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# Association between COVID-19 restrictions and emergency department presentations for paediatric mental health in Victoria, Australia

Harriet Hiscock[A,B,C,*] (*MBBS, FRACP, MD, Director*), Wanyu Chu[A,B] (*MBiostat, Data Analyst*), Gerard O'Reilly[D,E] (*PhD, Head, Epidemiology and Biostatistics*), Gary L Freed[F] (*MPH, Professor of Pediatrics*), Mary White[A,B,G] (*MD, Research Officer, Health Services Research Unit*), Margie Danchin[H,I] (*PhD, Group Leader, Vaccine Uptake*) and Simon Craig[J,K] (*MPH, Paediatric Emergency Medicine Specialist*)

For full list of author affiliations and declarations see end of paper

***Correspondence to:**
Harriet Hiscock
Health Services Research Unit, The Royal Children's Hospital, 50 Flemington Road, Parkville, Melbourne, Vic., 3052, Australia
Email: harriet.hiscock@rch.org.au

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## ABSTRACT

**Objective.** To determine the association between coronavirus disease 2019 (COVID-19) restrictions and paediatric mental health emergency department presentations. **Methods.** Secondary analysis of Victorian Emergency Minimum Dataset data from 38 Victorian public hospital emergency departments. Paediatric patients (birth to <18 years) attending emergency departments with an International Classification of Disease-Australian Modification (ICD-10-AM) diagnosis of a mental health problem between 1 January 2018 and 31 October 2020 were included. We compared pre-COVID-19 (1 January 2018–27 March 2020) to the COVID-19 period (28 March–26 October 2020) to examine the number of mental health presentations by patient age, socioeconomic status, location, and emergency department triage category. A Poisson regression prediction model was built for each diagnosis group to predict the presentation number in the COVID-19 period, assuming the pandemic and associated restrictions had not happened. **Results.** There were 15 898 presentations (589 presentations/month on average) in the pre-COVID-19 period and 4747 presentations (678 presentations/month on average) in the COVID-19 period. Compared with predicted presentations, there was an increase in observed presentations for eating disorders throughout lockdown (on average, an increase of 36 presentations/month) and for anxiety (11/month) and self-harm (18/month). There were no meaningful changes for mood disorders or developmental and behavioural problems, and presentations for substance abuse mostly fell. **Conclusions.** Pandemic restrictions were associated with increased emergency department presentations for eating disorders and, to a lesser extent, anxiety and self-harm. Given the ongoing pandemic, clinicians and policy makers must work together to find timely, accessible solutions to better manage these conditions.

**Keywords:** anxiety, COVID-19, eating disorders, emergency services, healthcare, health services research, mental health, paediatric, self-harm.

## Introduction

In Australia, the coronavirus disease 201 (COVID-19) pandemic has seen public health authorities initiate social restrictions to limit the spread of the virus in the community. Due to a large second wave of community infections, Victoria experienced the harshest restrictions for the longest time. Rigorous restrictions were put in place with metropolitan areas locked down from March 2020 to the end of October 2020, with a moderate easing of restrictions from May to June. Regional areas experienced similar restrictions, but with a moderate easing of restrictions lasting from May to July. The restrictions raised concerns about the impact of school closures, work from home orders (for parents), and limited or no social activities on children's mental health. Primary health care – the most accessed service for paediatric mental health care in Australia[1] – shifted

to telehealth, with most consultations delivered by telephone, which may not be ideal for mental health care.[2]

Emergency departments (EDs) are often the first point of call for healthcare, especially when access to community-based care is limited. Some studies have examined changes in ED paediatric mental health presentations pre and post pandemic restrictions. In the United States (US), a large study examined changes in mental health-related ED visits among children aged <18 years using data from National Syndromic Surveillance Program (comprising a subset of hospitals in 47 states representing approximately 73% of US ED visits) from 1 January through 17 October 2020, compared with the same period in 2019.[3] Initially (1 January–15 March 2020), the average number of mental health presentations to EDs was higher than in 2019, but then decreased by 43%, concurrent with the widespread implementation of COVID-19 mitigation measures. However, studies examining discrete paediatric mental health conditions show different results. For example, when examining rates of suicidal ideation and attempts, a study of a single Texan hospital ED found an increase in rates of positive suicide-risk screen results from January to July 2020 compared with rates from the same period in 2019.[4] In a single hospital in Dublin, Ireland, mental health related presentations fell by 26.5% in March–April 2020 compared with the same time the previous year.[5] However, in a study of presentations to four Victorian EDs, there was a 35% increase in mental health presentations in April–May 2020, compared to the same period in 2019.[6]

Thus, while most studies report a reduction in mental health ED presentations, others report an increase. Examining more nuanced data to understand associations between restrictions and different types of paediatric mental health conditions and age groups, across multiple sites, and over longer time periods could better inform the response to COVID-19 restrictions on paediatric mental health ED presentations. Such knowledge could equip families, clinicians, healthcare managers, schools, and policy makers to better prepare for and manage mental health in children during current restrictions arising from the COVID-19 pandemic and those for future diseases. We aimed to quantify the changes in the number of presentations pre- and post-restrictions for common paediatric (0 to <18 years) mental health diagnoses to all Victorian EDs and to determine whether changes differed by mental health condition, child age, socioeconomic status, and family location.

## Methods

### Data source

Paediatric (0 to <18 years) ED presentation data were obtained from the Victorian Emergency Minimum Dataset (VEMD) for the period 1 January 2018 to 30 October 2020. The VEMD data comprises de-identified demographic, administrative, and clinical data, which is mandatorily collected from all 38 Victorian public hospitals with a designated ED.[7] Each presentation has a single principal diagnosis recorded by an ED clinician using the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) codes.[8] Admission status was determined by ED departure status 'to ward.' Organisational approval was obtained from The Royal Children's Hospital (Melbourne) for an exemption from ethical review (Project ID: 70069).

### Study population and outcomes

Mental health presentations were defined as those with an F group diagnosis (F00-F99, Mental and behavioural disorders) according to ICD-10-AM or a diagnosis of intentional self-harm identified by ICD-10-AM code X60-X84 as well as S or T codes (injuries and poisonings) with intent of self-harm. We analysed presentation trends for six common conditions: substance abuse, mood disorders (including depression), anxiety disorders, eating disorders, self-harm, and development and behavioural disorders (e.g. autism spectrum disorder, attention deficit/hyperactivity disorder). We excluded schizophrenia, schizotypal and delusional disorders and disorders of personality due to small presentation numbers (<20 episodes/month). See Table A1 for full list of ICD-10AM codes.

We derived ED presentation severity based on the Australasian Triage Scale,[9] a five-level ED triage algorithm that provides clinically relevant stratification of patients into five groups from 1 (most urgent, must be seen immediately) to 5 (least urgent, safe to wait up to 2 h) based on acuity. We dichotomised triage levels 1 or 2 as urgent ED presentations and triage levels 3, 4, or 5 as non-urgent episodes.

We derived child socioeconomic status from patient residential postcode using the Australian Bureau of Statistics' (ABS) developed Socio-Economic Indexes for Areas (SEIFA) – Index of Relative Socio-economic Disadvantage (IRSD). IRSD is an index of economic and social conditions of people and households in an area, based on census data; lower scores correspond to greater disadvantage.[10] We dichotomised the IRSD for each patient presentation with lower socioeconomic status incorporating decile areas 1–5 and higher socioeconomic status deciles 6–10. We defined regional area based on the ABS's Remoteness Areas Structure[11] within the Australian statistical geography standard, with major cities designated metropolitan Melbourne and all other (inner regional, outer regional, remote and very remote) area variables designated regional Victoria.

### Statistical analysis

To examine the change in health service use before and after the COVID-19 pandemic restrictions, the number of ED presentations was converted into a monthly time series format. The entire observational period was divided into a

pre-COVID-19 period and a COVID-19 period. The COVID-19 period was defined from 31 March 2020 (start of stage 3 lockdown in Victoria when children could no longer attend school in person, community and indoor sports were closed, and employees could not attend the workplace if reasonable and practicable to work from home) to 28 October 2020 (end of the lockdown).[12] Thus, the study period comprised 27 'pre-COVID-19' and 7 'COVID-19' months of observations; overall, 34 observation points.

We conducted chi-squared analyses to determine any differences in mental health presentations by remoteness, socioeconomic status, presentation urgency, admitted proportion, sex, and age – pre- and during COVID-19 periods. Based on the observations occurring in the pre-COVID-19 period, we built a Poisson regression model with the number of presentations as the outcome variable and the time (month) passed from the start of the observational period as the predictor for each disorder group to predict what the number of monthly presentations in the COVID-19 period would be if the COVID-19 pandemic and associated restrictions had not happened. To quantify the uncertainty in the randomness associated with the point being predicted, and in the coefficient estimates, 95% prediction intervals (PI) of the predicted ED presentation numbers are reported. The difference between the observed minus the predicted number was computed. Relative difference was then calculated by subtracting the predicted from the observed and dividing this by the predicted number. Then for each condition, a mean difference was computed by averaging the sum of the monthly difference, and a mean relative difference was computed by averaging the sum of the relative difference of each month in the COVID-19 period.

All analyses were performed in R version 4.0.3.

## Results

Overall, in the pre-COVID period, there were 16 547 mental health presentations (613 presentations/month on average), of which 15 898 presentations were for the six conditions described above (589 presentations/month on average). In the COVID-19 period, there were 4899 mental health presentations (700 presentations/month on average), of which 4747 presentations were for the six conditions (678 presentations/month on average) (Table 1). Some children presented more than once for the same condition (presentation/patient ratio was 1.7 in the COVID-19 period versus 1.5 in the pre-COVID period), especially for eating disorders during the COVID-19 period, where the presentation/patient ratio was 2.3 versus 1.8 in the pre-COVID period. Table 2 shows the characteristics of presentations by condition during the pre- COVID-19 and COVID-19 periods, while Figs 1, 2 show ED presentations by condition group for the whole cohort and predicted (and 95% PI) versus observed presentations by condition, respectively. Compared with the pre-COVID-19 period, presentations were more common in children aged >12 years for anxiety, eating disorders, self-harm, and developmental-behavioural disorders during the COVID-19 period (Table 2). More children with eating disorders were from metropolitan areas in the COVID-19 period versus pre-COVID-19 period. Children living in lower socioeconomic status areas were more likely to present with mental health conditions across both time periods than children living in higher socioeconomic status areas, except for eating disorders, where the reverse trend was found, especially during the COVID-19 period. There were also small increases in the proportions of children living in higher socioeconomic areas presenting for self-harm and developmental and behavioural disorders during the COVID-19 period versus pre-COVID period. Compared with the pre-COVID period, presentations in the COVID-19 period were more common in girls for self-harm and developmental-behavioural disorders.

Table 3 shows the predicted versus the observed number of presentations by mental health condition per month in 2020. While rates of presentations for eating disorders, self-harm, anxiety disorders and mood disorders all rose, observed presentations for eating disorders were higher than the 95%

**Table 1.** Number of presentations, patients and presentation/patient ratio by mental health condition, pre (January 2018–March 2020) and during (April 2020–October 2020) COVID-19 periods.

| Mental health condition | No. of presentations | | No. of patients | | Presentation/patient ratio | |
|---|---|---|---|---|---|---|
| | Pre-COVID (27 months) | COVID (7 months) | Pre-COVID (27 months) | COVID (7 months) | Pre-COVID (27 months) | COVID (7 months) |
| All mental health conditions | 16 547 | 4899 | 10 755 | 2930 | 1.5 | 1.7 |
| Substance abuse | 2223 | 515 | 1995 | 400 | 1.1 | 1.3 |
| Mood disorders | 2378 | 737 | 2037 | 591 | 1.2 | 1.2 |
| Anxiety disorders | 2858 | 814 | 2505 | 675 | 1.1 | 1.2 |
| Eating disorders | 838 | 552 | 467 | 238 | 1.8 | 2.3 |
| Self-harm | 3831 | 1131 | 2759 | 806 | 1.4 | 1.4 |
| Development/behavioural disorders | 3770 | 998 | 2806 | 681 | 1.3 | 1.5 |

**Table 2.** Characteristics of mental health presentations pre-COVID versus during COVID-19 periods.

| | Substance abuse | | | Mood disorders | | | Anxiety disorders | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pre-COVID (No.(%)) | COVID (No.(%)) | *P*-value | Pre-COVID (No.(%)) | COVID (No.(%)) | *P*-value | Pre-COVID (No.(%)) | COVID (No.(%)) | *P*-value |
| Metro-Melbourne | 1602 (72.1) | 384 (74.6) | 0.25 | 1847 (77.7) | 575 (78.0) | 0.84 | 1963 (68.7) | 587 (72.1) | 0.06 |
| Regional Victoria | 621 (27.9) | 131 (25.4) | | 531 (22.3) | 162 (22.0) | | 895 (31.3) | 227 (27.9) | |
| Lower SES | 1143 (51.4) | 276 (53.6) | 0.37 | 1195 (50.3) | 351 (47.6) | 0.21 | 1611 (56.4) | 425 (52.2) | 0.04 |
| Higher SES | 1080 (48.6) | 239 (46.4) | | 1183 (49.7) | 386 (52.4) | | 1247 (43.6) | 389 (47.8) | |
| Urgent | 1529 (68.8) | 337 (65.4) | 0.14 | 293 (12.3) | 97 (13.2) | 0.55 | 256 (9.0) | 83 (10.2) | 0.28 |
| Non-urgent | 694 (31.2) | 178 (34.6) | | 2085 (87.7) | 640 (86.8) | | 2602 (91.0) | 731 (89.8) | |
| Admitted | 498 (22.4) | 132 (25.6) | 0.12 | 504 (21.2) | 165 (22.4) | 0.49 | 230 (8.0) | 71 (8.7) | 0.54 |
| Non-admitted | 1725 (77.6) | 383 (74.4) | | 1874 (78.8) | 572 (77.6) | | 2628 (92.0) | 743 (91.3) | |
| Female | 1140 (51.3) | 283 (55.0) | 0.13 | 1626 (68.4) | 526 (71.4) | 0.12 | 1912 (66.9) | 553 (67.9) | 0.58 |
| Male | 1083 (48.7) | 232 (45.0) | | 752 (31.6) | 211 (28.6) | | 946 (33.1) | 261 (32.1) | |
| Age < 12 years | 205 (9.2) | 53 (10.3) | 0.45 | 43 (1.8) | 15 (2.0) | 0.69 | 520 (18.2) | 119 (14.6) | 0.02 |
| Age 12 to <18 years | 2018 (90.8) | 462 (89.7) | | 2335 (98.2) | 722 (98.0) | | 2338 (81.8) | 695 (85.4) | |
| | **Eating disorders** | | | **Self-harm** | | | **Development/behavioural disorders** | | |
| | Pre-COVID | COVID | *P*-value | Pre-COVID | COVID | *P*-value | Pre-COVID | COVID | *P*-value |
| Metro-Melbourne | 715 (85.3) | 497 (90.0) | 0.01 | 2290 (59.8) | 693 (61.3) | 0.36 | 2923 (77.5) | 769 (77.1) | 0.75 |
| Regional Victoria | 123 (14.7) | 55 (10.0) | | 1541 (40.2) | 438 (38.7) | | 847 (22.5) | 229 (22.9) | |
| Lower SES | 232 (27.7) | 137 (24.8) | 0.24 | 2176 (56.8) | 583 (51.5) | <0.01 | 2145 (56.9) | 529 (53.0) | 0.03 |
| Higher SES | 606 (72.3) | 415 (75.2) | | 1655 (43.2) | 548 (48.5) | | 1625 (43.1) | 469 (47.0) | |
| Urgent | 48 (5.7) | 36 (6.5) | 0.54 | 788 (20.6) | 265 (23.4) | 0.04 | 709 (18.8) | 212 (21.2) | 0.08 |
| Non-urgent | 790 (94.3) | 516 (93.6) | | 3043 (79.4) | 866 (76.6) | | 3061 (81.2) | 786 (78.8) | |
| Admitted | 610 (72.8) | 374 (67.8) | 0.04 | 1280 (33.4) | 412 (36.4) | 0.06 | 439 (11.6) | 143 (14.3) | 0.02 |
| Non-admitted | 228 (27.2) | 178 (32.2) | | 2551 (66.6) | 719 (63.6) | | 3331 (88.4) | 855 (85.7) | |
| Female | 789 (94.2) | 527 (95.5) | 0.28 | 2834 (74.0) | 885 (78.2) | <0.01 | 1986 (52.7) | 587 (58.8) | <0.01 |
| Male | 49 (5.8) | 25 (4.5) | | 997 (26.0) | 246 (21.8) | | 1784 (47.3) | 411 (41.2) | |
| Age <12 years | 38 (4.5) | 8 (1.4) | <0.01 | 167 (4.4) | 32 (2.8) | 0.02 | 1085 (28.8) | 235 (23.5) | <0.01 |
| Age 12 to <18 years | 800 (95.5) | 544 (98.6) | | 3664 (95.6) | 1099 (97.2) | | 2685 (71.2) | 763 (76.5) | |

SES, socioeconomic status.

PI for predicted presentations during the whole lockdown period (Fig. 2), but only higher towards the end of the lockdown period for anxiety disorders and self-harm. The mean relative difference for presentations (i.e., the average of the sum of the relative difference of each month in the COVID-19 period) was higher than predicted for eating disorders (82.7 percentage point increase), self-harm (12.7 percentage point increase), anxiety (10.8 percentage point increase), and mood (61 percentage point increase) disorders and lower than predicted for developmental and behavioural problems and substance abuse (17 percentage point decrease and 24 percentage point decrease, respectively). However, changes for mood and developmental and behavioural disorders fell within 95% PIs for their respective conditions (Fig. 2).

## Discussion

We found large, unpredicted (based on previous presentations) increases in eating disorders in Victorian children during the 2020 lockdown. Presentations for self-harm and anxiety were also higher than predicted towards the end of the COVID-19 period. Children from lower socioeconomic areas and girls[13] continued to be over-represented in ED presentations, as per pre-2020 data.

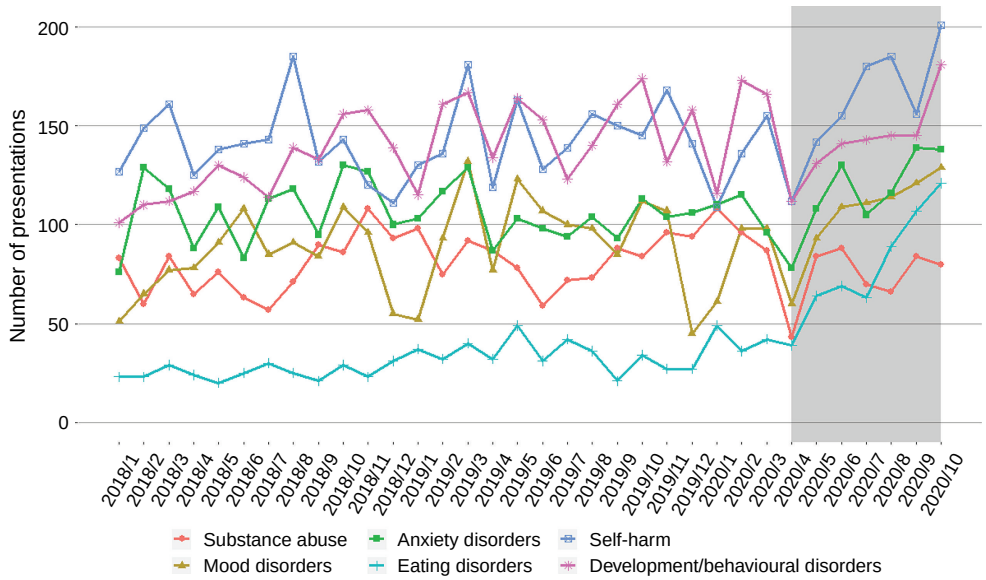


**Fig. 1.** The number of presentations to Victorian public hospitals according to the VEMD dataset from 1 January 2018 to 31 October 2020. The grey section to the right-hand side denotes the periods of COVID-19 restrictions in Victoria.

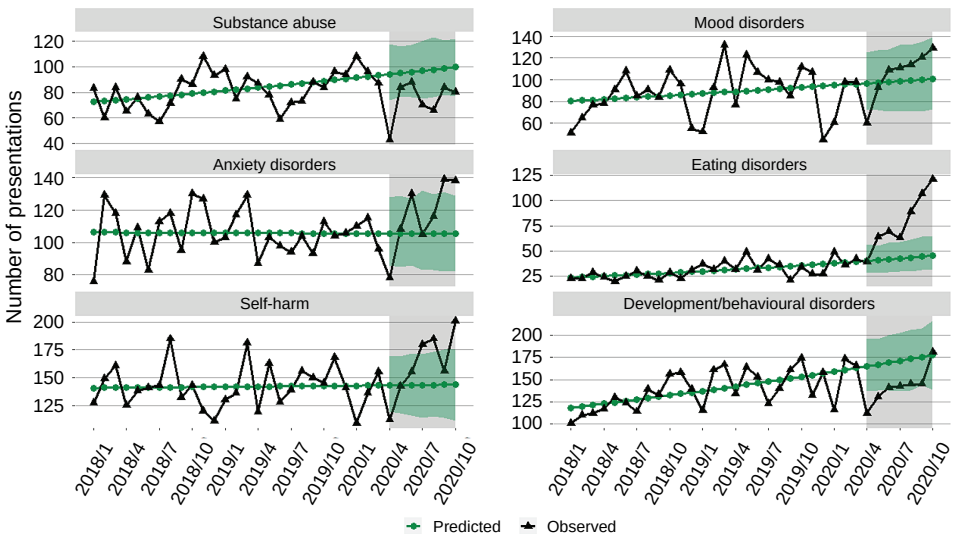


**Fig. 2.** Observed vs predicted number of presentations for each disorder group. The grey section to the right-hand side denotes the periods of COVID-19 restrictions in Victoria. The green shaded area shows 95% prediction interval of the predicted values.

The relative lack of change in presentations (other than eating disorders which increased throughout, and self-harm and anxiety, which increased in the latter months of lockdown) to Victorian EDs contrast with the reductions in presentations reported in most studies, even though a recent global meta-analysis of child depression and anxiety symptoms (including in children from the US and Europe)[14] report worsening mental health of children and adolescents compared to pre-pandemic times. There could be several reasons for this. First, in contrast to the US and most European countries, Victoria has been relatively successful in curbing paediatric COVID-19 cases (2621 children in total by October 2020, incidence proportion 0.2%).[15] Thus, Victorian parents may have been less worried than US parents about their child catching severe acute respiratory syndrome coronavirus 2 in a hospital environment than continuing to take their child to the ED for mental health support. Second, primary care physicians (general practitioners in Australia) overwhelmingly substituted face-to-face care with telephone-based telehealth during the 2020 lockdown[2] and caregivers and children may have viewed phone-based care as suboptimal support for more complex conditions such as eating disorders and self-harm, turning to the ED instead. The Australian paediatric mental health system was also (and continues to be) overwhelmed, with calls to national help lines rising[16] and anecdotal reports of

**Table 3.** Number of monthly presentations observed, predicted, difference, and relative difference between observed and predicted during COVID-19 period.

| | Substance abuse | | | | Mood disorders | | | |
|---|---|---|---|---|---|---|---|---|
| | Observed | Predicted (95% PI) | Diff | Relative difference (%) | Observed | Predicted (95% PI) | Diff | Relative difference (%) |
| Apr-2020 | 43 | 94 (74, 118) | −51 | −54.3 | 60 | 97 (73, 125) | −37 | −38.1 |
| May-2020 | 84 | 95 (76, 116) | −11 | −11.6 | 93 | 98 (72, 127) | −5 | −5.1 |
| Jun-2020 | 88 | 96 (76, 117) | −8 | −8.3 | 109 | 98 (71, 128) | 11 | 11.2 |
| Jul-2020 | 70 | 97 (75, 120) | −27 | −27.8 | 111 | 99 (71, 132) | 12 | 12.1 |
| Aug-2020 | 66 | 98 (76, 123) | −32 | −32.7 | 114 | 100 (71, 132) | 14 | 14.0 |
| Sep-2020 | 84 | 99 (78, 121) | −15 | −15.2 | 121 | 100 (71, 135) | 21 | 21.0 |
| Oct-2020 | 80 | 100 (77, 122) | −20 | −20.0 | 129 | 101 (73, 139) | 28 | 27.7 |
| Mean | | | −23 | −24.3 | | | 6 | 6.1 |
| | **Anxiety disorders** | | | | **Eating disorders** | | | |
| | Observed | Predicted (95% PI) | Diff | Relative difference (%) | Observed | Predicted (95% PI) | Diff | Relative difference (%) |
| Apr-2020 | 78 | 105 (86, 128) | −27 | −25.7 | 39 | 40 (28, 57) | −1 | −2.5 |
| May-2020 | 108 | 105 (85, 129) | 3 | 2.9 | 64 | 41 (28, 55) | 23 | 56.1 |
| Jun-2020 | 130 | 105 (86, 127) | 25 | 23.8 | 69 | 42 (29, 58) | 27 | 64.3 |
| Jul-2020 | 105 | 105 (83, 132) | 0 | 0 | 63 | 43 (30, 59) | 20 | 46.5 |
| Aug-2020 | 116 | 105 (83, 130) | 11 | 10.5 | 89 | 44 (30, 61) | 45 | 102.3 |
| Sep-2020 | 139 | 105 (82, 131) | 34 | 32.4 | 107 | 44 (31, 64) | 63 | 143.2 |
| Oct-2020 | 138 | 105 (82, 129) | 33 | 31.4 | 121 | 45 (32, 64) | 76 | 168.9 |
| Mean | | | 11 | 10.8 | | | 36 | 82.7 |
| | **Self-harm** | | | | **Development/behavioural disorders** | | | |
| | Observed | Predicted (95% PI) | Diff | Relative difference (%) | Observed | Predicted (95% PI) | Diff | Relative difference (%) |
| Apr-2020 | 112 | 143 (119, 169) | −31 | −21.7 | 112 | 165 (137, 197) | −53 | −32.1 |
| May-2020 | 142 | 143 (118, 169) | −1 | −0.7 | 131 | 167 (138, 196) | −36 | −21.6 |
| Jun-2020 | 155 | 143 (116, 172) | 12 | 8.4 | 141 | 169 (138, 200) | −28 | −16.6 |
| Jul-2020 | 180 | 143 (114, 171) | 37 | 25.9 | 143 | 171 (137, 203) | −28 | −16.4 |
| Aug-2020 | 185 | 143 (115, 173) | 42 | 29.4 | 145 | 173 (138, 206) | −28 | −16.2 |
| Sep-2020 | 156 | 144 (114, 175) | 12 | 8.3 | 145 | 176 (144, 208) | −31 | −17.6 |
| Oct-2020 | 201 | 144 (111, 175) | 57 | 39.6 | 181 | 178 (139, 216) | 3 | 1.7 |
| Mean | | | 18 | 12.7 | | | −29 | −17.0 |

Diff = Observed − Predicted; Relative difference = (Observed − Predicted)/Predicted × 100%.

psychologists and paediatricians closing their books to new patients. Thus, the ED may have represented the only place families felt they could go.

Whatever the reasons, greater support and services will be required as this pandemic continues, especially for eating disorders. This could include a focus on early prevention and intervention, e.g., by increasing funding and professional upskilling to frontline clinicians who care for mental health in Australian children – principally general practitioners, psychologists and paediatricians.[1] We are piloting a Community of Practice to upskill such clinicians through case discussions and secondary consultations with a child and adolescent psychiatrist, with the aim of supporting clinicians to better manage paediatric mental health. Similar approaches have improved primary care provider knowledge and self-efficacy in managing adult mental health.[17] For children and young people who may present often to EDs, offering them wrap-around services in the community could curb subsequent presentations.[18]

## Strengths and limitations

This study has several strengths. We analysed whole of state data and examined differences in presentations by mental health condition and age group, thus providing more nuanced data on the impacts of COVID-19 restrictions on mental health presentations. In contrast to previous studies,[3–5] we analysed data over 3 years, providing greater certainty in our predicted versus observed results. This study also has limitations. We used ICD-10-AM codes to classify mental health disorders which may underestimate ED mental health presentations, given ED clinicians typically only record one condition per presentation. Our study may be limited by inaccuracies in diagnostic coding, as codes are generally entered by busy clinicians with limited training in coding.[19] Use of administrative data does not tell us why children were more likely to present. Future qualitative research should seek to determine reasons for ED presentations, especially for eating disorders, and, to a lesser extent, self-harm. Reasons could include increased exposure to social media,[20] inability to access usual supports and social activities that children use to regulate their mental health,[21] and family impacts such as financial stress, job insecurity,[22] and increased exposure to family violence.[23] Our analyses cannot account for unmeasured exposures that might affect child mental health, and as such, our data can confirm associations but not causality.

## Conclusions

COVID-19 restrictions have seen an unpredicted increase in eating disorder presentations to Victorian EDs and to a lesser extent, self-harm and anxiety disorders. These increases also affected young children. Consumers, clinicians, schools, and policy makers must work together to strengthen support for these children and their families, with upskilling of existing workforces in the short term and funding to ensure accessible support in the longer term.

## Supplementary material

Supplementary material is available online.

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**Author affiliations**
[A]Health Services Research Unit, The Royal Children's Hospital, 50 Flemington Road, Parkville, Melbourne, Vic., 3052, Australia.
[B]Health Services, Murdoch Children's Research Institute, Melbourne, Vic., Australia.
[C]Department of Paediatrics, University of Melbourne, Melbourne, Vic., Australia.
[D]School of Public Health and Preventive Medicine, Monash University, Melbourne, Vic., Australia.
[E]Emergency and Trauma Centre, The Alfred, Melbourne, Vic., Australia.
[F]Susan B. Meister Child Health Evaluation and Research Center, University of Michigan, Ann Arbor, MI, USA.
[G]Department of Endocrinology & Diabetes, The Royal Children's Hospital, Melbourne, Vic., Australia.
[H]Vaccine Uptake Group, Murdoch Children's Research Institute, Melbourne, Vic., Australia.
[I]Department of General Medicine, The Royal Children's Hospital, Melbourne, Vic., Australia.
[J]Department of Paediatrics, School of Clinical Sciences, Monash University, Clayton, Vic., Australia.
[K]Paediatric Emergency Department, Monash Medical Centre, Emergency Service, Monash Health, Clayton, Vic., Australia.

## Appendix

**Table A1.** ICD-10 AM codes for each disorder group.

| Disorder group | ICD-10AM codes |
|---|---|
| Substance abuse | F10-F19 |
| Mood disorders | F30-F39 |
| Anxiety disorders | F40-F49 |
| Eating disorders | F50 |
| Self-harm | X60-X84 and S or T codes with human intent of self-harm |
| Development/behavioural disorders | F70-F99 |