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Patient Health Questionnaire 9 (PHQ-9) and General Anxiety Disorder 7 (GAD-7) data contributed by 13,829 respondents to a national survey about COVID-19 restrictions in Australia

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ABSTRACT

While the Patient Health Questionnaire 9 (PHQ-9) and General Anxiety Disorder 7 (GAD-7) are frequently used in mental health research, few studies have reported comprehensive data on these measures from population or community samples. The PHQ-9 and GAD-7 were used as indicators of symptoms of depression and anxiety in a national online anonymous survey to assess the mental health of adults in Australia during the COVID-19 restrictions. The aim of this study was to describe gender- and age-specific PHQ-9 and GAD-7 item and summary data contributed by those who completed this survey. Data were analysed descriptively. Complete survey responses were contributed by 13,829 people. For both measures, item-by-item results, summary statistics (mean, standard deviation, minimum, maximum, median and interquartile range) and prevalence of severity categories are reported for the whole sample, and disaggregated by gender and age groups. These comprehensive data provide a useful point of comparison for future COVID-19-related or other research among population or community samples. Other researchers are encouraged to report detailed PHQ-9 and GAD-7 data in the future, to enable and promote relevant between-group comparisons.

1. INTRODUCTION

Short and understandable screening instruments are useful for detecting and assessing severity of symptoms of depression and anxiety in clinical and research settings. The Patient Health Questionnaire 9 (PHQ-9) and the General Anxiety Disorder 7 (GAD-7) scale are well-established instruments for screening for symptoms of depression and generalised anxiety respectively. Both have been formally validated against diagnostic clinical interviews to establish the sensitivity, specificity and positive and negative predictive values of cut-off scores, and are used widely in clinical research (Kroenke et al., 2001; Spitzer et al., 2006).

However, the PHQ-9 and GAD-7 have been less widely used to ascertain population or community prevalence of symptoms of depression or generalised anxiety. After searching the literature, we found a limited set of studies that had used one or both of these measures (see Table 1) to assess depression and anxiety among randomly-selected samples of people drawn from general communities. Some studies involved a specific population group: people attending general practice

(Carey et al., 2014; Pirkis et al., 2009), university students (Farrer et al., 2016), or older women (Hammarberg et al., 2019). Most studies only reported the prevalence of moderate to severe symptoms of depression (PHQ-9 score ≥ 10) or generalised anxiety (GAD-7 score ≥ 10). The prevalence of those with no or mild symptoms, and a breakdown of moderate, moderately severe and severe symptoms have been less frequently reported. Further, few studies reported mean scores and indicators of variance like standard deviations of the population-level data. Only one included item-by-item results for the GAD-7 (Hinz et al., 2017) and none included item-by-item results for the PHQ-9.

We conducted a nationwide online survey to assess the mental health of adults living in Australia during the first month of COVID-19 restrictions (Fisher et al., 2020). The brief and anonymously-completed survey included the PHQ-9 and GAD-7 as indicators of prevalence and severity of symptoms of depression and anxiety. As the whole population was affected, it was not possible to establish a comparison group who were not living with COVID-19 restrictions, so we turned to the available published evidence about these measures in general communities at non-COVID times as a comparator. We found few published

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studies reporting comprehensive PHQ-9 and GAD-7 data from population or general community samples. With a large and nationally representative sample, the PHQ-9 and GAD-7 data from our survey can provide valuable reference data for future studies (Fisher et al., 2020). The aim of this study was to describe detailed gender- and age-specific PHQ-9 and GAD-7 item and summary data collected from adults in Australia during the COVID-19 restrictions.

2. METHODS

The methods of this study have been described in detail elsewhere (Fisher et al., 2020).

2.1. Design, setting and participants

This study was a short online survey of people aged at least 18 years and living in Australia. The survey was created in Qualtrics Insight Platform, and was open to respondents from 3 April to midnight on 2 May 2020. The survey link was displayed on the Monash University website, and information about the survey was disseminated through social and traditional media, organisational and personal networks.

2.2. Data source

Data were collected using a questionnaire, which included the PHQ-

9 and GAD-7, as well as study-specific questions. In this paper, only two study-specific questions, 'Are you: female, male, or other?' and 'How old are you?', will be used in analyses.

2.2.1. Patient Health Questionnaire 9 (PHQ-9)

The PHQ-9, a shorter version of the complete PHQ, is a nine-item self-report scale designed to assess symptoms of depression. The PHQ-9 is comprised of the nine criteria used in the DSM-IV to diagnose depressive disorders. Each of the nine items can be scored from 0 (not at all) to 3 (nearly every day), and the total scale score ranges from 0-27. Symptom severity can be assessed through the total score, where PHQ-9 scores of 5-9: mild, 10-14: moderate, 15-19: moderately severe, and ≥ 20 : severe depressive symptoms.

The PHQ-9 has been formally validated against structured diagnostic interviews administered by a mental health professional; PHQ-9 score ≥ 10 has a sensitivity of 88% and a specificity of 88% to detect Major Depression (Kroenke et al., 2001).

2.2.2. General Anxiety Disorder 7 (GAD-7)

The GAD-7 is a brief, seven-item self-report scale designed to assess generalised anxiety in primary care settings. Similar to the PHQ-9, each of the seven items are scored from 0 (not at all) to 3 (nearly every day). The total GAD-7 scale score ranges from 0-21. Cut-offs can be used to describe symptom severity; GAD-7 scores of 5-9: mild, 10-14: moderate, ≥ 15 : severe anxiety symptoms. When formally validated against

Table 1
Summary of comparison data collected using the PHQ-9 and/or GAD-7

Author (Year)	Country	Participants	Prevalence	Mean ($\pm$ SD)	Item-by-item results	Data disaggregated
PHQ-9						
Participants randomly selected from the general community						
Patten and Schopflocher (2009)	Canada	3304 people aged at least 18 years	Moderate-severe: 3.3%	NR	NR	NR
Shim et al. (2011)	USA	10,283 people aged at least 18 years	Mild: 14.8%; moderate: 4.52%; moderately severe: 1.8%; severe: 0.6%	NR	NR	Age, gender
Johansson et al. (2013)	Sweden	1329 people aged at least 18 years	Moderate: 6.4%; moderately severe-severe: 4.4%	3.7	NR	Gender
Kocalevent et al. (2013)	Germany	5018 people aged at least 18 years	No symptoms: 76.4%; mild: 18.1%; moderate: 4.3%; moderately severe-severe: 1.3%	Men: 2.7 ($\pm$ 3.5); women: 3.1 ($\pm$ 3.5)	NR	Age, gender
Kiely and Butterworth (2015)	Australia	546 people aged 32 to 35 years and 1515 aged 52 to 58 years	3.0%*	No prior 30-day diagnosis: 3.71 ($\pm$ 3.94); prior 30-day diagnosis: 12.34 ($\pm$ 6.64)*	NR	NR
Participants selected from people attending general practices						
Pirkis et al. (2009)	Australia	>22,000 people aged >59 consulting a GP	Moderate-severe: 8.2%	NR	NR	Gender
Carey et al. (2014)	Australia	1004 people consulting a GP	No symptoms: 66.3%; mild: 20.8%; moderate: 7.1%; moderately severe: 3.4%; severe: 2.4%	NR	NR	NR
Specific population groups						
Farrer et al. (2016)	Australia	611 university students	Moderate-severe: 7.9%	7.33 ($\pm$ 5.73)	NR	NR
GAD-7						
Participants randomly selected from the general community						
Johansson et al. (2013)	Sweden	1329 people aged at least 18 years	≥ 8 : 14.7%	3.59	NR	Gender
Hinz et al. (2017)	Germany	9721 people aged at least 18 years	No symptoms: 68.6%; mild: 25.5%; moderate: 4.7%; severe: 1.2%	3.57	Yes; mean score for each item, by gender	Age, gender
Specific population groups						
Farrer et al. (2016)	Australia	611 university students	Moderate-severe: 17.5%	5.60 ($\pm$ 5.04)	NR	NR
Hammarberg et al. (2019)	Australia	4947 women aged > 49 years from the general community responding to an online survey	Moderate-severe: 10.6%	NR	NR	Age

NR – not reported

*In Kiely and Butterworth (2015), this prevalence was estimated using the World Mental Health Composite International Diagnostic Interview (WMH-CIDI), and the means are reported separately for those with and without a 30-day diagnosis (diagnosed using the WMH-CIDI)

diagnostic psychiatric interviews, a GAD-7 score of ≥ 10 has a sensitivity of 89% and specificity of 82% to detect Generalised Anxiety Disorder (Spitzer et al., 2006).

2.3. Data management and analysis

Data were analysed descriptively. For both the PHQ-9 and GAD-7, the number and frequency of responses are reported at an item-by-item level, for the total sample, and stratified by gender and age group. Summary statistics, including mean, standard deviation, minimum and maximum values, median and interquartile range, for both measures for the total sample and gender and age groups were calculated. The number and frequency of participants in each symptom severity category for both depression and anxiety were calculated, by whole sample, gender and age groups.

2.4. Ethics approval

Ethics approval was given by the Monash University Human Research Ethics Committee (ID: 2020-24090-42716).

3. RESULTS

The survey was completed by 13,829 respondents aged 18 or over and living in Australia. Demographic characteristics of the study sample are shown in Table 2.

The distribution of the frequency of depressive symptoms ('not at all' to 'nearly every day') for each item of the PHQ-9, for the whole sample, and disaggregated by gender are shown in Table 3. Item-by-item results for the PHQ-9, disaggregated by age are shown in Table 4. In Tables 5 and 6, the distribution of frequency of anxiety symptoms for each item of the GAD-7 are shown, for the whole sample, and stratified by gender and age.

In Table 7, the mean, standard deviation, minimum and maximum values, median and interquartile range of the PHQ-9 and GAD-7 total scores are shown. These summary statistics are presented for the whole sample, and also by gender and age. The prevalence of depression and anxiety by symptom severity is displayed in Table 8.

4. DISCUSSION

This survey is, to our knowledge, one of the first observations of the impact of COVID-19 restrictions on the mental health of adults in Australia. Its major strength is that it yields the largest PHQ-9 and GAD-7 dataset from the general community to date in Australia, and is among the largest in the world. We acknowledge the limitation that online

surveys are less accessible to people with limited internet access or technological literacy, and people with limited English proficiency. In our first paper, we investigated the prevalence of clinically significant symptoms of depression and anxiety, and the factors that were associated with this (Fisher et al., 2020). In that paper, we only reported prevalence of mild and clinically significant depression and anxiety, and mean PHQ-9 and GAD-7 scores. The aim of this paper was to report descriptive age- and gender-specific reference data for future research using the PHQ-9 and GAD-7.

There are several reasons for describing detailed results from mental health measures, such as the PHQ-9 and GAD-7. First, the item-by-item breakdown of each measure allows readers to see and interpret the frequency distribution of each symptom. When the measures are presented item-by-item, it is clearer to see which symptoms are driving the higher total scores, or which items are endorsed less frequently. The item-by-item results can also reveal particular patterns or symptoms of concern. In this study, the item-by-item breakdown of the PHQ-9 revealed a concerning proportion of people having thoughts that they'd be better off dead or of hurting themselves on several days (7.8%), more than half the days (2.6%) or nearly every day (1.9%). When reporting overall prevalence of moderate to severe depression and anxiety been reported, potentially valuable information from individual items is lost.

Second, it is useful to report summary statistics of measures. As displayed in Table 1, the mean and standard deviation have rarely been included in papers reporting population- or community-based PHQ-9 and GAD-7 data. Summary statistics are key results, as they allow straightforward comparison with data from other studies. Further, reporting the minimum and maximum values of total PHQ-9 and GAD-7 scores is helpful in highlighting the range of symptom severity. In this study, the minimum and maximum values in each gender and age category were the same as the range of both measures. This emphasises the representativeness of our sample, as it shows that in each gender and age group, people experiencing the full spectrum of severity of symptoms of depression and anxiety participated.

Third, the prevalence of each symptom severity category of depression and anxiety, from no symptoms to severe symptoms, should be reported. In previous studies that have used the PHQ-9 or GAD-7 to estimate depression or anxiety prevalence in the community or among select populations (Table 1), the prevalence of each symptom category has been inconsistently reported. Often, only the prevalence of clinically significant (moderate-severe) symptoms are reported. Displaying the prevalence of each symptom severity category allows easier and more direct comparison with other research. Further, it provides information about the prevalence of mild or moderate symptoms, rather than just severe symptoms. This is particularly important in COVID-19-related research, such as in this paper, where the whole population has been affected.

Finally, when describing PHQ-9 and GAD-7 results in detail, it is helpful to disaggregate the data by gender and age. The aim of the study was not to test for differences between gender or age groups using bivariate or multivariate analyses. This has been reported elsewhere (Fisher et al., 2020). However, displaying the disaggregated data enables important comparisons between groups. Further, it enables other researchers to make direct comparisons between their data and these results, across gender and age groups.

The detailed PHQ-9 and GAD-7 data reported in this paper provide a useful point of comparison with other population- or community-based mental health research. The COVID-19 pandemic and its implications are unique, and thus, these data may be most suited to comparison with other COVID-19 affected populations, in Australia or elsewhere. We anticipate that these data will also be useful in assessing mental health as populations recover from the pandemic. In addition to COVID-19 research, these data could be used to make comparisons with population mental health in other crises, such as epidemics, natural disasters or conflict. Reporting PHQ-9 and GAD-7 data in detail, particularly item-

Table 2
Demographic characteristics of the study sample (N = 13,829)

	n	%
Gender		
Women	10,434	75.5
Men	3,328	24.1
Other	67	0.5
State/Territory		
Australian Capital Territory	465	3.4
New South Wales	2,753	19.9
Northern Territory	109	0.8
Queensland	1,939	14
South Australia	836	6.0
Tasmania	445	3.2
Victoria	6,105	44.1
Western Australia	1,177	8.5
Age group		
18-29	1337	9.7
30-49	5148	37.2
50-69	5897	42.6
70+	1447	10.5

Table 3
PHQ-9 item-by-item results, for the total sample and stratified by gender

	Whole sample (N=13,829)				Women (N=10,434)				Men (N=3,328)				Other (N=67)			
	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	6455 (46.7)	4776 (34.5)	1596 (11.5)	1002 (7.2)	4730 (45.3)	3755 (36)	1199 (11.5)	750 (7.2)	1700 (51.1)	1004 (30.2)	383 (11.5)	241 (7.2)	25 (37.3)	17 (25.4)	14 (20.9)	11 (16.4)
2. Feeling down, depressed, or hopeless	6331 (45.8)	5215 (37.7)	1370 (9.9)	913 (6.6)	4519 (43.3)	4162 (39.9)	1062 (10.2)	691 (6.6)	1786 (53.7)	1031 (31)	302 (9.1)	209 (6.3)	26 (38.8)	22 (32.8)	6 (9)	13 (19.4)
3. Trouble falling or staying asleep, or sleeping too much	5003 (36.2)	4723 (34.2)	2165 (15.7)	1938 (14)	3425 (32.8)	3727 (35.7)	1745 (16.7)	1537 (14.7)	1553 (46.7)	980 (29.4)	411 (12.3)	384 (11.5)	25 (37.3)	16 (23.9)	9 (13.4)	17 (25.4)
4. Feeling tired or having little energy	4210 (30.4)	5614 (40.6)	2388 (17.3)	1617 (11.7)	2895 (27.7)	4347 (41.7)	1897 (18.2)	1295 (12.4)	1299 (39)	1246 (37.4)	480 (14.4)	303 (9.1)	16 (23.9)	21 (31.3)	11 (16.4)	19 (28.4)
5. Poor appetite or overeating	6484 (46.9)	3733 (27)	2137 (15.5)	1475 (10.7)	4543 (43.5)	2941 (28.2)	1743 (16.7)	1207 (11.6)	1912 (57.5)	779 (23.4)	386 (11.6)	251 (7.5)	29 (43.3)	13 (19.4)	8 (11.9)	17 (25.4)
6. Feeling bad about yourself, or that you are a failure, or have let yourself or your family down	8827 (63.8)	2876 (20.8)	1190 (8.6)	936 (6.8)	6471 (62)	2296 (22)	944 (9)	723 (6.9)	2323 (69.8)	567 (17)	242 (7.3)	196 (5.9)	33 (49.3)	13 (19.4)	4 (6)	17 (25.4)
7. Trouble concentrating on things, such as reading the newspaper or watching television	7404 (53.5)	3757 (27.2)	1661 (12)	1007 (7.3)	5331 (51.1)	2963 (28.4)	1335 (12.8)	805 (7.7)	2048 (61.5)	779 (23.4)	315 (9.5)	186 (5.6)	25 (37.3)	15 (22.4)	11 (16.4)	16 (23.9)
8. Moving or speaking so slowly that other people could have noticed. Or the opposite, being so fidgety or restless that you have been moving around a lot more than usual	11079 (80.1)	1781 (12.9)	654 (4.7)	315 (2.3)	8298 (79.5)	1392 (13.3)	498 (4.8)	246 (2.4)	2742 (82.4)	374 (11.2)	149 (4.5)	63 (1.9)	39 (58.2)	15 (22.4)	7 (10.4)	6 (9)
9. Thoughts that you would be better off dead, or of hurting yourself in some way	12137 (87.8)	1075 (7.8)	356 (2.6)	261 (1.9)	9235 (88.5)	757 (7.3)	250 (2.4)	192 (1.8)	2858 (85.9)	308 (9.3)	101 (3)	61 (1.8)	44 (65.7)	10 (14.9)	5 (7.5)	8 (11.9)

*Data cell: number (%)

Table 4
PHQ-9 item-by-item results stratified by age

	18-29 (N=1,337)				30-49 (N=5,148)				50-69 (N=5,897)				70+ (N=1,447)			
	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	333 (24.9)	545 (40.8)	291 (21.8)	168 (12.6)	2098 (40.8)	1984 (38.5)	648 (12.6)	418 (8.1)	3083 (52.3)	1893 (32.1)	568 (9.6)	353 (6.0)	941 (65)	354 (24.5)	89 (6.2)	63 (4.4)
2. Feeling down, depressed, or hopeless	347 (26)	585 (43.8)	228 (17.1)	177 (13.2)	1966 (38.2)	2191 (42.6)	605 (11.8)	386 (7.5)	3053 (51.8)	2069 (35.1)	472 (8)	303 (5.1)	965 (66.7)	370 (25.6)	65 (4.5)	47 (3.2)
3. Trouble falling or staying asleep, or sleeping too much	339 (25.4)	408 (30.5)	274 (20.5)	316 (23.6)	1605 (31.2)	1819 (35.3)	918 (17.8)	806 (15.7)	2294 (38.9)	2044 (34.7)	843 (14.3)	716 (12.1)	765 (52.9)	452 (31.2)	130 (9.0)	100 (6.9)
4. Feeling tired or having little energy	201 (15)	497 (37.2)	371 (27.7)	268 (20)	1129 (21.9)	2213 (43)	1071 (20.8)	735 (14.3)	2168 (36.8)	2389 (40.5)	824 (14)	516 (8.8)	712 (49.2)	515 (35.6)	122 (8.4)	98 (6.8)
5. Poor appetite or overeating	386 (28.9)	384 (28.7)	321 (24)	246 (18.4)	1935 (37.6)	1558 (30.3)	961 (18.7)	694 (13.5)	3130 (53.1)	1534 (26)	764 (13)	469 (8.0)	1033 (71.4)	257 (17.8)	91 (6.3)	66 (4.6)
6. Feeling bad about yourself, or that you are a failure, or have let yourself or your family down	622 (46.5)	351 (26.3)	187 (14)	177 (13.2)	2869 (55.7)	1257 (24.4)	580 (11.3)	442 (8.6)	4118 (69.8)	1103 (18.7)	386 (6.5)	290 (4.9)	1218 (84.2)	165 (11.4)	37 (2.6)	27 (1.9)
7. Trouble concentrating on things, such as reading the newspaper or watching television	433 (32.4)	429 (32.1)	261 (19.5)	214 (16)	2403 (46.7)	1541 (29.9)	747 (14.5)	457 (8.9)	3471 (58.9)	1539 (26.1)	587 (10.0)	300 (5.1)	1097 (75.8)	248 (17.1)	66 (4.6)	36 (2.5)
8. Moving or speaking so slowly that other people could have noticed. Or the opposite, being so fidgety or restless that you have been moving around a lot more than usual	873 (65.3)	284 (21.2)	112 (8.4)	68 (5.1)	3979 (77.3)	754 (14.6)	284 (5.5)	131 (2.5)	4923 (83.5)	646 (11)	226 (3.8)	102 (1.7)	1304 (90.1)	97 (6.7)	32 (2.2)	14 (1.0)
9. Thoughts that you would be better off dead, or of hurting yourself in some way	1063 (79.5)	159 (11.9)	62 (4.6)	53 (4)	4477 (87)	426 (8.3)	149 (2.9)	96 (1.9)	5261 (89.2)	409 (6.9)	128 (2.2)	99 (1.7)	1336 (92.3)	81 (5.6)	17 (1.2)	13 (0.9)

*Data cell: number (%)

Table 5
GAD-7 item-by-item results, for the total sample and stratified by gender

	Whole sample (N=13,829)				Women (N=10,434)				Men (N=3,328)				Other (N=67)			
	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day
Feeling nervous, anxious or on edge	4849 (35.1)	5542 (40.1)	1941 (14)	1497 (10.8)	3160 (30.3)	4415 (42.3)	1605 (15.4)	1254 (12)	1668 (50.1)	1108 (33.3)	326 (9.8)	226 (6.8)	21 (31.3)	19 (28.4)	10 (14.9)	17 (25.4)
Not being able to stop or control worrying	7511 (54.3)	3993 (28.9)	1408 (10.2)	917 (6.6)	5259 (50.4)	3248 (31.1)	1170 (11.2)	757 (7.3)	2222 (66.8)	733 (22)	226 (6.8)	147 (4.4)	30 (44.8)	12 (17.9)	12 (17.9)	13 (19.4)
Worrying too much about different things	6148 (44.5)	4946 (35.8)	1656 (12)	1079 (7.8)	4228 (40.5)	3973 (38.1)	1347 (12.9)	886 (8.5)	1896 (57)	952 (28.6)	301 (9)	179 (5.4)	24 (35.8)	21 (31.3)	8 (11.9)	14 (20.9)
Trouble relaxing	5915 (42.8)	4875 (35.3)	1809 (13.1)	1230 (8.9)	4118 (39.5)	3868 (37.1)	1464 (14)	984 (9.4)	1775 (53.3)	990 (29.7)	332 (10)	231 (6.9)	22 (32.8)	17 (25.4)	13 (19.4)	15 (22.4)
Being so restless that it is hard to sit still	9399 (68)	3022 (21.9)	932 (6.7)	476 (3.4)	6984 (66.9)	2370 (22.7)	715 (6.9)	365 (3.5)	2381 (71.5)	640 (19.2)	203 (6.1)	104 (3.1)	34 (50.7)	12 (17.9)	14 (20.9)	7 (10.4)
Becoming easily annoyed or irritable	5494 (39.7)	5277 (38.2)	1925 (13.9)	1133 (8.2)	3855 (36.9)	4110 (39.4)	1531 (14.7)	938 (9)	1616 (48.6)	1147 (34.5)	381 (11.4)	184 (5.5)	23 (34.3)	20 (29.9)	13 (19.4)	11 (16.4)
Feeling afraid as if something awful might happen	7432 (53.7)	4133 (29.9)	1431 (10.3)	833 (6)	5265 (50.5)	3340 (32)	1164 (11.2)	665 (6.4)	2137 (64.2)	779 (23.4)	257 (7.7)	155 (4.7)	30 (44.8)	14 (20.9)	10 (14.9)	13 (19.4)

*Data cell: number (%)

Table 6
GAD-7 item-by-item results, stratified by age

	18-29 (N=1,337)				30-49 (N=5,148)				50-69 (N=5,897)				70+ (N=1,447)			
	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day	Not at all	Several days	More than half the days	Nearly every day
Feeling nervous, anxious or on edge	282 (21.1)	494 (36.9)	298 (22.3)	263 (19.7)	1279 (24.8)	2228 (43.3)	915 (17.8)	726 (14.1)	2402 (40.7)	2361 (40)	660 (11.2)	474 (8.0)	886 (61.2)	459 (31.7)	68 (4.7)	34 (2.3)
Not being able to stop or control worrying	524 (39.2)	411 (30.7)	233 (17.4)	169 (12.6)	2403 (46.7)	1673 (32.5)	653 (12.7)	419 (8.1)	3488 (59.1)	1644 (27.9)	465 (7.9)	300 (5.1)	1096 (75.7)	265 (18.3)	57 (3.9)	29 (2.0)
Worrying too much about different things	393 (29.4)	484 (36.2)	259 (19.4)	201 (15)	1891 (36.7)	1975 (38.4)	768 (14.9)	514 (10)	2910 (49.3)	2103 (35.7)	555 (9.4)	329 (5.6)	954 (65.9)	384 (26.5)	74 (5.1)	35 (2.4)
Trouble relaxing	385 (28.8)	477 (35.7)	264 (19.7)	211 (15.8)	1668 (32.4)	1992 (38.7)	861 (16.7)	627 (12.2)	2867 (48.6)	2049 (34.7)	615 (10.4)	366 (6.2)	995 (68.8)	357 (24.7)	69 (4.8)	26 (1.8)
Being so restless that it is hard to sit still	695 (52)	373 (27.9)	162 (12.1)	107 (8)	3255 (63.2)	1266 (24.6)	412 (8.0)	215 (4.2)	4235 (71.8)	1200 (20.3)	322 (5.5)	140 (2.4)	1214 (83.9)	183 (12.6)	36 (2.5)	14 (1.0)
Becoming easily annoyed or irritable	362 (27.1)	485 (36.3)	296 (22.1)	194 (14.5)	1339 (26)	2222 (43.2)	974 (18.9)	613 (11.9)	2849 (48.3)	2162 (36.7)	591 (10)	295 (5)	944 (65.2)	408 (28.2)	64 (4.4)	31 (2.1)
Feeling afraid as if something awful might happen	599 (44.8)	400 (29.9)	202 (15.1)	136 (10.2)	2500 (48.6)	1623 (31.5)	662 (12.9)	363 (7.1)	3284 (55.7)	1800 (30.5)	513 (8.7)	300 (5.1)	1049 (72.5)	310 (21.4)	54 (3.7)	34 (2.3)

*Data cell: number (%)

Table 7

Mean, minimum, maximum, median and interquartile range of PHQ-9 and GAD-7 total scores

	PHQ-9 Mean ($\pm$ SD)	Minimum	Maximum	Median	IQR	GAD-7 Mean ($\pm$ SD)	Minimum	Maximum	Median	IQR
Whole sample	6.4 ($\pm$ 6.0)	0	27	5	2-9	5.5 ($\pm$ 5.3)	0	21	4	1-8
Gender										
Women	6.7 ($\pm$ 6.0)	0	27	5	2-10	5.8 ($\pm$ 5.3)	0	21	5	2-8
Men	5.5 ($\pm$ 5.9)	0	27	4	1-8	4.2 ($\pm$ 5.0)	0	21	2	0-6
Other	9.9 ($\pm$ 8.3)	0	27	9	2-17	8.1 ($\pm$ 7.0)	0	21	7	2-11
Age										
18-29	9.7 ($\pm$ 6.5)	0	27	8	4-14	7.8 ($\pm$ 5.9)	0	21	7	3-12
30-49	7.4 ($\pm$ 6.0)	0	27	6	3-11	6.6 ($\pm$ 5.4)	0	21	5	2-10
50-69	5.5 ($\pm$ 5.6)	0	27	4	1-8	4.6 ($\pm$ 4.9)	0	21	3	1-7
70+	3.6 ($\pm$ 4.6)	0	27	2	0-5	2.6 ($\pm$ 3.6)	0	21	2	0-4

SD: standard deviation, IQR: interquartile range

Table 8

Prevalence of depression and anxiety by symptom severity, stratified by gender and age

	n (%)							
	Whole sample	Women	Men	Other	18-29	30-49	50-69	70+
Depression (PHQ-9 score)								
No symptoms (<5)	6598 (47.7)	4698 (45)	1875 (56.3)	25 (37.3)	335 (25.1)	2012 (39.1)	3206 (54.4)	1045 (72.2)
Mild (5-9)	3791 (27.4)	2996 (28.7)	785 (23.6)	10 (14.9)	415 (31)	1574 (30.6)	1549 (26.3)	253 (17.5)
Moderate (10-14)	1886 (13.6)	1533 (14.7)	341 (10.2)	12 (17.9)	291 (21.8)	876 (17)	634 (10.8)	85 (5.9)
Moderately severe (15-19)	937 (6.8)	740 (7.1)	189 (5.7)	8 (11.9)	171 (12.8)	419 (8.1)	310 (5.3)	37 (2.6)
Severe ($\geq$ 20)	617 (4.5)	467 (4.5)	138 (4.1)	12 (17.9)	125 (9.3)	267 (5.2)	198 (3.4)	27 (1.9)
Anxiety (GAD-7 score)								
No symptoms (<5)	7394 (53.5)	5186 (49.7)	2179 (65.5)	29 (43.3)	473 (35.4)	2278 (44.3)	3511 (59.5)	1132 (78.2)
Mild (5-9)	3661 (26.5)	2973 (28.5)	677 (20.3)	11 (16.4)	410 (30.7)	1527 (29.7)	1499 (25.4)	225 (15.5)
Moderate (10-14)	1621 (11.7)	1339 (12.8)	269 (8.1)	13 (19.4)	236 (17.7)	789 (15.3)	531 (9)	65 (4.5)
Severe ($\geq$ 15)	1153 (8.3)	936 (9)	203 (6.1)	14 (20.9)	218 (16.3)	554 (10.8)	356 (6)	25 (1.7)

by-item, has public health and policy implications as well. Item-by-item breakdowns can highlight specific symptoms or areas of concern for the general population, such as a lack of sleep, poor appetite or irritability. These results provide opportunities for policy or public health responses that target specific needs. In conclusion, we encourage future research using the PHQ-9 and/or GAD-7 to be reported in detail, with item-by-item results, summary statistics and all prevalence categories, to enable straightforward and accurate comparisons.

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CRediT authorship contribution statement

Ruby Stocker: Conceptualization, Investigation, Writing - original draft. **Thach Tran:** Methodology, Formal analysis, Investigation, Writing - review & editing. **Karin Hammarberg:** Conceptualization, Writing - review & editing. **Hau Nguyen:** Formal analysis, Data curation. **Heather Rowe:** Writing - review & editing. **Jane Fisher:** Conceptualization, Investigation, Writing - review & editing, Supervision.

Declaration of Competing Interest

The authors declare that there are no conflicts of interest.

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References

- Carey, M., Jones, K.A., Yoong, S.L., D'Este, C., Boyes, A.W., Paul, C., Inder, K.J., Sanson-Fisher, R., 2014. Comparison of a single self-assessment item with the PHQ-9 for detecting depression in general practice. *Fam Pract* 31 (4), 483–489.
- Farrer, L.M., Gulliver, A., Bennett, K., Fassnacht, D.B., Griffiths, K.M., 2016. Demographic and psychosocial predictors of major depression and generalised anxiety disorder in Australian university students. *BMC Psychiatry* 16, 241.
- Fisher, J., Tran, T., Hammarberg, K., Sastry, J., Nguyen, H., Rowe, H., Popplestone, S., Stocker, R., Stubber, C., Kirkman, M., 2020. Mental health of people in Australia in the first month of COVID-19 restrictions: a national survey. *Med J Aust*.
- Hammarberg, K., Holton, S., Michelmores, J., Fisher, J., Hickey, M., 2019. Thriving in older age: A national survey of women in Australia. *Maturitas* 122, 60–65.
- Hinz, A., Klein, A.M., Brähler, E., Glaesmer, H., Luck, T., Riedel-Heller, S.G., Wirkner, K., Hilbert, A., 2017. Psychometric evaluation of the Generalized Anxiety Disorder Screener GAD-7, based on a large German general population sample. *J Affect Disord* 210, 338–344.
- Johansson, R., Carlbring, P., Heedman, A.S., Paxling, B., Andersson, G., 2013. Depression, anxiety and their comorbidity in the Swedish general population: point prevalence and the effect on health-related quality of life. *PeerJ* 1 (1), e98.
- Kiely, K.M., Butterworth, P., 2015. Validation of four measures of mental health against depression and generalized anxiety in a community based sample. *Psychiatry Res* 225 (3), 291–298.
- Kocalevent, R.-D., Hinz, A., Brähler, E., 2013. Standardization of the depression screener Patient Health Questionnaire (PHQ-9) in the general population. *Gen Hosp Psychiatry* 35 (5), 551–555.
- Kroenke, K., Spitzer, R.L., Williams, J.B.W., 2001. The PHQ-9: Validity of a brief depression severity measure. *J Gen Intern Med* 16 (9), 606–613.
- Patten, S.B., Schopflocher, D., 2009. Longitudinal epidemiology of major depression as assessed by the Brief Patient Health Questionnaire (PHQ-9). *Compr Psychiatry* 50 (1), 26–33.

- Pirkis, J., Pfaff, J., Williamson, M., Tyson, O., Stocks, N., Goldney, R., Draper, B., Snowdon, J., Lautenschlager, N., Almeida, O.P., 2009. The community prevalence of depression in older Australians. *J Affect Disord* 115 (1-2), 54–61.
- Shim, R.S., Baltrus, P., Ye, J., Rust, G., 2011. Prevalence, treatment, and control of depressive symptoms in the United States: results from the National Health and Nutrition Examination Survey (NHANES), 2005–2008. *J Am Board Fam Med* 24 (1), 33.
- Spitzer, R.L., Kroenke, K., Williams, J.B.W., Löwe, B., 2006. A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7. *Arch Intern Med* 166 (10), 1092–1097.