COVID-19 as a context in suicide: early insights from Victoria, Australia

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Abstract

Objective: To examine how the coronavirus (COVID-19) pandemic and its consequences may have influenced suicide in Victoria, Australia.

Methods: A mixed methods study of consecutive Victorian suicide cases spanning 1 January 2015 to 31 January 2021. Interrupted time series analysis examined whether suicide frequency changed following the pandemic onset. Thematic analysis was undertaken of police reports in suicides linked with COVID-19 to try to understand how COVID-19 acted as a stressor.

Results: The frequency of Victorian suicides did not change following the onset of COVID-19. Sixty COVID-linked suicides were identified, featuring three recurring themes: COVID-19 as a disturbance in the self, in relationships with others and institutions.

Conclusions: While COVID-19 has not led to an increase in Victorian suicide frequency to date, it is an important background stressor that can erode one's wellbeing, sense of agency and connectedness to others.

Implications for public health: Clinical interventions that serve to reconnect people with a sense of agency and seek to re-establish contact with significant others are indicated. Clinicians should ensure they are familiar with pathways for their patients to access government social and economic supports. A better understanding of how government interventions may be lessening psychological distress is needed.

Key words: suicide, COVID-19, mixed-methods

From the onset of the coronavirus (COVID-19) pandemic in Australia, there has been concern that its cascading effects on the economy, the health system and society will exacerbate psychological distress and mental ill health, potentially leading to an increase in Australia's suicide rate.[1-3]

While studies have consistently found that COVID-19 has impacted negatively on Australians' mental health,[4-8] to date there is no evidence of an accompanying increase in suicides. Analysis of the Queensland Suicide Register data found there was no overall change to the suicide rate for Queensland during the seven months following its 29 January 2020 Public Health Emergency Declaration in response to COVID-19.[9] Likewise, analysis of suicide counts in Victoria and New South Wales showed either no change (Victoria) or a slight decrease (New South Wales) in monthly suicide frequencies through to September 2020 following the pandemic's onset, compared to the pre-pandemic period.[10]

Regardless of whether COVID-19 has impacted suicide at a population level in Australia, though, the Queensland study established grounds for concern that it is a relevant factor or context in individual suicides; its authors reported evidence from initial police reports that COVID-19 potentially influenced 36 (8.3%) of 434 suspected suicides through impacts in domains such as mood, coping, stress, employment, healthcare and social isolation.[9]

This study aimed to explore how the COVID-19 pandemic impacted suicide frequency in Victoria at a population level, and how it might have influenced the decision to suicide in individual Victorian cases. Up to 1 March 2021, Victoria was the state most affected by the pandemic, accounting for 70.7% of Australia's COVID-19 cases and 90.2% of Australia's COVID-19 related deaths.[11] In an effort to control the spread of COVID-19, Victorians were subjected to broad-ranging restrictions on movement and gathering for longer periods than residents in any other state, including two major 'lockdowns' reinforced by curfews and strong police enforcement action. Victorian insights into the intersection between COVID-19 and suicide have potential prevention implications across Australia.

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Method

This study addressed two central research questions; the first of which was: did the frequency of suicides occurring in Victoria change after the onset of the pandemic? As already noted, an earlier study found no evidence that Victoria's monthly suicide frequency changed after the pandemic's onset through to September 2020.[10] In this study, the period examined was extended to January 2021, and evidence of change was tested at multiple significant dates during the pandemic using weekly suicide frequencies. The second question addressed in this study was: in how many cases was there evidence that COVID-19 and its consequences may have influenced the decision to suicide, and what was the nature of this influence?

Study design

A consecutive case series of suicides reported to the Coroners Court of Victoria ('the Court') and recorded in the Victorian Suicide Register (VSR) was analysed using a convergent mixed methods design that included both quantitative (interrupted time series analysis) and qualitative (content analysis) elements.[12]

Data source

All Victorian deaths from suspected non-natural causes are required to be reported to the Court for investigation. Trained coders review the initial Victoria Police summary of circumstances included in each death report and identify possible and probable suicides to be added to the VSR.

The VSR contains basic coded information (including sex and age of the deceased, suicide method, location of usual residence, location of fatal incident and country of birth) for every suspected and coroner-determined suicide reported to the Court between 1 January 2000 and the present. The contents of the VSR are continually revised and updated as coroners' investigations progress and more information is known about the deaths.[13]

Of particular relevance to this study, the VSR includes the full text of the summary of circumstances that Victoria Police submit when initially reporting a death to the Court. The summary of circumstances is an unstructured narrative prepared in the hours after the death or discovery of the body and includes whatever relevant information the reporting police member can ascertain based on attendance at the scene of death and speaking with witnesses. The detail and accuracy of the information contained therein are largely dependent on what can be established at the time. Some summaries include extensive accounts of the events leading up to death recounted by family members, acquaintances and treating medical practitioners, and through suicide notes found at the scene. In other cases, particularly where the deceased's identity cannot initially be ascertained, the summary of circumstances may be little more than a description of the scene of death.

Despite their varying quality, the summaries of circumstances are a valuable resource because they are the only immediate information on the context in which Victorian suicides occur; a comprehensive coronial brief of evidence containing witness statements and medical records and other material requires time and resources to prepare.

Case identification

A de-identified dataset comprising deceased sex, age group, and date of death was extracted from the VSR on 15 February 2020 for every suicide that occurred between 1 January 2015 and 31 January 2021 inclusive.

Additionally, for every suicide between 27 February 2020 (the date the pandemic was declared in Australia) and 31 January 2021, the text of the initial police summary of circumstances was extracted. These summaries were searched using the following terms and text strings derived from the medical literature and lay press pertaining to COVID-19: "corona*", "covid", "virus", "pandemic", "epidemic", "isol*", "quarant*", "jobkeeper", "jobseeker", "unemploy*", "social dist*", "restrict*" and "curfew". For any case returned in a search, the summary of circumstances was reviewed to ascertain whether COVID-19 and its associated impacts were identified as being a factor in the suicide.

A death was designated to be COVID-linked suicide if there was explicit evidence of a COVID-19 context. For example, a suicide in a setting of financial stress would not be included unless the circumstances specified that the financial stress was caused by loss of employment or business closing or similar as a result of COVID-19. Two research team members independently reviewed the summary of circumstances to reduce the risk of inferring a link in the absence of explicit evidence. Where the members differed in opinion, a third member reviewed the material to determine the final classification.

Quantitative analysis of overall suicide trend

A two-segment interrupted time series analysis was undertaken of Victorian suicides occurring between 1 January 2015 and 31 January 2021, using an ordinary least squares linear regression model with Newey-West standard errors to establish whether there was any change in frequency following the onset of the pandemic. The null hypotheses of no step change at the event time and no change in post-event slope from that in the pre-event period were tested at a two-sided significance level set at 0.05. No control series was used in the analysis.

To prepare the data for analysis, the number of suicide notifications and suicides linked to COVID were summed by week commencing 1 January 2015, with the final week in each year being either eight days or (in a leap year) nine days in length. This generated 260 weeks of summed data prior to 1 January 2020 and 57 weeks of summed data up to and including 31 January 2021. No adjustment for changes in the size of the COVID-19 source population over time was performed.

The possibility of a delay between external COVID-19 related events and a change in suicide frequency was explored using three separate event time models with dates set at 27 February 2020, when the Australian Government activated the Australian Health Sector Emergency Response Plan for Novel Coronavirus (COVID-19); 16 March 2020, when the state of emergency and human biosecurity emergency were declared by the Victorian Government (the Australia Government declared a human biosecurity emergency two days later on 18 March); and 12 May 2020, 10 days after the announcement of the meatworks outbreak signalling the second-wave community spread of COVID-19 in Victoria.

Statistical analysis was executed in Stata version 16 using the ITSA module, with evidence of serial correlation assessed using the Breusch-Godfrey test.[14] Evidence of seasonality was assessed using the auto.arima function within the forecast package[15] in R version 4.0.4, release 21-02-15.

Qualitative analysis of COVID-linked suicides

To identify evidence of the relevance of COVID-19 in the COVID-linked suicides, two psychiatrists independently reviewed the text contained in each relevant summary of

circumstances that related to COVID-19 using the four-stage manifest content analysis procedure outlined by Bengtsson.[16] First, meaning units were extracted and coded (given researcher created labels); second, meaning units and codes were compared with the original data and information unrelated to the suicide and its context was removed; third, comparable codes were grouped into researcher-created themes; and fourth, the analysis and writing-up process was completed, including independent verification by a third researcher. The world view informing the analysis was that of a psychiatrist in clinical practice, proceeding from the assumption that the decision to suicide can be understood in light of known risk factors and an understanding of the individual, in which their many internal resources and vulnerabilities are in a state of dynamic interaction. ATLAS.ti version 8 data management software was used.

Ethical review

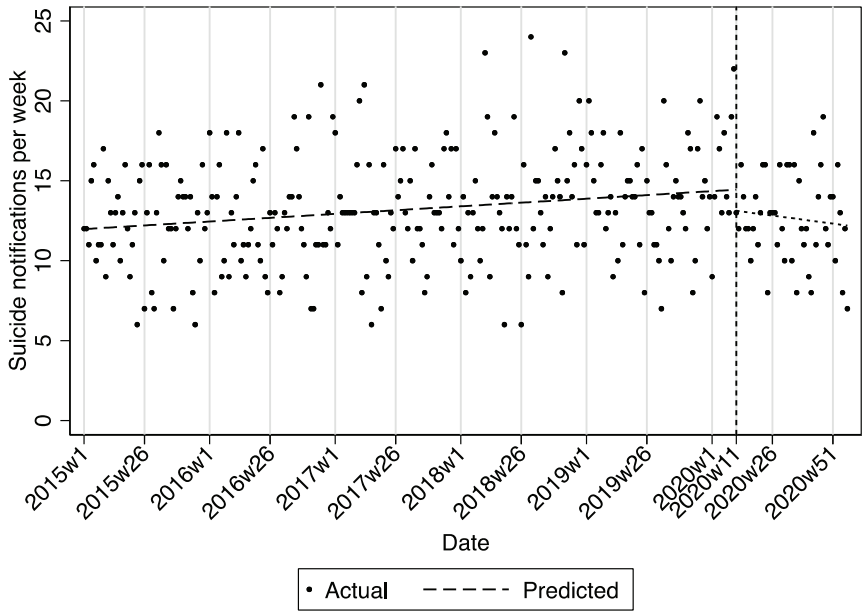
Human research ethics approval was obtained from Monash University Human Research Ethics Committee (Project 24318). Access to the VSR data for the purposes of this study was granted by the Victorian State Coroner.

Results

Between 1 January 2015 and 31 January 2021, the mean number of suicides per week reported to the Court was 13 (standard deviation 3.4, range 6 to 24). The interrupted time series analysis found no evidence for an increase in the number of suicides per week when the event time was set at 16 March 2020. Pre-event, the predicted number of suicides was increasing slowly by 0.009 (95%CI 0.005 to 0.013, $p<0.001$) suicides per week from 12.0 per week (first week of January 2015). The model predicted a step reduction in the number of suicides per week of -1.32 (95%CI -2.47 to -0.16, $p=0.03$) but no change in the post-event number per week of -0.02 (95%CI -0.07 to 0.03, $p=0.46$). There was no evidence of autocorrelation or seasonality using either the Breusch-Godfrey test (for lags up to 6 all p-values >0.2) or in an ARIMA(0,1,1) model. Raw data and mean predicted curves pre- and post-event date are presented in Figure 1.

At the other two event times (which occurred in the weeks beginning 26 February 2020 and 13 May 2020) there was no evidence of either a step change or a change in slope post-event, and the pre-event slope was unchanged from the analysis with the event set to 16 March 2020. Together, these results indicated Victoria's suicide frequency did not change following the onset of COVID-19.

Figure 1: Number of suicides per week from 1 January 2015 until 31 January 2021.



Notes:
The vertical dotted line identifies the date when the of state of emergency was declared in Victoria.
The predicted line is based upon interrupted time series using ordinarily least squares regression with Newey-West standard errors.
On the horizontal axis "W1" designates week 1 of the year; "W26" designates week 26 of the year.

Sixty COVID-linked suicides were identified, the first of which occurred in the week beginning 11 March 2020. The COVID-linked suicides accounted for 9.5% of the 634 suicides between 27 February 2020 and 31 January 2021 inclusive.

Females accounted for 30.0% of the COVID-linked suicides (18/60), compared to 25.7% of the suicides (906/3526) that occurred in the pre-COVID period (that is, before the pandemic was declared on 27 February 2020). Males accounted for 70% of the COVID-linked suicides (42/60) compared to 74.3% of all pre-COVID suicides (2620/3526). There was no sex difference in age for COVID-linked suicides (rank-sum test $p=0.28$). The overall mean age of COVID linked suicides was 49 (SD17.0) with minimum age 15 years, maximum age 84 years, and no difference compared to the pre-COVID period (mean age 45 [SD 18.0] years).

The percentage of COVID-linked suicides occurring per week, commencing 4 March 2020, is presented in Figure 2. The overall median rate per week was 9.9%; individual weekly rates ranged from a minimum of zero in 12 of the 47 weeks (26%) to a maximum 33.3%.

In 57 of the 60 COVID-linked suicides, the summaries of circumstances contained information about the deceased from two or more sources. Forty-three included information from immediate family and friends and 45 included information gleaned from medical records. Among the male deceased, 78.6% had a known psychiatric history, and 33% had a history of prior suicide attempts. In female deceased, the figures were 66.6% and 33.3%, respectively.

Three central themes emerged from the content analysis of information linking COVID-19 with the suicide. These are presented without direct quotes from the summaries of circumstances to prevent identification of the deceased. Hypothetical text and illustrative analysis examples are shown in Table 1.

Theme 1: COVID-19 could disturb the sense of self

The first common theme that emerged was of the individual feeling personally thwarted by the consequences of COVID-19. Restrictions on personal freedom of movement and feeling resigned to these privations were

identified as stresses in the deceased who lost contact with the familiar in their everyday life. An increased sense of worry for one's physical and mental health was evident as a consistent theme, and there were numerous accounts of worry about pre-existing health problems intensifying as the pandemic progressed.

Theme 2: COVID-19 could disturb relationships with others

The second common theme was that COVID-19 could disrupt important family and social relationships. Loss of social activities, such as through sporting and community clubs, was noted. Other identified themes included the loneliness of working from home and the general sense of isolation from others. There were accounts of strained family and intimate relationships as arguments ensued or travel restrictions prevented a needed reunion, such as with one's children during a separation. Bereavements as a result of COVID-19 could be very significant.

Theme 3: COVID-19 could disturb relationships with institutions

The third common theme was that COVID-19 could force individuals to interact with unfamiliar institutions, and/or interrupt their established patterns of interaction with institutions, thus displacing the individual from their usual residential, employment and social contexts in a manner beyond their control. The sudden imposition of working from home directives could be very unsettling. The consequences of becoming newly unemployed and needing to deal with social support services could be experienced as stressful. Being uprooted from one's usual abode and placed into quarantine or alternative accommodation was identified in a few cases. Attempts to access healthcare could be much more arduous as individuals had treatments cancelled, refused offers of telehealth, and found themselves unable to cover healthcare costs or unable to have a needed support person accompany them for treatment.

Figure 2: Percentage of suicides (per week) identified as COVID-related.

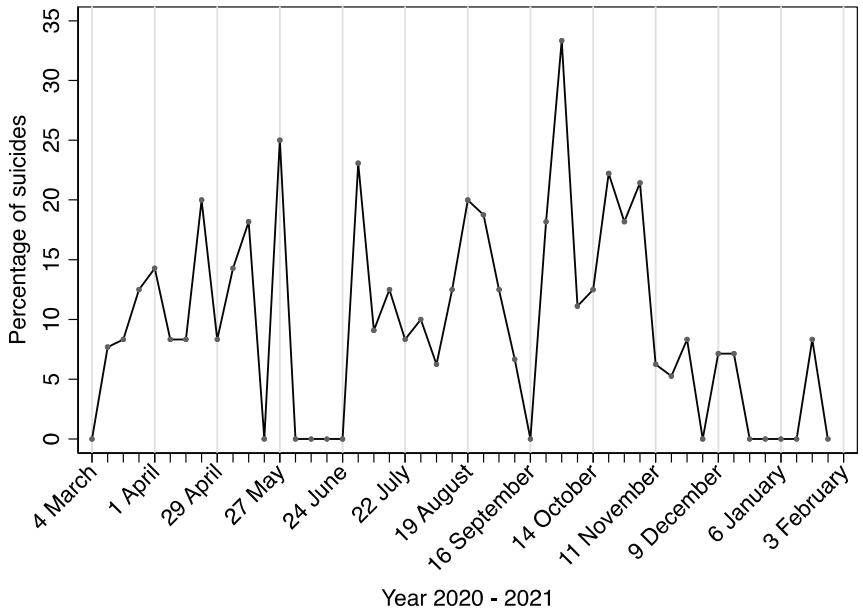


Table 1: Hypothetical examples of qualitative analysis of narrative contained within the initial police summary of circumstances regarding a suspected suicide.

Original text	Meaning unit	Code	Theme
His partner said he had recently he had been more depressed since being unable to go and visit his kids interstate.	Unable to visit kids interstate	Cut off from family	COVID-19 could disturb relationships with others
She has always been anxious about her breathing, and this really went downhill over the coronavirus.	Anxious about breathing being worse with coronavirus	Threat to wellbeing	COVID-19 could disturb the sense of self

Discussion

In this study, quantitative analysis of VSR data found that the suicide frequency in the southern Australian state of Victoria did not increase during the first 47 weeks of the COVID-19 pandemic.

This result is broadly consistent with the findings of other recent studies that examined suicide in Queensland, Victoria and New South Wales,[9-10] and is also consistent with studies reporting no evidence of a suicide increase during the pandemic in other countries.[10,17-20] However, it is at odds with the widely articulated expectation that the negative mental health impact on the Australian population of COVID-19 and the measures taken to control its spread would result in substantially increased suicide. Some commentators have expressed concern that these findings may represent only a temporary state of affairs: a 'honeymoon period' before the social, psychological and economic effects of COVID-19 are fully felt and suicides rise.[18,19,21] Such concerns are amplified by the results of a recent study finding a significant increase in suicides following an initial decrease during the pandemic in Japan.[22]

Given these concerns, it is important to understand why there has been no change to date in the frequency of suicides in Victoria so that countermeasures can be put in place to guard against any risk of future increases.

A potential explanation is that the pandemic may have strengthened social bonds and promoted self-care, similar to what was reported to have happened during the SARS epidemic in Hong Kong.[23] A longitudinal study of Australian survey respondents during the first few months of COVID-19 found an increase in social cohesion and sense of trust in others despite rising unemployment and decreasing household income.[24] In an Australian national survey during the first month of COVID-19 restrictions, 14.6% of respondents reported experiencing thoughts of being better off dead or self-harming, but also more than half of respondents felt more optimistic than pessimistic.[8]

Another possible explanation is the policy decisions made quickly to mitigate the financial impact of business closures and job losses on the Australian public. The JobKeeper and Coronavirus Supplement wage subsidy programs reduced overall levels of poverty and housing stress in the community to

levels below those seen prior to COVID-19[25] and this may have cushioned some of the psychological impacts, particularly as financial stress was found to be an important driver of mental distress in Australia during 2020 as the pandemic unfolded.[26] Banking initiatives to defer mortgage and business loan repayments for customers experiencing financial difficulty, and bans in some states (including Victoria) on evicting tenants who fall behind on rent, may also be relevant in this regard.

Making healthcare more accessible may have played a role. The creation of new billing items in Australia's Medicare system has supported mental health clinicians' rapid transition to telehealth services,[27] which have been shown to be acceptable and as effective as in-person consultations for a variety of mental health problems.[28] This may have provided essential support to people in crisis who might not otherwise have been able to readily access mental health care.

The results of the qualitative analysis of COVID-linked suicides offer further potential insights into why increased mental distress has not so far translated into increased suicides in Victoria. The themes identified suggest that the impacts of COVID-19 are likely to be multifaceted in any given person. COVID-19 does not appear to be a discrete stressor in its own right; rather, it is a context that produces stress across personal, interpersonal and societal domains through precipitating negative life events such as job loss and isolation, straining relationships with others, and stymieing people's attempts to improve their lot. Viewed through this lens, initiatives that relieve the consequences of these negative life events in a concrete way, such as providing financial support for people who have lost jobs, are also potentially suicide prevention initiatives.

This approach resonates with contemporary models of suicidal behaviour, which implicate experiences of defeat, humiliation and entrapment as central links in the path from suicidal ideation to dying by suicide.[29] Background risk factors, such as prior suicide attempts, can reinforce suicidal behaviour as a solution to otherwise feeling trapped.[30]

It also provides a potential framework for understanding other aspects of life during the pandemic. For example, government-imposed restrictions on movement and gathering to control the spread of COVID-19 in Victoria were enforced through substantial fines, and through to October 2020 more than 19,000 such fines were issued.[31] Those fined were regularly depicted as irresponsible law-breakers by politicians and news media, but at least in some cases, these breaches may have resulted from attempts to relieve personal and interpersonal stressors resulting from COVID-19, including isolation and the inability to engage in activities of normal life.

Limitations

The quantitative analysis relied upon the accuracy and completeness of the VSR suicide data. VSR data quality is maintained through iterative revision over time as coroners' investigations progress. A case initially added to the VSR may be confirmed as a suicide, or it may be removed if the investigation establishes it is not a suicide. New cases not initially identified as potential suicides may also be added in this process. Consequently, more recent VSR data (where cases are less likely to have undergone revision) are usually less accurate and complete than older data, which may have impacted the quantitative analysis.

A major qualitative limitation was the reliance on initial police summaries of circumstances that varied greatly in detail, rather than the more fulsome coronial briefs of evidence including witness statements that are subsequently prepared at the coroner's direction. It is likely that some relevant COVID-linked suicides were not identified, and that where COVID-19 was identified as a stressor, the contextual information needed to understand the nature of its impact was not complete.

Further to this point, relying on information from the initial police summary of circumstances, which is not collected in a standardised manner, might introduce a degree of bias. For example, initial summaries for suicides in a setting of social isolation might lack relevant health history and other background contextual information because police cannot immediately locate witnesses, meaning any relevant COVID-19 context is less likely to be identified and recorded.

Finally, it is worth noting that the findings suggest the consequences of COVID-19 are socially pervasive, and therefore may act both directly and indirectly as stressors in vulnerable people. A suicide was deemed to be COVID-linked only where there was explicit evidence the pandemic and/or its consequences were a factor in the decision to suicide. This excluded, then, suicides where COVID-19 may have been a background stressor, or an indirect stressor not articulated in the source material. Again, this would have led us to underestimate the frequency of COVID-linked suicides.

Implications for public health

A specific implication of the findings presented here is that a focus on the person's experience across social domains including work, relationships and wellbeing is indicated when exploring psychological distress related to COVID-19. Appropriate interventions for clinicians to consider are those that serve in a practical sense to reconnect people with a sense of agency and with other people. These might include advocacy for family visits.

A related implication is that clinicians should consider updating their knowledge of housing, welfare, employment and other services in their areas, as well as referral pathways, client advocacy services and similar, to inform their discussions with patients who may be experiencing stress related to COVID-19. Clinics who do not already employ social workers and support staff to work with patients in addition to the mental health clinicians might consider introducing them. The rationale for this proposal is that – while it is not known for certain whether government policy interventions in housing, financial support and elsewhere may have mitigated suicide risk – these interventions offer support across domains of stress that feature prominently in the COVID-linked suicides, so clinically meaningful protective benefits may derive from facilitating patients to access corresponding services.

More generally, timely death surveillance is needed to track suicides as the pandemic continues to unfold, so that if any feared increase does eventuate it is detected at the earliest possible opportunity and interventions are planned and implemented. This surveillance should include a particular focus on examining whether changes in government support for people affected by COVID-19 are accompanied by changes in suicide numbers.

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