



Supporting Information

Supplementary methods and results

**This appendix was part of the submitted manuscript and has been peer reviewed.
It is posted as supplied by the authors.**

Appendix to: Woldegiorgis M, Cadby G, Ngeh S, et al. Long COVID in a highly vaccinated but largely unexposed Australian population following the 2022 SARS-CoV-2 Omicron wave: a cross-sectional survey. *Med J Aust* 2024; doi: 10.5694/mja2.52256.

1. The long COVID survey text

Dear *Name DD/MM/YYYY*

The WA Department of Health is conducting a brief survey to assess the possible longer-term health impacts of COVID-19. We would greatly appreciate your assistance. Please click below for more information, and to accept or decline our invitation to participate in this survey:

[Link]

The WA Department of Health is conducting a brief survey to assess the possible longer-term impacts of COVID-19. The survey should take only 2-5 minutes to complete.

We are contacting you because you previously indicated a willingness to participate in COVID-19 research and we would appreciate your assistance. The results of this research will be used by the Department of Health to plan for future health care needs resulting from the COVID pandemic. Participation is completely voluntary. If you decide to participate, we will connect your survey responses to the demographic information you provided to us at the time of your COVID-19 diagnosis, your COVID vaccination and test records, and determine if you were admitted to hospital. Any information you provide will only be shared in such a way that you cannot be identified.

Please click "Next" to proceed to the next page.

Next

*** A detailed Participant Information Sheet can be downloaded by clicking on this [link](#).**

If you have questions regarding the survey or any difficulty completing the survey, you can call the WA Department of Health on 6376 0530 Monday-Friday from 8AM - 4PM. Are you willing to participate in this brief online survey? (Click "Next" after selecting your response).

Yes

No

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Next

*** Do you currently have any new or ongoing symptoms or health problems that you believe are related to your COVID-19 illness?**

Yes

No

Not sure

Previous

Next

If answered no to above

*** Thank you for taking a few moments to tell us about your current health status.**

We would like to learn about your health status before and after your COVID-19 diagnosis. This brief survey will take about 2 minutes.

Before you tested positive for COVID-19, did you have any significant or long-standing health issues?

Yes

No

Not sure

Please indicate the type(s) of health issues you had prior to being diagnosed with COVID-19:

Please indicate the type(s) of health issues you had prior to being diagnosed with COVID-19:

Heart problems

Lung problems

Asthma

Kidney disease

Gastrointestinal problems such as diarrhoea or stomach pain

Diabetes

Obesity

Neurologic problems such as sleep problems, headache, depression, or anxiety

Immune system problems

Cancer

Other

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* How would you describe your overall health status now?

Excellent

Good

Fair

Poor

I'm not sure

Previous

Next

*** If you were working and/or studying before your COVID diagnosis, have you been able to continue these activities after your illness?**

Yes, I was able to fully return to work/study within a month of my COVID illness

Yes, but I needed more than a month before I was able to fully return to work/studying

Yes, but I have had to reduce the number of hours I work/study

No, I have not returned to work/study

I was not working or studying at the time I developed my COVID illness

I'm not sure

*** Thank you for helping the WA Health better understand the longer term impact of the COVID-19 pandemic. Please click "Finish Survey" below, then click "Next" to submit your answers.**

Finish survey

Previous

Next

If answered yes to first question on symptoms

We would like to learn more about the ongoing symptoms or health conditions you may be experiencing due to your COVID illness.

Are you currently experiencing any of the symptoms listed below?

Tiredness or fatigue that interferes with daily life

Yes

No

Unsure

Headache

Yes

No

Unsure

Fever

Yes

No

Unsure

Difficulty breathing or shortness of breath

Yes

No

Unsure

Cough

Yes

No

Unsure

Chest pain

Yes

No

Unsure

Fast-beating or pounding heart (heart palpitations)

Yes

No

Unsure

Difficulty thinking or concentration ("brain fog")

Yes

No

Unsure

Sleep problems

Yes

No

Unsure

Dizziness when you stand up (light-headedness)

Yes

No

Unsure

Memory loss or confusion

Yes

No

Unsure

Pins-and-needles feelings

Yes

No

Unsure

Change in smell or taste

Yes

No

Unsure

Low mood or not enjoying anything

Yes

No

Unsure

Increased worry or anxiety

Yes

No

Unsure

Diarrhoea

Yes

No

Unsure

Stomach pain

Yes

No

Unsure

Rash

Yes

No

Unsure

Joint or muscle pain

Yes

No

Unsure

Loss of appetite or eating less than usual

Yes

No

Unsure

Nausea or vomiting

Yes

No

Unsure

Females only - changes in your menstrual cycle

Yes

No

Unsure

Not applicable

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*** Do you think your current symptoms are the result of your recent COVID infection?**

Yes – I think they have been caused by my recent COVID infection

No – I think they are likely explained by a separate illness or health condition I have/have had

I am not sure

Previous

Next

*** Do you think your current symptoms are consistent with the condition called “Long COVID”?**

Yes

No

I am not sure if my symptoms are considered to be ‘Long COVID’

I am not sure what ‘Long COVID’ means

Previous

Next

*** In the last month, have you seen a GP because of ongoing symptoms following your COVID illness?**

Yes

No

Not sure

Previous

Next

*** In the last month, have you been to an emergency department because of ongoing symptoms following your COVID illness?**

Yes

No

Not sure

Previous

Next

*** In the last month, have you been admitted to hospital because of ongoing symptoms following your COVID illness?**

Yes

No

Not sure

Previous

Next

*** If you were working and/or studying before your COVID diagnosis, have you been able to continue these activities after your illness?**

Yes, I was able to fully return to work/study within a month of my COVID illness

Yes, but I needed more than a month before I was able to fully return to work/studying

Yes, but I have had to reduce the number of hours I work/study

No, I have not returned to work/study

I was not working or studying at the time I developed my COVID illness

I'm not sure

Previous

Next

*** How would you describe the outcome of your COVID illness at the present time?**

I am fully recovered from my COVID illness now

I am not fully recovered, but I can do my usual activities

I am still recovering, but not able to all my usual activities

I do not feel like I am recovering

I'm not sure

Previous

Next

*** How would you describe your overall health status now?**

Excellent

Good

Fair

Poor

I'm not sure

Previous

Next

*** Before you tested positive for COVID-19, did you have any significant or chronic health issues?**

Yes

No

Not sure

Previous

Next

Please indicate the type(s) of health issues you had prior to being diagnosed with COVID-19

Select all that apply

- Heart problems
- Lung problems
- Asthma
- Kidney disease
- Gastrointestinal problems such as diarrhoea or stomach pain
- Diabetes
- Obesity
- Neurologic problems such as sleep problems, headache, depression, or anxiety
- Immune system problems
- Cancer
- Other

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*** We would like to send you another brief survey three months from today to find out if you have fully recovered from your COVID illness or if you are still having symptoms. Would that be okay with you?**

Yes

No

*** Thank you for helping the WA Health better understand the longer-term impact of the COVID-19 pandemic. Please click "Finish Survey" below, then click "Next" to submit your answers.**

If you have concerns about any ongoing symptoms, or need information on how to manage them, you should speak with your GP or call health direct at 1800 022 222.

Finish Survey

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Thank you for your time, you may now close the webpage.

Table 1. Sampling weights applied to the long COVID online survey in Western Australia, 2022

Age group (years)/ gender	Population: all adults diagnosed with SARS-CoV-2 during the study period*	Respondents	Probability	Weight (inverse of probability)	Weight adjusted to total number of respondents	Weighted number of respondents
18-29						
Women	7,553	911	0.121	8.29	1.44	1,309
Men	6,569	535	0.081	12.28	2.13	1,138
30-39						
Women	7,303	1,149	0.157	6.36	1.10	1,265
Men	6,865	750	0.109	9.15	1.59	1,189
40-49						
Women	6,589	1,249	0.190	5.28	0.91	1,142
Men	6,054	905	0.149	6.69	1.16	1,049
50-59						
Women	6,273	1,624	0.259	3.86	0.67	1,087
Men	5,901	1,157	0.196	5.10	0.88	1,022
60-69						
Women	3,986	1,155	0.290	3.45	0.60	691
Men	3,878	996	0.257	3.89	0.67	672
70+						
Women	3,386	640	0.189	5.29	0.92	587
Men	3,159	626	0.198	5.05	0.87	547
Total	67,516	11,697				11,697

Reference population: All 70,876 adults diagnosed during 16 July – 3 August 2022 apart from 3,360 people for whom information on gender was not available.

Respondents: Persons who completed the long COVID survey

Probability= respondents/population

Weight =1/probability

Weight adjusted to number of respondents =weight X respondents/population

Weighted respondents= weight adjusted to number of respondents X respondents

Table 2. Numbers of symptoms reported by adult Western Australian residents with long COVID who responded to our long COVID survey, 14 October – 1 November 2022*

Number of symptoms	Respondents	Proportion of respondents
0	32	1.5%
1	173	8.1%
2	216	10.1%
3	211	9.9%
4	210	9.9%
5	199	9.3%
6	189	8.9%
7	159	7.5%
8	133	6.2%
9	141	6.6%
10	117	5.5%
11	97	4.6%
12	84	3.9%
13	49	2.3%
14	39	1.8%
15	28	1.3%
16	20	0.9%
17	18	0.8%
18	9	0.4%
19	3	0.1%
20	1	< 0.1%
21	2	0.1%

* Weighted number with long COVID: 2130 of 11,697 respondents (18.2%).

Table 3. Symptoms reported by adult Western Australian residents with long COVID who responded to our long COVID survey, 14 October – 1 November 2022*

Symptom	Respondents		Yes proportion (95% CI)
	No	Yes	
Long COVID symptom			
Fever	2008	122	5.7% (4.8–6.8%)
Rash	1966	164	7.7% (6.6–8.9%)
Nausea or vomiting	1911	219	10.3% (9.0–11.7%)
Diarrhoea	1852	278	13.1% (11.7–14.6%)
Chest pain	1828	302	14.2% (12.7–15.8%)
Stomach pain	1801	329	15.4% (13.9–17.1%)
Loss of appetite or eating less than usual	1781	349	16.4% (14.8–18.1%)
Pins-and-needles feelings	1659	471	22.1% (20.4–23.9%)
Fast-beating or pounding heart (heart palpitations)	1603	527	24.7% (22.9–26.7%)
Change in smell or taste	1587	542	25.5% (23.6–27.4%)
Headache	1464	666	31.3% (29.3–33.3%)
Memory loss or confusion	1438	692	32.5% (30.5–34.6%)
Female participants only - Changes in menstrual cycle	487	237	32.7% (29.2–36.5%)
Dizziness when standing up (light headedness)	1432	698	32.8% (30.8–34.8%)
Increased worry or anxiety	1357	773	36.3% (34.2–38.4%)
Low mood or not enjoying anything	1353	777	36.5% (34.4–38.6%)
Difficulty breathing or shortness of breath	1273	857	40.2% (38.1–42.4%)
Joint or muscle pain	1246	884	41.5% (39.4–43.6%)
Cough	1146	984	46.2% (44.1–48.4%)
Sleep problems	1135	995	46.7% (44.5–48.9%)
Difficulty thinking or concentrating (“brain fog”)	862	1267	59.5% (57.4–61.6%)
Tiredness or fatigue that interferes with daily life	626	1504	70.6% (68.6–72.6%)

CI = confidence interval.

* Total number of respondents with long COVID: 2130 people; for changes in menstrual cycle: 723 women.

Table 4. Self-reported health of adult Western Australian residents who responded to our long COVID survey, 14 October – 1 November 2022, by long COVID status

Self-reported health 3 months after positive SARS-CoV-2 result	Long COVID		No long COVID		Total respondents
	Respondents	Proportion (95% CI)	Respondents	Proportion (95% CI)	
Excellent	31	1.4% (1.0–2.1%)	2175	22.7% (21.8–23.7%)	2206
Good	799	37.5% (35.5–39.7%)	5685	59.4% (58.4–60.5%)	6484
Fair	1064	50.0% (47.8–52.1%)	1441	15.1% (14.3–15.9%)	2505
Poor	205	9.6% (8.4–11.0%)	130	1.4% (1.1–1.6%)	335
Not sure	31	1.5% (1.0–2.2%)	136	1.4% (1.2–1.7%)	167
<i>Total</i>	<i>2130</i>		<i>9567</i>		<i>11697</i>

CI = confidence interval.

Table 5. Return to work or study by adult Western Australian residents who responded to our long COVID survey, 14 October – 1 November 2022, by long COVID status

Work /study status three months after COVID diagnosis	Long COVID		No long COVID		Total respondents
	Respondents	Proportion (95% CI)	Respondents	Proportion (95% CI)	
Have not returned to work/study	48	2.7% (2.0–3.5%)	66	0.8% (0.6–1.1%)	114
Had to reduce the number of hours of work/study	270	15.2% (13.5–17.1%)	151	1.9% (1.6–2.3%)	421
Needed more than a month before able to fully return to work/studying	307	17.3% (15.5–19.1%)	374	4.7% (4.2–5.2%)	681
Able to fully return to work/study within a month of COVID-19 illness	1154	64.9% (62.5–67.1%)	7382	92.6% (91.9–93.2%)	8536
<i>Total</i>	<i>1779</i>		<i>7973</i>		<i>9752</i>

CI = confidence interval.