



AJGH

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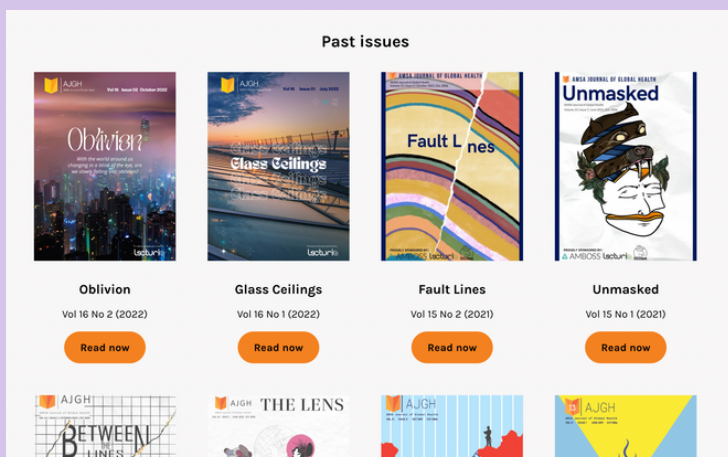
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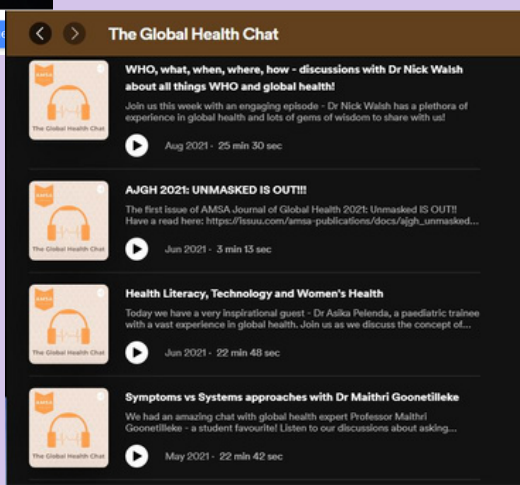


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A person wearing a yellow protective suit and a respirator mask is holding a white spray bottle. The background is a solid pink color.

# What worried us most?

Identifying and measuring common concerns about the impact of the COVID-19 pandemic

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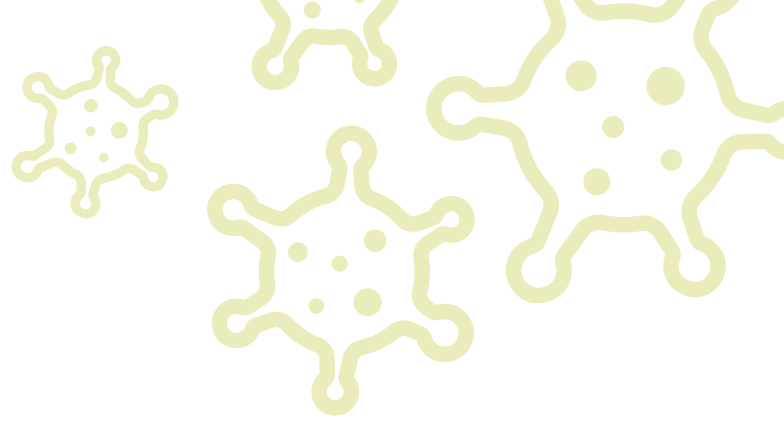
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# What worried us most?

## Identifying and measuring common concerns about the impact of the COVID-19 pandemic



### Abstract

#### Aim

This study aimed to determine what a cohort of Australian adults were worried about at an early stage of the COVID-19 pandemic. Perception of risk and worry are known to influence the uptake of health protecting behaviours and therefore understanding patterns of worry can impact the design of public health campaigns.

#### Methods

We retrospectively analysed data obtained from a cross-sectional online survey of working adults residing in Australia. Worry about COVID-19 was measured using a COVID-19 Worry Scale consisting of 15 questions and variations of which have been used in studies elsewhere in Australia and internationally. Statistical analysis compared level of worry between different demographic groups and identified predictors of total score on the COVID-19 Worry Scale.

#### Results

There were 494 respondents to the COVID-19 Worry Scale. Of the 15 questions, the 5 most associated with the highest level of worry were “my loved ones’ health”, “economic recession in my country”, “health system being overwhelmed”, “small companies running out of business” and “losing someone I love”. Higher total worry score was significantly associated with higher total score on a 21-item Depression Anxiety and Stress Scale (DASS21), work being impacted by COVID-19 and female sex.

#### Conclusion

Our results suggest that people have diverse worries about COVID-19 but concern for the health of loved ones and the economy are consistently ranked highly and therefore these factors should be considered in designing interventions to slow transmission of the virus.

#### Keywords

COVID-19, pandemic, worry, fear, public health, mental health, anxiety

### 1. Introduction

#### *1.1 The pandemic’s impact on daily life in Australia*

The COVID-19 pandemic has had a significant social, economic and psychological impact globally.[1] At the time of writing, there have been almost 238 million cases of coronavirus recorded worldwide and close to 4.8 million people have died from the infection.[2]

Public health restrictions to control the spread have impacted Australians since the first case of local community transmission in March 2020.[3] To prevent intensive care units being overwhelmed, federal and state governments introduced a range of measures including travel restrictions, social distancing measures, closing of non-essential businesses and limiting the number of people at indoor gatherings.[4]

#### *1.2 Measuring worry about COVID-19 and implications*

As a “once in a century” event,[5] relatively little is known about peoples’ responses to such a global health crisis. By way of trying to overcome this gap in knowledge, the World Health Organisation (WHO) has released guidelines on studying behaviour and perceptions of the pandemic to promote research into the area.[6] It has been recognised that understanding peoples’ perceptions and responses to the pandemic is relevant to designing effective public health campaigns to slow transmission of the virus as risk perception is known to drive such health protecting behaviours.[7, 8] Public

health campaigns that are cognisant of peoples' individual concerns are more likely to have better adherence and may allay excessive or unhelpful levels of worry by helping people play an active role in preventing what worries them. [9] We define worry in this case to be similar to fear of the unknown, in this case, a virus. This approach is in contrast to "fearmongering" which increases worry but tends to reduce compliance as people are overcome by distress. [9]

Addressing unnecessary concerns is also an area of interest due to the globally recognised impact of the pandemic on mental health and levels of psychological distress.[10] This is because public health restrictions may interfere with social determinants of mental health, including employment, financial security, ability to engage in leisure activities and social isolation.[10] In this study we hypothesised that people with psychological distress are more likely than those without to be worried about COVID-19. Understanding patterns of worry and predictors could therefore help target interventions to groups at higher risk of poor mental health and symptomatic psychological distress in the pandemic.

## 2. Methods

### 2.1 Study design

This study retrospectively analysed data obtained from a cross-sectional online survey titled "COVID-19 and Mental Health".

### 2.2 Context

The survey took place between 29th May and 8th July 2020, close to the beginning of Victoria's second wave of COVID-19. At the time of the survey, most of the restrictions from earlier in 2020 had eased nation-wide but were gradually reintroduced in Victoria from June 20th.[12] This study was part of a larger program of research looking at how people have responded to the pandemic in Australia. Further details can be found here.[13, 14]

### 2.3 Recruitment

A link to the survey was distributed via email to

pre-existing social contacts enabling a convenience sample of personal and professional networks and subsequent snowballing. The survey was only made available in English language and Australian residence was part of the inclusion criteria. The other inclusion criteria were being 18 years or older and having engaged in voluntary or paid work at any time during the period from December 2019 to July 2020.

### 2.4 Ethics approval and consent

This study was conducted in compliance with the Declaration of Helsinki, the National Statement on Ethical Conduct in Human Research (2007, updated 2018) and ethics approval was granted by the Office of Research Ethic and Integrity at The University of Melbourne (approval number: 2056921.1). All participants provided electronic informed consent before completing the survey.

### 2.5 Measures

Worry about COVID-19 was measured using a COVID-19 Worry Scale consisting of 15 questions (Appendix A).[15] Participants were asked to indicate their level of worry about each question on a scale of 1-9 with 1 being "Don't worry at all" and 9 being "Worry a lot".

The survey collected demographic information on participants including age, sex, living situation, employment status and industry of primary paid or volunteer work (Table 1). For the latter, 18 options were presented according to categories recognised by the Australian Bureau of Statistics (ABS) as well as the option for manual entry. In addition, participants were asked about any previously diagnosed chronic physical or mental health conditions and if they had previously been diagnosed with COVID-19.

The 21-item Depression Anxiety and Stress Scale (DASS21) questionnaire was also included as part of the survey and used to measure self-reported symptoms of depression (low mood), anxiety (somatic symptoms, panic and fear) and stress (tension, intolerance and overreaction to situations).[16,17] The DASS21 was used to evaluate our hypothesis that greater levels of worry about COVID-19 correlates with higher levels of psychological distress.



## 2.6 Data management and analysis

All data were analysed using SPSS 27. For the purposes of our analysis, sex was recorded to a binary variable and the categories “non-binary” and “prefer not to say” were excluded due to low numbers. The variables living with a chronic physical or mental health condition were also recorded into binary “yes or no”, due to low numbers in the categories, “don’t know” or “prefer not to say”. Responses to the question about the impact on the respondent’s work were re-organised from five categories to two categories to create a binary variable of “work impacted” or “work not impacted.” Common reasons why people responded “other” to this question were that they were self-employed, or their hours had increased due to COVID-19 and therefore it was decided to place them in the “work not impacted” group. We acknowledge that the inclusion criteria and type of employment options in our study did not capture unpaid or care-giving work.

For the initial analysis, responses to the worry scale were translated from the 9-point scale into 3 level-of-worry categories, based on a version of the survey distributed as part of a study in Ethiopia.[15] From the 1-9 scale, scores of 1-3 were interpreted as “Don’t worry at all”, scores of 4-6 as “Worry somewhat” and scores of 7-9 as “Worry a lot”. The 3 levels of worry categories were designated a score of “Don’t worry at all” = 1, “Worry somewhat” = 2 and “Worry a lot” = 3 for individual questions which were summated for an individual’s total worry score.

The proportion of participants in each level of worry for each question was then re-analysed according to various demographic factors. These features were sex (male or female), industry of primary paid employment (healthcare or other), living with a chronic physical health condition (yes or no), living with a chronic mental health condition (yes or no), living alone or with others and work impacted by COVID-19 (yes or no). An independent sample t-test and a chi-square test for independence were used to compare total and question specific levels of worry between groups respectively.

To compare our results to another study that utilised a similar questionnaire, the total worry scale was calculated for our 15-question questionnaire, but then recalculated, omitting three questions that were not included in the study of interest for comparison.[15]

Separate multiple regression analyses were performed to investigate factors predictive for level of worry about COVID-19. The independent variables of total DASS21 score, age, sex, pre-existing chronic health condition, living alone or with others and work impact of COVID-19 were included in the analysis.

## 3. Results

### 3.1 Responses

There were 616 responses to the survey recorded. This analysis excluded participants who did not complete all 15 questions on the COVID-19 Worry Scale, leaving a total of 494 participants.

### 3.2 Participant characteristics

Participants were predominantly female (80.4%) with a mean age of 43.6 years. The most common industries of primary paid employment were healthcare and social assistance (44.5%) and education and training (23.7%). Approximately 21.0% reported having a chronic physical health condition and 20.0% a chronic mental health condition. No participants in our study reported ever being diagnosed with COVID-19 nor did any members of their household.

### 3.3 Worry scale responses

Worry scale questions are ranked from highest to lowest level of worry in Figure 1. The top three worries were “my loved ones’ health”, “economic recession in my country” and “health systems being overwhelmed”, with 36.6%, 31.8% and 27.5% of the cohort respectively reporting a high level of worry. By contrast, the three questions that demonstrated the least amount of worry were “restricted access to food supplies”, “restricted liberty of movement” and “having to defend a decision not to attend a social event which my family and friends expect me to attend” with only 13.4%, 12.8% and 11.3% respectively reporting a high level of worry.

### 3.4. Specific worries of different demographics

Table 2 summarises questions that showed a significant difference in level of worry between groups. The presence or absence of a chronic mental health condition was the variable most associated with higher levels with worry. People working in healthcare had a higher overall level of worry about the health system being overwhelmed compared with people working in other industries ( $p=0.005$ ) but were less worried about economic recession than people working in other industries ( $p=0.006$ ). People who responded that their work had been impacted by COVID-19 demonstrated higher level of worry about losing a loved one ( $p=0.042$ ), economic recession ( $p=0.002$ ), restricted access to food ( $p=0.043$ ), becoming unemployed ( $p<0.001$ ) and not being able to pay bills ( $p<0.001$ ) than those for whom there had been no impact on their work. Living alone or with others did not significantly impact any of the responses apart from concern for loved ones' health ( $p=0.018$ ) where a higher proportion of those living with others reported a high level of concern (38.1%) compared with those living alone (27.3%).

### 3.5 Linear regression model

Associations between independent variables and the dependent variable "Total worry score" are presented in Table 3. Preliminary analyses of the standard multiple regression model were conducted to ensure no violation of the assumptions of normality, multicollinearity and homoscedasticity. The results of the regression indicated that the model explained 26.1% of the variance in worry score and that the model was a significant predictor of worry score,  $F(7, 421) = 21.2$ ,  $p<0.001$ . Higher total worry score was significantly associated with higher Total DASS21 score ( $B=0.263$ ,  $p<0.001$ ), younger age ( $B=-0.061$ ,  $p=0.008$ ), work being impacted by COVID-19 ( $B=2.180$ ,  $p=0.014$ ) and identifying as female ( $B=-1.626$ ,  $p=0.026$ ).

## 4. Discussion

### 4.1 Summary of key findings

The five questions associated with the highest level of worry illustrate the diversity of peoples' concerns for health threats posed by the virus, namely "My loved ones' health", "Economic recession in my country", "Health system being overwhelmed", "Small companies running out of business" and "Losing someone I love". These results suggest that protecting the health of others, including those in our hospitals, is a key concern for many people. Overall, worry about personal physical and mental health were of less concern to the respondents than the potential implications of the virus for loved ones. The relatively short survey which covered a wide range of concern areas including social, economic and health was a strength of this study, as it allowed for exploration of a variety of concerns.

Furthermore, older age, a known risk factor for severe COVID-19 infection,[18] was found to be associated with a lower total worry score. Similar patterns have been observed in other studies, with young people being more prone to fear and worry about the pandemic than older people.[19] Chronic physical health conditions were also not associated with higher levels of worry overall, echoing what was observed when a similar questionnaire was conducted in Norway.[11]

Total worry score was also influenced by demographic features, with females, people of younger age and people whose employment had been impacted by COVID-19 more likely to have a higher total worry score when other variables were controlled for, a finding common to other Australian research.[20, 21] In addition, consistent with findings elsewhere,[22, 23] symptoms of depression, anxiety and stress as measured by the DASS21 were associated with higher total worry score. This suggests that other known risk factors for anxiety disorders and psychological distress, particularly those of female sex and financial stress similarly correlate with COVID-related worry, raising concern about a greater overall burden.[24,14]



#### 4.2 Comparison to other studies

The pattern of responses to the worry scale questionnaire shared similarities with studies conducted in Ethiopia and Norway as well as longitudinal research being conducted in Australia,[11,15, 25] using a similar questionnaire (Table 4).

The Australian SCRUB (Survey of COVID-19 Responses to Understand Behaviour) study has been tracking behaviour and concerns about COVID-19 in the Australian population through repeated cross-sectional and longitudinal sampling.[25] During the same time period as our study, the top four most worrisome questions from the SCRUB data all related to the economic and personal financial situation at the time. Differences in findings between the SCRUB study and our findings may be due to differences in recruitment approaches, timing of survey and sample demographics.

#### 4.3 Implications of our results

These results suggest that worry about the COVID-19 pandemic is complex and different worries interact with each other. Understanding the pattern of worry could be utilised to inform public health interventions to slow transmission. An approach that is informed by this pattern may reduce harmful and distressing levels of worry by empowering people to become active participants in preventing what worries them. Examples of how public health messages could be framed to respond to common worries highlighted in our results could be, “Wash your hands to protect your loved ones from coronavirus” or “Wear a mask when out and about to get back to supporting local businesses”. Additional, potentially pro-active support could also be offered to people living with pre-existing psychological distress/diagnosed mental health concerns.

#### 4.4 Limitations

Compared to other threats and disasters, relatively little is known about concerns in a pandemic.[26] The urgency of the COVID-19 situation confers limitations to research into behaviour and peoples’ perceptions of the response and validation studies for the items on

our survey are yet to be undertaken.[6] There were several biases introduced in this study mainly through the inclusion criteria of engaging in paid or voluntary work. This decreased the likelihood of selecting financial concerns as one of their main worries. Additionally, bias was also introduced through distributing the survey via email to pre-existing contacts, as it was predominantly females who worked in healthcare with tertiary level education who completed the survey.

Furthermore, certain demographic aspects of the respondents to the survey means these results cannot be easily generalised to the wider population. The survey was distributed Australia-wide, but most respondents were female (80.4%) and lived in non-metropolitan areas (78.1%). The latter was not controlled for in our analysis and may have had an influence on the level of worry with the vast majority of COVID-19 cases in Australia occurring in metropolitan areas.[12] Further, the total percentage of respondents living with a chronic physical health condition was relatively low (21.1%) in comparison to the Australian population, with the Department of Health estimating 50% of Australians have at least one chronic health condition.[27]

### 5. Conclusion

This research contributes to an understanding of the patterns of pandemic-related worry. Personal and community health impacts of the virus and the consequences for the economy and the health system were consistently associated with a higher level of worry than other questions on the survey. Understanding this pattern has the potential to help inform the way public health messages should be communicated to maximise their health promoting benefits.

#### Acknowledgements

We would like to thank all the participants who kindly contributed to this study.

#### Conflicts of Interest

There are no conflicts of interest to declare.

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**Appendix A. 15-Question Worry Scale Questionnaire (respondent version)**

On a scale of 1 (Don't worry at all) to 9 (Worry a lot), to what extent are you worried about the following during the COVID-19 pandemic?

1. Losing someone I love
2. Health system being overloaded
3. My own mental health
4. My own physical health
5. My loved ones' health
6. My loved ones' health and wellbeing in residential aged care
7. Restricted liberty of movement
8. Losing vacation opportunities
9. Small companies running out of business
10. Economic recession in my country
11. Restricted access to food supplies
12. Becoming unemployed
13. Not being able to pay my bills
14. Not being able to visit people who depend on me
15. Having to defend a decision not to participate in a social event which my family and friends expect me to attend

**Appendix B. 12-Question Worry Scale Questionnaire**

On a scale of 1 (Don't worry at all) to 9 (Worry a lot), to what extent are you worried about the following during the COVID-19 pandemic?

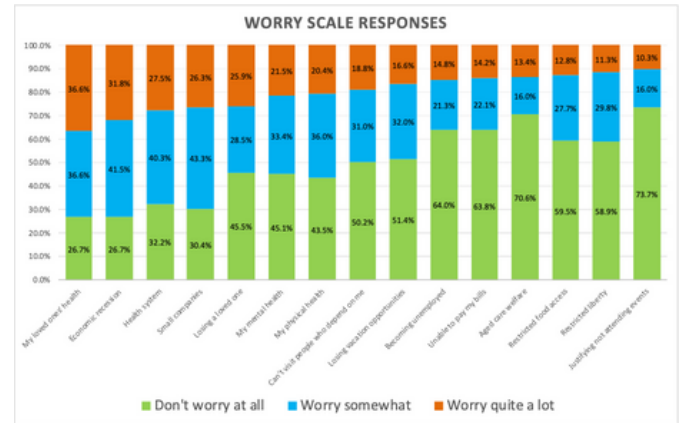
1. Losing someone I love
2. Health system being overloaded
3. My own mental health
4. My own physical health
5. My loved ones' health
6. Restricted liberty of movement
7. Small companies running out of business
8. Economic recession in my country
9. Restricted access to food supplies
10. Becoming unemployed
11. Not being able to pay my bills
12. Not being able to visit people who depend on me

**Table 1. Participant characteristics (n% unless otherwise specified)**

Respondents	Total
<b>Age</b>	
Mean +/- SD	43.6+/-12.8
Range	19 -77
<b>Sex</b>	
Male	95 (19.2)
Female	397 (80.4)
Non-binary	1 (0.2)
Prefer not to say	1 (0.2)
<b>Industry</b>	
Education and training	117 (23.7)
Healthcare and social assistance	220 (44.5)
Other	157 (31.8)
<b>Pre-existing chronic physical health condition</b>	
Yes	104 (21.1)
No	380 (77.1)
Don't know	5 (1.0)
Prefer not to say	4 (0.8)
<b>Pre-existing mental health condition</b>	
Yes	99 (20.0)
No	380 (76.9)
Don't know	7 (1.4)
Prefer not to say	8 (1.6)
<b>Ever being diagnosed with COVID-19</b>	
Yes, tested and confirmed	0 (0)
Suspected but not tested	2 (0.4)
No	489 (99.0)
Don't know	3 (0.6)
<b>Ever had a diagnosis of COVID-19 in your household</b>	
Yes, tested and confirmed	0 (0)
Suspected but not tested	2 (0.4)
No	489 (99.2)
Don't know	2 (0.4)
<b>Work impact of COVID-19</b>	
Temporarily stood down	14 (2.9)
Role terminated	7 (1.5)
Hours reduced	36 (7.5)
Hours and role not impacted	323 (67.4)
Other	99 (20.7)
<b>Living alone or with others</b>	
Alone	66 (13.4)
With others	428 (86.6)
<b>DASS21 Categories</b>	
Depression	371 (78.1)
Normal - mild	104 (21.9)
Moderate - extremely severe	404 (84.7)
Anxiety	73 (15.3)
Normal - mild	384 (80.8)
Moderate - extremely severe	91 (19.2)
<b>TOTAL:</b>	<b>494</b>

**Figure 1. Worry scale questions by proportion of responses in each level of worry category**

“On a scale of 1 (Don't worry at all) to 9 (Worry a lot), to what extent are you worried about the following during the COVID-19 pandemic?” Scores were recorded into 3 groups: 1 - 3: Don't worry at all = 1; 4 - 6: Worry somewhat = 2; 7 - 9: Worry a lot = 3



**Table 2. Worry scale responses with significant differences between different groups (chi square test for independence)**

Grouping and Worry scale question		% Worry a lot		P-value
		Females	Males	
<b>Sex</b>	<i>Losing a loved one</i>	27.5	20.0	.042
	<i>Health system being overwhelmed</i>	29.7	18.9	.001
	<i>My own physical health</i>	22.4	12.6	.028
	<i>Economic recession</i>	32.0	31.6	.029
<b>Industry</b>	<i>Health system being overwhelmed</i>	<b>Healthcare</b> 30.9	<b>Other</b> 24.8	.005
	<i>Economic recession</i>	24.5	37.6	.006
	<i>Becoming unemployed</i>	10.0	18.6	.005
	<i>Not being able to pay my bills</i>	10.5	17.2	.035
<b>Living with a chronic physical health condition</b>	<i>My own physical health</i>	<b>Yes</b> 29.8	<b>No</b> 17.4	.014
	<i>Becoming unemployed</i>	21.2	12.4	.016
	<i>Not being able to visit people who depend on me</i>	26.9	16.1	.039
<b>Living with a chronic mental health condition</b>	<i>My own mental health</i>	<b>Yes</b> 44.4	<b>No</b> 14.2	<.001
	<i>My own physical health</i>	33.3	15.5	<.001
	<i>My loved ones' health</i>	47.5	32.1	.009
	<i>Economic recession</i>	39.4	N28.9	.008
<i>Not being able to pay my bills</i>		21.2	12.4	.046
		27.3	15.5	.025
		27.3	15.5	.025
<b>Work impacted by COVID-19</b>	<i>Losing a loved one</i>	<b>Impact</b> 38.6	<b>No impact</b> 23.5	.042
	<i>Economic recession</i>	50.9	28.9	.002
	<i>Restricted access to food supplies</i>	22.8	11.1	.043
	<i>Becoming unemployed</i>	35.1	11.8	<.001
	<i>Not being able to pay my bills</i>	35.1	11.1	<.001

Table 3. Linear regression model (reference “0” variable shown by a 1) for the dependent variable total worry score

	Unstandardized B	Coefficients Std. Error	Standardised Coefficients Beta	Sig.
<b>Constant</b>	25.121	1.177		<.001
<b>Total DASS21 Score</b>	0.263	0.026	0.430	<.001
<b>Age</b>	-0.061	0.023	-0.117	0.008
<b>Sex</b>				
Male	-1.626	0.728	-0.096	0.026
Female	1			
<b>Industry</b>				
Healthcare	0.085	0.582	.006	0.883
Other	1			
<b>Chronic physical condition</b>				
Yes	0.947	0.703	0.058	0.179
No	1			
<b>Live alone</b>				
Yes, alone	-1.611	0.832	-0.082	0.054
No – with others	1			
<b>Work impact</b>				
Work impacted	2.180	0.880	0.106	0.014
Work not impacted	1			

Table 4. Comparison of top 5 worries across other Australian data and research in Ethiopia and Norway. Daily cases and mortality taken from Worldometer.[28] Questions not common across studies\*

	COVID-19 and Mental Health Study	Australia – SCRUB (26)	Ethiopia (15)	Norway (11)
Time of study	29th May - 8th July 2020	Snapshot from 29th - 3rd July 2020	9th - 26th June 2020	May 2020
Daily new COVID-cases at time (June 2020)	<20 cases daily	<20 cases daily	200 - 400 daily cases	<50 cases daily
Cumulative deaths at time of study (June 2020)	Cumulatively <100 deaths recorded in Australia	Cumulatively <100 deaths recorded in Australia	90 deaths cumulatively	There had been ~ 250 deaths recorded in Norway by that stage
N	494	3977	952	1041
1st	My loved ones' health	Economic recession	Health system being overwhelmed	Economic recession in my country
2nd	Economic recession in my country	Society getting more selfish*	My loved ones' health	A new outbreak of COVID-19*
3rd	Health systems being overwhelmed	Small companies failing	Losing someone I love	Not being able to visit people who depend on me
4th	Small companies running out of business	Losing money*	Economic recession in my country	Losing someone I love
5th	Losing someone I love	Someone I love dying	Unable to visit people who depend on me	That society will become more egoistic*

# ANNUAL GLOBAL HEALTH INTENSIVE 2023:

## Tackling Non-Communicable Diseases Through Nutrition and Disaster Risk Reduction

In August 2023, AMSA Global Health Intensive (AGHI) will convene in Melbourne with the objective of offering delegates a dialectical and hands-on approach to understanding the current issues surrounding non-communicable diseases (NCDs). NCDs account for 74% of deaths globally, and are inequitably distributed, with almost 85% of those deaths occurring in Low- and Middle-Income Countries (LMICs).[1] Elevated blood pressure, cholesterol, obesity and insulin resistance often arise from malnutrition and are risk factors for many NCDs, including cardiovascular disease, various cancers and type 2 diabetes mellitus. Importantly, malnutrition includes both deficient nutrient or energy intake, such as wasting and stunting, and excessive or imbalance intake, which can lead to obesity.

In addition to nutritional concerns, the impact of climate change in Australia, with bushfires having caused much destruction in 2019-2020, has precipitated the need for a coherent policy relating to disaster management and NCDs. The United Nations Office for Disaster Risk Reduction (UNDRR) considers it vital to examine climate change policies in conjunction with planning for disasters.[2] The establishment of the Royal Commission in National Natural Disaster Arrangements in 2020 in response to the 2020 bushfires along with the United Nations' Sendai Framework for Disaster Risk Reduction 2015-2030 are exemplary of the importance of educating medical students on NCDs rather than simply focusing on infectious diseases in emergency situations.[2, 3]

### I. NCDs and Nutrition

Many countries now experience a double burden of malnutrition where both under and overnutrition coexist within the population.[4] Access to a diversity of nutrient-dense foods, such as fruits and vegetables, is not equitable and many rely upon high-calorie, nutrient-poor staples for sustenance.[5] In addition, many unhealthy foods that are high in salt, sugar and saturated fats have become cheaper and more widely available. Furthermore, the World Health Organisation (WHO) has classified processed meat, including hot-dogs, ham, and bacon, as a Group 1 carcinogen - meaning it is known to cause cancer.[6] As a result of global increases in processed, nutrient-poor, food and meat consumption, the global NCD burden has been rising. As future doctors that will care for patients with NCDs, it's critical that we are able to counsel and guide patients. Understanding the causes and associated risk factors for NCDs will allow us to better counsel patients and, ideally, prevent patients from NCDs. Unfortunately, many of us feel ill equipped to counsel and educate patients on nutrition.

One study had medical students in their clinical years complete a questionnaire to assess their knowledge, attitudes and self-efficacy related to nutrition knowledge.[7] The study found that students had an overall mean knowledge score of 64%, with a lower score found on topics related to obesity and diabetes.[7] This is not surprising as nutrition is not sufficiently incorporated into medical

education.[8] This results in students, and future trainees and consultants, not having the skills, knowledge, or confidence to incorporate nutrition into a patient's medical care.[8] To address this gap in knowledge, AGHI will conduct workshops to teach delegates the practical skills and knowledge related to nutrition and its impact on NCDs.

## II. NCDs and Disaster Management

While nutritional imbalances and longer lifespans have been scrutinised thoroughly in scientific literature as contributors to the increasing burden of NCDs worldwide, the role of climate change and disasters has not been equally delineated. NCDs, which are often treated with coordinated care across medical specialties, require prolonged or continuous care and can reduce individuals' capacity to manage during emergencies.[9] When disasters destroy the health infrastructure in a region, those individuals with NCDs are at risk of having acute complications or a worse prognosis as their care is interrupted.[10] For example, heart attacks and strokes are 2-3 more likely than normal to occur during emergencies.[9] Furthermore, self-care may become secondary to dependency on care by others in patients with NCDs during catastrophic situations. Ryan et al.[10] reported that factors affecting self-care, such as medicinal access and stress, as well as those aspects which required care by others, such as slow-healing sores and shortness of breath, were both concerns among Queensland residents with NCDs who had experienced disasters.

Multiple scenarios that affect chronic diseases after disasters can be theorised. Acute health events, such as the incidence of mosquito-borne flaviviruses in affected areas within Australia after the 2022 flooding,[11] could increase complications among those who have NCDs or create the basis for compromised immunity that can cause cancer in the long term. Disasters can also affect the social

determinants of health underlying the severity of NCDs. A report on past flooding events in Australia revealed the greater impact that disasters have on lower income households and vulnerable communities.[12] For example, Aboriginal communities experienced more displacement during the 2017 floods in New South Wales which was tied to worse outcomes for chronic health conditions.[12]

Since individuals with NCDs depend on access to specialised technologies or medicine as part of their personalised treatment plan, factors relating to equity and distributive justice are necessary to address by any national policy on disaster risk reduction.[2, 9] By implementing the recommendations of the United Nations' Sendai Framework for Disaster Risk Reduction (2015-2030), which recognises the importance of including individuals with chronic diseases in policies regarding healthcare and disasters as well as stockpiling medicines for chronic conditions.[2] Australia can build more resilient and thriving communities that have reduced disparities in health post-disaster. Furthermore, the Royal Commission on National Natural Disaster Arrangements highlights the importance of training primary care practitioners on treating individuals during mass emergencies.[3]

To explore these topics in detail, AGHI will host simulation-based workshops and discussions that will further inform medical students about the need for greater advocacy for vulnerable communities and policy which specifically advises on post-disaster management of patients with NCDs. For more information about the speakers and the program, please visit the AMSA Global Health Intensive website (<https://globalhealth.amsa.org.au/amsa-global-health>).



## About the Author

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# CPR: A Universal Language

## Highlighting the challenges of inadequate CPR training in low and middle income countries

*By Raffaella Skourletos*  
*Peer reviewed by Dr Marilyn Wise*

As a final year medical student from Australia, I recently spent four weeks on an elective medical placement in the emergency department of a busy urban hospital in the capital city of Cambodia, Phnom Penh. It was a fascinating experience clinically, and an opportunity to sincerely connect with local students, doctors, and nurses – one I am deeply grateful for.

The entrance to the hospital sits on a bustling city street, with the layered smells of grilling fish, petrol fumes and lingering Rumduol greeting me as I step out of the tuk tuk every morning. I am in a nation whose economy is the fastest growing in Asia but in which poverty still permeates life – including in the hospital in which I am working. I am reminded, constantly, of ways in which poverty influences the hospital care that patients receive and the care that staff can provide. Whether the patient is refusing diagnostic tests for cancer due to financial struggles or doctors must decide which patient can be attached to the single ventilator in the emergency department, resources are finite and often totally out of reach. This is the context for every lesson, every issue, and every observation I made here.

The clinical acumen and knowledge of the local healthcare workers is remarkable, with resourcefulness and cost-effective judgement regarded as skills just as important as history-taking, examination, and diagnosis. The differences between Australian and Cambodian healthcare are

sizeable; the main being in the proportions of the populations who have ready access to high quality disease diagnostic testing and management. These differences reflect an enormous discrepancy in resources invested in the provision of health care to the populations in each country. No matter where you are in the world, resources are finite, and doctors must make decisions on their patients' access to these resources. However, compared to Australia, this system is amplified in low- and middle-income countries where it is so obviously impacted by poverty.

One of these differences was particularly striking. I experienced genuine shock when I realised that there was a difference in the delivery of what I had previously considered to be a universal technique for Cardiopulmonary Resuscitation (CPR). CPR is the process of performing chest compressions, maintaining an airway, and ventilating a patient who is in cardiac arrest to achieve a return of spontaneous circulation (ROSC). It can be a life-saving method when performed correctly and all Australian medical practitioners are required to learn CPR as part of their university studies and ongoing registration.

In the hospital at which I was based in Cambodia, I witnessed several cardiac arrest resuscitations requiring CPR and Basic Life Support (BLS). The CPR technique involved a different depth and rate of chest compressions to the standard outlined by the Australian Resuscitation Council's evidence-

based guidelines of 100-120 compressions per minute at a depth of 1/3 of the chest cavity, with inconsistencies in non-rebreather mask use for ventilation.[1] Further to that, junior doctors were being taught how to perform compressions during the resuscitation.

I asked my peers, when are you trained in CPR and BLS? They responded, on the job. As a further impact of poverty on the delivery of healthcare, it emerged that universities are not adequately resourced to provide formal CPR training to future medical professionals, so that senior doctors and nurses are forced to teach junior doctors 'on the job' whenever the opportunity arises. Between 24-hour shifts at the hospital and an endless stream of significantly unwell patients, these opportunities tend to present themselves only in emergency situations when CPR is required. The observed barriers were clear; this was a finance-limited, time-limited, resource-limited clinical and educational environment in which structured CPR teaching was essentially impossible. I wanted to find out more about this, and whether we know what effect a paucity of formal CPR training may have on patient outcomes.

The existing evidence on CPR outcomes in cardiac arrests in the setting of low- and middle-income healthcare systems is limited but reveals some surprises. There was no literature on CPR outcomes in tertiary hospitals in Cambodia and it would be remiss to apply sweeping generalisations or conclusions in other settings to this situation. However, a retrospective study performed in a tertiary hospital in Karachi, Pakistan, sought to unravel these outcomes. [2] To compare the two low-income countries, Cambodia's GDP (Gross Domestic Product) per capita is \$1625.2 USD, while Pakistan's is \$1505.0 USD according to the World Bank, where GDP per capita can inform the economic status of a country and measure its growth.[3] For reference, Australia's GDP per capita is \$60,443.1 USD.

Using Pakistan as an example of a low-income model, Moosajee US et al. (2018) analysed 8 years' worth of inpatient data of cardiac arrests in an emergency department to determine several outcomes including the rate of ROSC and survival to discharge (STD) - both key outcomes in determining CPR effectiveness. They found that 27.4% of cardiac arrest patients achieved ROSC and 7.5% reached STD.[2] Out-of-hospital cardiac arrest (OHCA) patients achieved ROSC and STD at lower rates, 21% and 4% respectively. [2] In comparison, an Australian/New Zealand study by Bray J et al. (2022) found that outcomes for OHCA patients in the ED were ROSC 28% and STD 13%.[4] While differences in ROSC are minimal, the differences in STD in a lower income setting versus a higher income setting is significant, and depends on multiple factors including pre-hospital, emergency department and inpatient factors.[2]

These studies suggest that pre-hospital factors appear to be key in addressing discrepancies between OHCA patient outcomes in low- and middle-income countries compared with higher-income settings such as Australia, given that timely and effective CPR administration is a strong predictor of better CPR outcomes. There is good evidence that high-quality bystander CPR in OHCA patients and good outcomes have a positive correlation because of this.[5] Unfortunately, there is virtually no research on CPR training for medical professionals and medical students in low- and middle-income countries or its impact on CPR provision and patient outcomes. This highlights an opportunity to investigate and ultimately improve the provision of CPR in hospitals as a vital inpatient factor of cardiac arrest outcomes. Conversely, Moosajee US et al. (2018) posited that minimal or absent community skills in CPR and BLS provision is an important contributing prehospital factor to poorer CPR outcomes in the emergency

department in OHCA patients in a low- or middle-income setting.[2] In fact, effective bystander CPR in OHCA can improve patient outcomes by 23-fold.[6] Bystander CPR is only one of many pre-hospital factors contributing to those outcomes.

Access to emergency services in low- and middle-income countries is severely impacted by financial and resource strain. A systematic review performed in 2018 found that prehospital factors such as culture/community, infrastructure, communication/coordination, transport, equipment, and personnel are major barriers to timely and effective care.[7] Community understanding and recognition of medical emergencies can be limited due to poor health literacy, highlighting a barrier to identifying the need for CPR. Poor roads in rural settings and congested thoroughfares in urban settings make ambulance transportation very difficult. Increased distances from appropriate health facilities increase mortality by 2% with every 10% increase in distance. Emergency transport services, such as ambulances, are available to less than 1% of the population in many low- and middle-income countries.[7] A lack of trained personnel and equipment in emergency responders from services is additionally marked. I recall ambulances arriving at the emergency department in Cambodia with patients who had suffered road accident trauma using tourniquets made from scraps of clothing. In contrast, Australian paramedics are afforded the resources to be trained as first-responders and thus can provide exceptional assessment and management of medical emergencies before they arrive at a hospital.

It is clear then that CPR is only one of multiple factors that affect patient outcomes significantly following OHCA. However, evidence points to the significant positive impact that the delivery of high standard CPR by bystanders can have in improving patient

outcomes. Community knowledge and training in CPR and BLS is significantly limited in LMICs compared to Australia. There appears an opportunity here for bystander intervention to fulfil the dogma of timely and effective CPR in OHCA in low- and middle-income settings.[6]

Increasing community awareness and proficiency in CPR may be considered a cost-effective solution, since CPR requires only 4 hours of instruction according to the American Heart Association.[8] However, delivering this training in LMICs raises several dilemmas. The fragility of the “chain-of-survival” in LMICs is an important consideration. It describes the integration of community-wide CPR training, public access to AEDs, prehospital and healthcare facility emergency care with ongoing intensive and rehabilitative care .[8] A weak link in this chain can negatively impact patient outcomes; and in LMICs there can often be multiple weak links. Compounding this is a compromise in patient autonomy which stems from socio-cultural differences in understanding of CPR and end-of-life care with unsuccessful resuscitation. This is because varying levels of health literacy can result in misunderstanding and confusion for family members regarding end-of-life care, potentially prolonging patient suffering after inadequate resuscitation and delaying “last rites” in religious traditions.[8] It also calls into question the nonmaleficence principle, or ‘do no harm’. CPR training should, at a minimum, provide certification and refresher training to ensure up-to-date and highest possible standard of CPR provision.[8] This is challenging to achieve in a resource-limited setting, which can precipitate iatrogenic harm. Similarly, upholding beneficence when providing CPR in a resource-limited setting is difficult if outcomes include disability or insurance costs that cannot be managed by the patient or family’s financial backing.[8]

Several methods of improving community knowledge and practice of CPR in low- and middle-income settings have been proposed by various authors with each following a theme of community empowerment. Further public awareness and training should be bolstered in efforts to improve the areas of deficit best identified by the communities themselves. Moosajee US et al. (2018) recommends grassroots organisations such as high schools and religious congregations to facilitate CPR training with youth leaders and local medical students spearheading this.[2] Gross A (2017) suggested cost-effective training where money and resources are limited is a strong consideration in determining training programs, with further recommendations including training Immediate Life Support (ILS) to provide interim first aid in critically unwell patients to prevent cardiac arrest.[6]

As community training of CPR becomes a more clearly defined issue, international organisations such as the Philips Foundation's educational outreach program and the International Red Cross Foundation's Global First Aid are already working towards empowering communities to better respond to medical emergencies.[9] However, the broader ethical context must be considered. Large-scale organisations must prioritise delivering CPR training in an empowering and sustainable way. This means teaching local instructors to pass knowledge and training on to their communities. Furthermore, in-hospital factors should be optimised to improve rates of ROSC and STD in patients who suffer a cardiac arrest out of hospital, which is its own complex, location-specific issue and requires far more funding, training, and resource provision particularly in the context of CPR training for medical professionals and students which provides certification, refresher training and is long-term, sustainable, and evidence-based.

Putting the power of life-saving skills in the

hands of community members is affording a bystander the chance to save a life. In low- and middle-income countries it is possible that bystanders will have the greatest opportunity to improve a patient's outcome of cardiac arrest if they are equipped to deliver timely, effective CPR. CPR is a universal language but is sadly not universally accessible. There are programs already in place to address this, but there needs to be further research done to understand the quality of medical practitioner training of CPR and BLS. In a similar fashion to existing community-led initiatives, this research should inform local industry-led improvements. CPR is a universal language, and it must be a universal skill.



## About the Author



Raffaella is a final year medical student from the University of Adelaide with keen interests in Paediatrics, Critical Care and Public Health. She is passionate about improving healthcare access for resource-poor communities. She has worked in remote Indigenous communities in an outreach capacity and overseas as a medical student in a low-income healthcare setting. This year, she was the Lead Policy Author for AMSA's Climate Change and Health Policy and a Policy Author for the Aboriginal and Torres Strait Islander Health Policy. She hopes to pursue further clinical roles in resource-poor settings and non-clinical roles focused on health systems management, policy-writing, and leadership.

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# On the Outskirts

By Lim Yun Fei, Louis

Rare diseases (RDs) encompass diverse conditions, each affecting a small subset of individuals.[1] Despite their rarity, the collective number of individuals “living rare” is equivalent to the population of the third largest country.[2]

The limited healthcare accessibility for this marginalised group is a significant concern as it has adverse health, psychosocial, and economic impacts on patients, their families, and carers.[1] Major contributing factors include the lack of awareness, education and professional training about RDs.[3] Furthermore, even when treatments are available, the costs can be exorbitant. Due to such challenges, RD patients often undergo long diagnostic journeys, with an average period of 4–5 years.[1] In some cases, it can take over a decade. Despite their extensive and expensive journeys, RD patients often remain undiagnosed or even misdiagnosed, which further adds emotional distress to them and their families.[4]

In 2019, the United Nations pledged to alleviate the burden of RDs as part of achieving universal health coverage. Subsequently, they adopted a resolution in 2021 to recognise the needs and challenges of RD patients and their families, including healthcare access.[5] This resolution highlights the increasing global awareness of the unique challenges faced by the RD community and the importance of equitable healthcare for this marginalised population. Today, I challenge you to start learning about RDs and to join in creating a more inclusive and compassionate healthcare system.

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## Appendix:

RD - Rare disease, RDs - Rare diseases, UN - United Nations

# Abortion Accessibility – Are Medical Schools The Answer?

By Ella Mulcahy

Despite the dissolution of the legal barriers to abortion, women in regional Australia remain largely unable to access this reproductive right.[1] Studies repeatedly demonstrate that access to safe abortions is essential in preventing maternal death and disability.[2-4] However, regional Australia is critically lacking practitioners who are willing to engage in the provision of these services.[1-3]

National figures estimate that upwards of 70% of healthcare professionals should be providing abortion treatments.[5] Unfortunately, only a shocking 7% of all general practitioners (GPs) in 2020 were trained to prescribe early abortion medications.[1, 5] This is confounded by the high concentration of conscientious objectors in regional areas, correlated with high religious observance.[1, 4, 5] As a result, regional women are often unable to approach their local GP and have limited options.[5, 6] Telehealth would be an appropriate solution, however, with only 7% of GPs trained, this is currently not feasible.[7, 8]

To resolve this deficit, attention needs to be directed towards education. Medical schools are responsible for training and shaping practitioner attitudes, to ensure maximised patient outcomes.[1, 9, 10] Abortion has been largely absent from medical curricula and training, with some universities offering as little as one lecture on this topic.[1, 9, 10] Until our educational institutions recognise the importance of reproductive health and abortions, regional women will continue to have to fight to access this right. Incorporation of abortion education and training into medical curricula needs to be the first step.

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