (85.3)	17 (100.0)	13 (77.5)	4.1 (3.9, 4.3)
Dari	10 (32.9)	17 (83.7)	8 (39.2)	6 (28.4)	14 (66.9)	3 (13.4)	2.9 (2.3, 3.4)
Spanish	5 (16.6)	4 (20.9)	1 (3.5)	5 (23.1)	4 (20.9)	0 (0)	1.8 (0.7, 2.9)
Hindi	5 (14.7)	7 (36.7)	9 (49.4)	12 (76.2)	8 (44.9)	4 (21.8)	3.1 (2.6, 3.5)
Samoan/Tongan	15 (68.2)	13 (72.6)	14 (81.0)	13 (76.2)	14 (79.8)	14 (79.8)	4.1 (3.7, 4.5)
English language proficiency							

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Very well/well	65 (25.6)	144 (69.5)	123 (59.2)	133 (64.3)	135 (65.3)	89 (43.0)	3.5 (3.2, 3.7)
Not well/not at all	37 (25.2)	47 (85.5)	43 (78.7)	35 (63.5)	44 (81.0)	29 (52.0)	3.8 (3.6, 4.0)

^an=1 respondent excluded from the weighted analyses included in this table; weighted frequencies have been rounded to whole numbers for clarity
^bTotal number of participants that responded to the question regarding the impacts of COVID-19 on their relationship with their partner = 399
^cTotal number of participants reporting having children = 262. Impacts on children are not reported for age group 70+ due to small numbers
^dComposite score comprising impact on screen time, physical activity, time with friends and schooling. Scale range: 1-5. Higher scores indicate more negative impact.
^eHealth conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

For peer review only

Financial impacts

Overall, 38.6% of participants reported that their employment status has changed because of COVID-19. This was most commonly a reduction in hours of employment. See Figure 1. In total, 63.6% of participants reported somewhat or more worry about financial problems as a result of the COVID-19 pandemic, and 53.7% reported that they were having difficulty meeting their financial expenses.

--- Figure 1 here ---

Mean perceived financial burden was 2.9 on a five-point scale (95% Confidence Interval [CI]=2.8 to 2.9). As shown in Table 5 and Supplementary Table 3, perceived financial burden was similar across health literacy and language proficiency categories. Financial burden differed across language groups and was highest for Khmer speakers (M=3.6; 95%CI 3.4 to 3.8) and lowest for Spanish speakers (M=2.1; 95%CI 1.7 to 2.6).

In the multivariable regression model, we also observed significant differences in mean perceived financial burden across language groups ($p<0.001$). As well as differences by language, mean perceived financial burden was significantly lower for the oldest age group compared to the youngest after controlling for other sociodemographic factors ($p<0.001$). People with one chronic illness ($p=0.01$) or two or more ($p<0.001$) reported significantly more financial burden compared to those without chronic illness.

Table 5. Financial impacts by gender, age group, health literacy, IRSAD quintile and number of comorbidities (n=707)^a

	Employment status changed	Worried about financial problems	Unable to meet weekly expenses	Mean financial burden ^b
	n (%)	n (%)	n (%)	M (95% CI)
Total	273 (38.6)	450 (63.6)	380 (53.7)	2.9 (2.8, 2.9)
Gender				
Male	139 (40.5)	128 (37.1)	80 (23.2)	2.8 (2.7, 3.0)
Female	134 (36.8)	161 (44.2)	75 (20.8)	2.9 (2.8, 3.0)
Age group				
<30	76 (51.8)	65 (44.1)	32 (21.9)	2.8 (2.6, 3.1)
30-49	134 (45.5)	135 (45.9)	64 (21.8)	2.9 (2.8, 3.0)
50-69	58 (30.0)	76 (39.5)	47 (24.6)	2.9 (2.8, 3.1)
70+	5 (6.3)	12 (16.6)	11 (15.7)	2.4 (2.3, 2.6)
Health literacy				
Inadequate	101 (35.7)	104 (35.8)	64 (21.9)	2.8 (2.7, 3.0)
Adequate	172 (41.3)	184 (44.3)	91 (22.0)	2.9 (2.8, 3.0)
IRSAD quintile				
Lowest	70 (31.4)	288 (40.8)	49 (21.7)	2.8 (2.7, 3.0)
Not lowest	202 (41.9)	201 (41.6)	107 (22.1)	2.9 (2.8, 3.0)
Comorbidities^c				
0	182 (43.1)	166 (39.5)	93 (22.0)	2.8 (2.7, 2.9)
1	62 (39.9)	73 (47.0)	30 (19.4)	3.0 (2.8, 3.2)
2	30 (22.6)	49 (37.4)	33 (24.8)	2.9 (2.7, 3.0)
Language				
Assyrian	24 (18.2)	39 (29.0)	39 (29.4)	2.7 (2.6, 2.9)
Croatian	51 (41.9)	57 (46.8)	5 (3.9)	2.7 (2.6, 2.9)
Arabic	29 (36.1)	19 (23.7)	12 (14.8)	2.7 (2.5, 3.0)
Chinese	20 (39.8)	14 (18.4)	21 (27.3)	2.6 (2.3, 2.9)
Dinka	25 (40.3)	39 (62.3)	15 (24.5)	3.1 (2.8, 3.3)
Khmer	38 (59.7)	45 (71.3)	30 (47.7)	3.6 (3.4, 3.8)
Dari	25 (56.7)	26 (59.5)	8 (18.7)	3.4 (3.2, 3.6)
Spanish ^d	13 (29.7)	9 (21.4)	6 (14.9)	2.1 (1.7, 2.6)
Hindi	20 (48.0)	17 (40.4)	3 (7.4)	2.8 (2.6, 2.9)
Samoan/Tongan	18 (42.8)	24 (56.3)	15 (36.9)	3.0 (2.6, 3.5)
English language proficiency				
Very well/well	211 (43.2)	201 (41.2)	100 (20.5)	2.8 (2.7, 2.9)
Not well/not at all	62 (28.3)	88 (39.9)	55 (25.2)	2.9 (2.8, 3.0)

^a n=1 respondent excluded from the weighted analyses included in this table; weighted frequencies have been rounded to whole numbers for clarity

^b Composite score comprising worry about financial problems and inability to meet weekly expenses. Scale range: 1-5. Higher scores indicate greater perceived financial burden.

^c Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

^d Spanish language group had substantial gaps in recruitment across age groups.

DISCUSSION

This is the largest Australian survey exploring COVID-19-related psychological, social, and financial outcomes, and the sociodemographic predictors of those outcomes, among people who primarily speak a language other than English. Even prior to the July 2021 COVID-19 outbreak in New South Wales, which disproportionately impacted the communities and geographical areas included in this study, we observed broad negative psychological, social and financial impacts of the pandemic. Over one quarter of the sample reported feeling nervous or stressed most or all of the time, and twenty-two percent felt lonely or alone most or all of the time. Over half worried about financial problems and reported being somewhat or less able to meet their weekly expenses. One quarter of participants reported negative impacts on their spousal relationship and the majority of participants with children under 18 years reported that even out of lockdown their children spent less time with friends as a result of the pandemic (68.5%), were less physically active (64.2%) and had more screen time (63.3%). Regression analyses consistently showed distinct patterns of COVID-19 impacts for different language groups and more negative outcomes for those living with chronic illness and comorbidities.

The impacts of COVID-19 have been explored across a number of countries with different population groups. Direct comparisons are difficult on account of varying survey items, different data collection timepoints, and wide-ranging case numbers, morbidity and mortality from COVID-19 across geographical contexts. However, since the beginning of the pandemic, studies have spotlighted socio-demographic disparities in outcomes worldwide (38) and broad impacts for culturally and linguistically diverse groups (39). A cross-sectional

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3 survey among culturally and linguistically diverse communities in Greater Western Sydney
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5 (n=198) conducted earlier in the pandemic (August - September 2020), for example, similarly
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7 identified financial and social impacts, with 40% of participants indicating that their financial
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9 situation and ability to access social services were “worse” as a result of COVID-19 (39). Our
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11 findings build on this by offering further nuance (e.g. highlighting associated worry about
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13 financial problems) and elucidating a range of other impacts including additional impacts on
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15 children. Our study also uniquely showcases differences in outcomes across language
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17 groups.
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25 In comparing our findings to Australian studies which did not specifically focus on culturally
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27 and linguistically diverse communities, we also see some similarities. Nationally-
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29 representative data from the Australian Bureau of Statistics, for instance, showed that in
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31 June 2021, one in five (20%) Australians experienced high or very high levels of psychological
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33 distress in the last four weeks, and 28% of people 18 years and over reported feeling
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35 nervous in that survey (13). Previous work has also confirmed negative impacts of COVID on
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37 children’s social connectedness and amount of screen time (40, 41). The psychological
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39 impacts found in this study are also comparable to our national survey conducted
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41 in April 2020, at the outset of the pandemic when stay at home orders had been in place for
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43 3 weeks. In this earlier study, we found that 26% of participants reported feeling nervous or
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45 stressed most or all of the time, and 27% percent felt lonely or alone most or all of the time
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47 (18). Similar proportions of negative outcomes over time may reflect a pattern of community
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49 resilience, which has been referred to elsewhere (39). Alternatively, given that case numbers
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51 and community restrictions were low at the time of data collection in the current study, our
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3 findings could also reflect the inadequate COVID response for culturally and linguistically
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5 diverse communities.
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10 **Implications**

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14 Our findings showcase a broad range of impacts of COVID-19 among culturally and
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16 linguistically-diverse Australian communities. A multi-level, whole-of-government approach
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18 is needed to address these, with policy and sustainable infrastructure to disseminate timely,
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20 understandable and culturally-appropriate information about financial, social and mental
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22 health resources and services and to co-design tailored support packages for different
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24 language groups (42). Qualitative studies have highlighted a large number of community-
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26 driven initiatives and actions that have emerged as a response to COVID-19, as well as
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28 embodied and communal ways of coping (43). Using a strengths-based perspective, we must
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30 acknowledge the multiple capacities and resources of our culturally and linguistically diverse
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32 communities and provide properly-resourced opportunities to work directly with them to
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34 address unique challenges that they face, as identified in this study. Our findings reinforce
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36 the need to prioritise support for community members living with comorbidities who are
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38 likely to bear a disproportionate impact.
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48 **Strengths and limitations**

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51 This study was co-designed by researchers and multicultural health service staff, and
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53 enabled through recruitment methods that are inclusive and reduce barriers to
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55 participation, such as translated versions of the survey, engagement of interpreters and
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57 multicultural health staff who are trusted in their communities, and use of multiple
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3 recruitment methods (including through community events and networks). This approach
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5 wholly aligns with the Framework of Culturally Competent Health Research (22). However,
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7 practical constraints limited the number of languages we could include, and restricted data
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9 collection to three regions in Greater Sydney only. We also used convenience sampling
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11 methods.
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18 To reduce survey length and burden on participants we purposefully selected a small
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20 number of items from validated measures or our previous research to explore psychological,
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22 social and financial impacts, or co-designed them specifically for this study. Self-report may
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24 have introduced recall and social desirability bias.
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30 Finally, the results of this study reflect a particular point in time when there were very low
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32 numbers of community-acquired cases of COVID-19 in Australia, and for the most part, no
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34 government-imposed restrictions on movement and activities in New South Wales. It is likely
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36 that psychological wellbeing outcomes and financial and social stress have worsened since
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38 the July 2021 outbreak and the imposition of stay-at-home orders, in line with previous
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40 research (40, 44). We are unable to explore changes in impacts over time in this study.
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48 Conclusion

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51 Culturally and linguistically diverse communities experience significant impacts of COVID-19,
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53 with distinct patterns of impacts for different language groups. We must work with
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55 communities to address unique challenges they face and tailor interventions and supports
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57 accordingly. As COVID-19 continues to disproportionately impact the most culturally and
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3 linguistically diverse communities in Sydney and worldwide, responses must too reflect the
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5 diversity of our communities through co-production and tailored support packages.
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FIGURE LEGENDS

Figure 1. Change in employment

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COMPETING INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

AUTHORS' CONTRIBUTIONS

Muscat DM - Formal analysis, Investigation; Data Curation; Writing - Original Draft; **Ayre J** - Conceptualization, Methodology, Formal analysis, Investigation; Data Curation; Writing - Review & Editing; Project administration; **Mac O** - Formal analysis, Investigation; Data Curation; Writing - Review & Editing; Project administration; **Batcup C** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; Project administration; **Cvejic E** - Formal analysis, Writing - Review & Editing; **Pickles K**; Conceptualization, Methodology, Writing - Review & Editing; **Dolan H** - Conceptualization, Methodology, Writing - Review & Editing; **Bonner C** - Conceptualization, Methodology, Writing - Review & Editing; **Mouwad D** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Zachariah D** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Turalic U** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Santalucia Y** -

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3 Conceptualization, Methodology, Investigation; Writing - Review & Editing; **Chen T** -
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5 Conceptualization, Methodology, Investigation; Writing - Review & Editing
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7 **Vasic G** - Conceptualization, Methodology, Investigation; Writing - Review & Editing; **McCaffery**
8
9 **KJ** - Conceptualization, Methodology, Formal analysis, Writing - Review & Editing; Project
10 administration.
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15 DATA SHARING

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18 Deidentified participant data are available from the first author (ORCID identifier: 0000-0001-
19 6106-6298) upon reasonable request.
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23 ETHICS STATEMENT

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26 This study was approved by Western Sydney Local Health District Human Research Ethics
27 Committee (Project number 2020/ETH03085). All participants provided informed consent to
28 participate. This manuscript does not contain any personal or medical information about an
29 identifiable individual.
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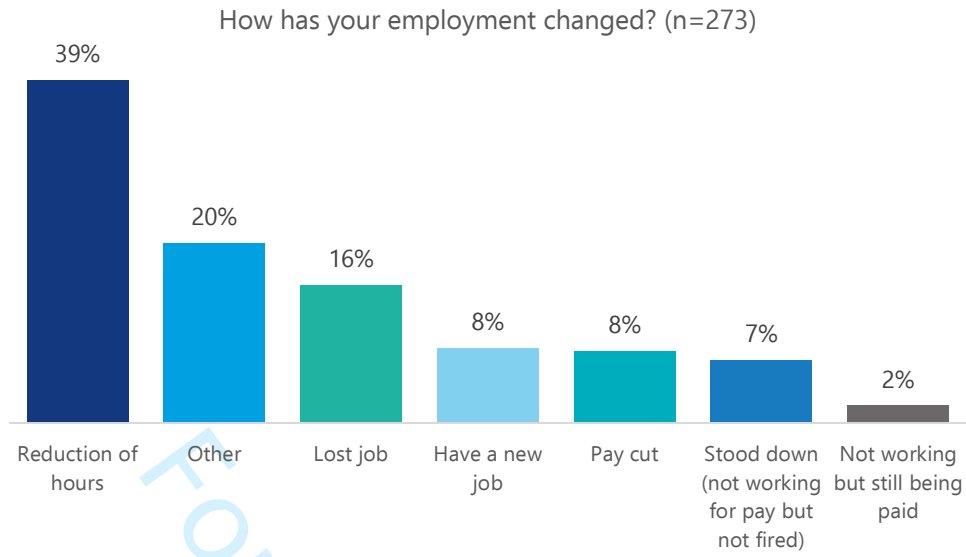


Figure 1. Change in employment

Supplementary Table 1. Multiple regression model of factors associated with negative psychological impacts (n=707)^a

Predictor	Nervous/Stressed				Alone/Lonely			
	Unadjusted analysis ^b		Adjusted analysis ^c		Unadjusted analysis ^b		Adjusted analysis ^c	
	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value	OR (95% CI)	P value
Gender^a								
Male	Reference		Reference		Reference		Reference	
Female	1.51 (1.03 to 2.22)	0.03	1.59 (1.03 to 2.45)	0.04	1.05 (0.70 to 1.60)	0.80	1.01 (0.65 to 1.57)	0.97
Age group		0.06		0.65		<0.001		0.36
18-29	Reference		Reference		Reference		Reference	
30-49	1.07 (0.59 to 1.95)	0.82	0.76 (0.39 to 1.48)	0.42	0.84 (0.42 to 1.70)	0.63	1.54 (0.78 to 3.06)	0.22
50-69	1.62 (0.89 to 2.95)	0.12	0.99 (0.47 to 2.11)	0.99	1.16 (0.57 to 2.33)	0.68	1.41 (0.62 to 3.23)	0.42
>70	2.04 (1.00 to 4.15)	0.05	1.09 (0.41 to 2.88)	0.87	3.30 (1.53 to 7.12)	<0.001	0.93 (0.35 to 2.48)	0.88
Comorbidity^d		<0.001		0.01		<0.001		<0.001
0	Reference		Reference		Reference		Reference	
1	0.60 (0.39 to 0.94)	0.03	1.34 (0.77 to 2.32)	0.30	1.48 (0.90 to 2.44)	0.12	0.80 (0.45 to 1.44)	0.460
2+	0.44 (0.27 to 0.70)	<0.001	2.39 (1.35 to 4.24)	<0.001	2.74 (1.67 to 4.51)	<0.001	0.34 (0.18 to 0.64)	<0.001
Lowest ISRAD quintile	1.16 (0.77 to 1.74)	0.47	1.41 (0.86 to 2.31)	0.17	0.80 (0.51 to 1.24)	0.32	1.08 (0.64 to 1.84)	0.77
University education	0.47 (0.30 to 0.73)	<0.001	1.28 (0.71 to 2.32)	0.41	0.43 (0.26 to 0.74)	<0.001	1.10 (0.58 to 2.08)	<0.001
Adequate health literacy	0.62 (0.42 to 0.90)	0.01	0.68 (0.39 to 1.19)	0.18	0.59 (0.39 to 0.9)	0.01	1.17 (0.67 to 2.04)	0.57
English-language proficiency	0.54 (0.37 to 0.78)	<0.001	0.88 (0.50 to 1.57)	0.68	0.49 (0.33 to 0.74)	<0.001	0.93 (0.51 to 1.72)	0.83
Years living in Australia		0.12		0.70		0.42		0.870
5 years or less	Reference		Reference		Reference		Reference	
6 to 10 years	1.36 (0.70 to 2.64)	0.36	1.22 (0.58 to 2.53)	0.60	1.26 (0.58 to 2.72)	0.56	0.88 (0.42 to 1.84)	0.73
More than 10 years	1.27 (0.74 to 2.18)	0.38	1.19 (0.61 to 2.34)	0.61	1.22 (0.63 to 2.37)	0.56	1 (0.51 to 1.95)	0.99
Born in Australia	0.51 (0.21 to 1.26)	0.14	0.73 (0.25 to 2.18)	0.58	0.60 (0.21 to 1.70)	0.34	1.38 (0.43 to 4.39)	0.59
Language group^e	-	<0.001	-	<0.001	-	<0.001	-	<0.001
Perceived public health threat	1.15 (1.08 to 1.22)	<0.001	1.08 (0.99 to 1.18)	0.07	1.12 (1.05 to 1.20)	<0.001	0.93 (0.85 to 1.03)	0.15
Mean financial burden	1.96 (1.55 to 2.48)	<0.001	1.82 (1.42 to 2.33)	<0.001	-	-	-	-

NB: All regression models also control for date of survey completion (binary variable, before/after 23 June when restrictions in Greater Sydney were imposed).

^a n=1 respondent excluded from the weighted analyses presented in this table

^b Unadjusted analyses do not control for co-variables; statistics represent the regression of each predictor on psychological outcomes with no other co-variables included in the model.

^c Adjusted analyses control for all covariates listed in this table.

^d Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

^e Individual comparisons for language group not presented as there is no specific contrast that is pragmatically relevant. Khmer was selected as the reference language group as this subsample was of adequate size (n>50) and had the highest proportion of people reporting negative psychological impacts.

Supplementary Table 2. Multiple regression model of factors associated with negative social impacts

Predictor	Negative impact on relationships (n=399) ^a				Negative impact on children (n=262) ^b			
	Unadjusted analysis ^c		Adjusted analysis ^d		Unadjusted analysis ^c		Adjusted analysis ^e	
	OR (95% CI)	P value	OR (95% CI)	P value	B(95%CI)	P value	B (95% CI)	P value
Gender								
Male	Reference		Reference		Reference		Reference	
Female	1.16 (0.65 to 2.09)	0.62	1.21 (0.72 to 2.03)	0.47	-0.12 (-0.54 to 0.31)	0.59	-0.17 (-0.41 to 0.08)	0.18
Age group		0.15		0.03		0.13		0.12
18-29	Reference		Reference		Reference		Reference	
30-49	0.32 (0.09 to 1.09)	0.07	0.27 (0.11 to 0.65)	<0.001	0.75 (-0.13 to 1.62)	0.10	0.70 (-0.03 to 1.43)	0.06
50-69	0.57 (0.13 to 2.41)	0.44	0.41 (0.17 to 0.98)	<0.001	0.32 (-0.78 to 1.41)	0.57	0.46 (-0.35 to 1.27)	0.26
>70	0.40 (0.07 to 2.30)	0.30	0.30 (0.11 to 0.86)	0.02	0 (-1.32 to 1.33)	1.00	0.44 (-1.40 to 2.28)	0.64
Chronic illness^f		0.63		0.70		0.15		<0.001
0	Reference		Reference		Reference		Reference	
1	0.81 (0.39 to 1.68)	0.57	1.11 (0.61 to 2.00)	0.74	0.33 (-0.02 to 0.68)	0.07	0.37 (0.09 to 0.65)	0.01
2+	1.28 (0.50 to 3.24)	0.60	1.33 (0.68 to 2.60)	0.40	-0.07 (-0.82 to 0.68)	0.85	0.76 (0.27 to 1.26)	<0.001
Lowest IRSAD quintile	0.34 (0.14 to 0.82)	0.02	0.34 (0.17 to 0.66)	<0.001	-0.17 (-0.67 to 0.33)	0.50	0.40 (0.07 to 0.72)	0.02
University education	1.87 (0.68 to 5.13)	0.23	0.50 (0.25 to 1.02)	0.06	-0.12 (-0.53 to 0.29)	0.57	-0.02 (-0.36 to 0.32)	0.91
Adequate health literacy	0.41 (0.21 to 0.81)	0.01	0.80 (0.48 to 1.35)	0.41	0.08 (-0.38 to 0.53)	0.75	0.22 (-0.08 to 0.53)	0.15
English-language proficiency	1.46 (0.66 to 3.21)	0.35	1.02 (0.61 to 1.71)	0.95	-0.31 (-0.64 to 0.02)	0.06	-0.11 (-0.41 to 0.19)	0.46
Years living in Australia		0.13		0.53		0.91		0.99
5 years or less	Reference		Reference		Reference		Reference	
6 to 10 years	1.14 (0.45 to 2.93)	0.78	1.78 (0.73 to 4.34)	0.21	0.04 (-0.64 to 0.71)	0.91	-0.09 (-0.57 to 0.39)	0.72
More than 10 years	0.47 (0.18 to 1.20)	0.12	1.01 (0.53 to 1.93)	0.98	-0.07 (-0.46 to 0.32)	0.73	-0.03 (-0.41 to 0.36)	0.89
Born in Australia	0.41 (0.08 to 2.15)	0.29	1.06 (0.34 to 3.35)	0.92	-0.34 (-1.4 to 0.72)	0.52	0 (-0.59 to 0.59)	1.00
Language group^g		<0.001		<0.001		<0.001		<0.001
Perceived public health threat	0.97 (0.85 to 1.10)	0.59	1.06 (0.99 to 1.15)	0.10	-	-	-	-
Mean financial burden	1.70 (1.14 to 2.54)	0.01	1.88 (1.38 to 2.56)	<0.001	-	-	-	-
Feeling lonely / alone	0.98 (0.40 to 2.40)	0.96	0.37 (0.21 to 0.64)	<0.001	-	-	-	-
Feeling nervous / stressed	0.33 (0.14 to 0.77)	0.01	0.29 (0.17 to 0.49)	<0.001	-	-	-	-

NB: All regression models also control for date of survey completion (binary variable, before/after 23 June when restrictions in Greater Sydney were imposed).

^aTotal number of participants that responded to the question regarding the impacts of COVID-19 on their relationship with their partner

^bTotal number of participants reporting having children

^cUnadjusted analyses do not control for co-variables; statistics represent the regression of each predictor on social outcomes with no other co-variables included in the model.

^dAdjusted analyses exploring factors associated with negative impacts on relationships control for all covariates listed in this table.

^eAdjusted analyses exploring factors associated with negative impacts on children do not control for perceived public health threat, financial burden or psychological outcomes (lonely/alone; nervous/stressed).

^fHealth conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

^gIndividual comparisons for language group not presented as there is no specific contrast that is pragmatically relevant. Khmer was selected as the reference language group as this subsample was of adequate size (n>50) and had the highest proportion of people reporting negative impacts on relationships.

Supplementary Table 3. Multiple regression model of factors associated with financial burden (n=707)^a

	Unadjusted analysis ^b		Adjusted analysis ^c	
	B (95% CI)	P value	B (95% CI)	P value
Gender				
Male	Reference		Reference	
Female	0.03 (-0.15 to 0.21)	0.77	0.01 (-0.13 to 0.15)	0.89
Age group		<0.001		<0.001
18-29	Reference		Reference	
30-49	0.07 (-0.19 to 0.34)	0.58	0.08 (-0.15 to 0.32)	0.49
50-69	0.09 (-0.20 to 0.38)	0.54	0.03 (-0.22 to 0.29)	0.80
>70	-0.40 (-0.67 to -0.12)	0.01	-0.51 (-0.82 to -0.20)	<0.001
Comorbidity^d		0.14		<0.001
0	Reference		Reference	
1	0.21 (0 to 0.41)	0.05	0.26 (0.06 to 0.46)	0.01
2+	0.07 (-0.12 to 0.26)	0.48	0.35 (0.15 to 0.54)	<0.001
Lowest IRSAD quintile	-0.01 (-0.21 to 0.18)	0.91	-0.06 (-0.22 to 0.11)	0.50
University education	-0.27 (-0.46 to -0.09)	<0.001	-0.18 (-0.36 to 0.01)	0.06
Adequate health literacy	0.05 (-0.13 to 0.24)	0.56	0.14 (-0.06 to 0.33)	0.16
English-language proficiency	-0.09 (-0.25 to 0.07)	0.27	-0.12 (-0.32 to 0.08)	0.24
Years living in Australia		0.01		0.24
5 years or less	Reference		Reference	
6 to 10 years	0.14 (-0.11 to 0.38)	0.27	0.05 (-0.19 to 0.30)	0.67
More than 10 years	-0.17 (-0.37 to 0.02)	0.07	-0.12 (-0.32 to 0.09)	0.26
Born in Australia	-0.33 (-0.77 to 0.11)	0.14	-0.21 (-0.61 to 0.19)	0.31
Language group^e	-	<0.001	-	<0.001

NB: All regression models also control for date of survey completion (binary variable, before/after 23 June when restrictions in Greater Sydney were imposed).

^a n=1 respondent excluded from the weighted analyses presented in this table

^b Unadjusted analyses do not control for co-variables; statistics represent the regression of each predictor on financial burden with no other co-variables included in the model.

^c Adjusted analyses control for all covariates listed in this table.

^d Health conditions assessed included respiratory disease, asthma, chronic obstructive pulmonary disease, high blood pressure, cancer, heart disease, stroke, diabetes, depression and anxiety

^e Individual comparisons for language group not presented as there is no specific contrast that is pragmatically relevant. Khmer was selected as the reference language group as this subsample was of adequate size (n>50).

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For peer review only

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2-3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7-9
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-9
Bias	9	Describe any efforts to address potential sources of bias	9-10
Study size	10	Explain how the study size was arrived at	NA [#]
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	9
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	9
		(b) Describe any methods used to examine subgroups and interactions	9
		(c) Explain how missing data were addressed	
		(d) If applicable, describe analytical methods taking account of sampling strategy	9
		(e) Describe any sensitivity analyses	9
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	10
		(b) Give reasons for non-participation at each stage	NA [#]
		(c) Consider use of a flow diagram	NA [#]
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	10-11
		(b) Indicate number of participants with missing data for each variable of interest	Tables 2, 3, S1, S2, S3

Outcome data	15*	Report numbers of outcome events or summary measures	13-17
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	13-17
		(b) Report category boundaries when continuous variables were categorized	13-17
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA [#]
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	13-17
Discussion			
Key results	18	Summarise key results with reference to study objectives	18
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	20
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	18-19
Generalisability	21	Discuss the generalisability (external validity) of the study results	20
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	NA [#]

*Give information separately for exposed and unexposed groups.

Not available

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.