

Increased Mental Health Presentations by Children Aged 5-15 at Emergency Departments during the first 12 months of COVID-19

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Abstract

Aims

To determine changes in mental health (MH) attendance at Emergency Departments (ED) by children aged five to 15 during the COVID-19 pandemic.

Methods

Analysis of MH presentations during the first year of the pandemic compared with prior year for three public paediatric EDs serving the greater Dublin area with a paediatric population of 430,000.

Results

Overall, ED attendance during the 12 months to 28th February 2021 was 34.3% below prior year, while MH presentations were 8.9% above prior year. MH attendances initially decreased by 26.8% (2020: 303; 2019: 414) during the first four months of the pandemic (March to June), lower than the corresponding decrease of 47.9% for presentations for any reason (2020: 11,530; 2019: 22,128). However, MH presentations increased by 52.4% in July and August (2020: 218; 2019: 143), and by 45.6% in September to December (2020: 552 ;2019: 379), dropping 28.1% below prior year in January (2021: 87; 2020: 121) before returning to prior year levels in February 2021 (2021: 107; 2020: 106).

Conclusion

Following the initial COVID-19 lockdown, ED presentations by children for acute MH care increased significantly over prior year, with this increase sustained throughout 2020. Long-term stressors linked to the pandemic may be leading to chronic MH problems, warranting increased funding of MH services as part of the response to COVID-19.

Introduction

Mental health (MH) presentations at the emergency department (ED) by children have been increasing over recent years^{1,2}. However, paediatric MH presentations fell in many countries during the initial and most restrictive stage of public health measures implemented in response to COVID-19^{3,4}. While this may be due to strict stay-at-home measures leading to a decline in help-seeking behaviour², this may also indicate hospital avoidance due to concerns about contracting COVID-19, or a belief that health services were unavailable due to the diversion of resources to tackling the pandemic⁵. The closure of schools may have temporarily removed pressure from some children with MH problems, with the stay-at-home measures leading to some children benefiting from increased family support. However, for others the absence of a structured school day and access to supports within the school setting may have exacerbated MH problems. The stay-at-home measures may also be a source of additional stress within the family. Public health measures such as the cancellation of sporting and cultural activities and restrictions on social gatherings, have significantly impacted the lives of children and young people.⁶ As the pandemic continues, these challenging living conditions may exacerbate existing MH problems, while an increase in new presentations might be expected due to the accumulated negative effects of the public health crisis, social isolation, and economic recession⁷.

The demand for child and adolescent mental health services (CAMHS) struggled to meet the needs of children before COVID-19^{1,8,9}, and these services have been severely disrupted by the pandemic¹⁰. While MH attendance at an adult ED in Dublin fell during the initial eight weeks of the pandemic¹¹, an increase in attendance by adolescents (aged 16-18) was noted (13 versus 2). Should the expected increase in paediatric MH problems transpire, CAMHS and hospital psychological medicine will need to be fully resourced to adapt rapidly to the crisis needs of children and young people¹². As the ED is a gateway to these services for many children³ with more severe or acute MH problems, identifying changes in the pattern of MH presentations can provide a timely signal of need. This report expands on existing literature from the early stage of the pandemic by presenting timely surveillance on the changed pattern in ED MH attendances in the first 12 months of the COVID-19 pandemic.

Methods

Statistical and graphical analysis of MH presentations at EDs from 1st March 2020 to 28th February 2021 compared with prior year (2019/20) is presented, split over four time periods: March – June (Period 1), the period of the most severe public health restrictions, including a 7-week period of lockdown; July and August (Period 2), as restrictions abated and COVID-19 case numbers remained low over the holiday period; September to December (Period 3), as children returned to school with reported cases of COVID-19 increasing and a further six-week period of stay-at-home measures commencing on 21st October 2020. The country entered a further lockdown on 28th December following a brief period of reduced restrictions and increased mobility over the Christmas period. During the final time period, January and February 2021 (Period 4), the country remained in lockdown and schools moved to remote/on-line learning after the Christmas period.

Electronic records of attendance were extracted from the ED administrative system at the three public paediatric emergency departments in the greater Dublin region (Children's Health Ireland (CHI)), serving a paediatric population of 430,000. The collective annual ED census is 120,000, and accounts for over one third of national public ED paediatric attendances. Using ICD-10 classification as a guide, MH attendances were identified from the recorded first diagnosis and crossed-checked against presenting complaint. Statistical analysis was completed using Stata 16 (StataCorp, College Station, Texas, USA), while graphical analysis used both Stata 16 and Microsoft Excel. Ethical approval was granted by the COVID-19 National Research Ethics Committee (reference: 20-NREC-COV-034).

Results

Table 1 presents aggregate and mean daily attendance figures for ED presentations overall, with comparable statistics for MH presentations, for each of the four periods outlined above. Table 2 presents the characteristics of MH attendances over these four periods, including the proportion of presentations out-of-hours, self-referred, triaged as urgent, admitted, and by gender. For the 12-month period from 1st March 2020 to 28th February 2021, overall attendance decreased by 34.3%, (2020/21: 38,951; 2019/20: 59,327), with MH presentations increasing by 8.9% (2020/21: 1,267; 2019/20: 1,163).

In period 1 (March – June 2020), MH presentations decreased by 26.8% compared to the same period in 2019 (2020: 303; 2019: 414), a level lower than the corresponding decrease of 47.9% (2020: 11,530; 2019: 22,128) for presentations for any reason (Table 1). During this period, the proportion of visits self-referred (defined as presentations not referred by a general practitioner (GP)) increased to 78.9% from 68.6% (2020: 239; 2019: 284), with many GPs moving to remote consultation (Table 2).

Table 1: Emergency department presentations for children aged 5 - 15 (12 Months to February 2021).

	2019/20	2020/21	Difference	P-values
12 months from 1st March – 28th February				
Total Presentations (all reasons)	59,327	38,951	-20,376 (-34.3%)	
Total Mental Health Presentations	1,163 (2%)	1,267 (3.3%)	104 (8.9%)	
March - June 2020 (Period 1)				
Total Presentations (all reasons)	22,128	11,530	-10,598 (-47.9%)	
Total Mental Health Presentations	414 (1.9%)	303 (2.6%)	-111 (-26.8%)	
<i>Daily Attendance (mean ± SD)</i>				
All reasons	181 ± 33	94 ± 32	-87 ± 33***	<0.001
Mental Health	3 ± 2	2 ± 2	-1 ± 2***	<0.001
July - August 2020 (Period 2)				
Total Presentations (all reasons)	8,439	7,198	-1,241 (-14.7%)	
Total Mental Health Presentations	143 (1.7%)	218 (3.0%)	75 (52.4%)	
<i>Daily Attendance (mean ± SD)</i>				
All reasons	136 ± 17	116 ± 15	-20 ± 16***	<0.001
Mental Health	2 ± 1	3 ± 2	1 ± 2***	<0.001
September – December 2020 (Period 3)				
Total Presentations (all reasons)	19,732	15,540	-4,192 (-21.2%)	
Total Mental Health Presentations	379 (1.9%)	552 (3.6%)	173 (45.6%)	
<i>Daily Attendance (mean ± SD)</i>				
All reasons	162 ± 31	127 ± 31	-32 ± 31***	<0.001
Mental Health	3 ± 2	5 ± 3	2 ± 2***	<0.001
January – February 2021 (Period 4)				
Total Presentations (all reasons)	9,028	4,683	-4,345 (-48.1%)	
Total Mental Health Presentations	227 (2.5%)	194 (4.1%)	-33 (-14.5%)	
<i>Daily Attendance (mean ± SD)</i>				
All reasons	150 ± 31	79 ± 16	-71 ± 23***	<0.001
Mental Health	4 ± 2	3 ± 2	0 ± 2	0.239

Significance: ***p<0.001, **p<0.01, *p<0.05. SD = standard deviation

Total ED presentations for the summer months of July and August (Period 2) were 14.7% lower than 2019 numbers (2020: 7,198; 2019: 8,439). As national restrictions were lifted in July, MH presentations began to increase (Figure 1), with a disproportionate increase on prior year over the summer months (July +46.2% (2020: 95; 2019: 65); August (+57.7% (2020: 123; 2019: 78)). MH presentations by girls increased over this period (Period 2) to 67.4% (147/218) of presentations from 53.8% (77/143) in the prior year. Self-referral rates were no longer statistically significant versus prior year, suggesting increased GP accessibility. MH presentations were notably higher in the week prior to schools reopening in August (Figure 2).

Table 2: Proportional changes in mental health presentations for children aged 5 - 15 (12 Months to February 2021).

	2019/20	2020/21	Difference	P-values
March - June 2020 (Period 1)				
Mental Health/All Presentations	1.9%	2.6%	0.7%***	<0.001
Aged 12 – 15	81%	81%	-1%	0.814
Female	68%	63%	-4%	0.220
Out of Hours	53%	60%	8%	0.068
Self-referrals	69%	79%	10%**	0.003
Triaged as Urgent	69%	72%	3%	0.747
Presentations resulting in hospital admission	39%	38%	0%	0.798
July – August 2020 (Period 2)				
Mental Health/All Presentations	1.7%	3.0%	1.3%***	<0.001
Aged 12 - 15	75%	73%	-2%	0.871
Female	54%	67%*	13%*	0.029
Out of Hours	59%	55%	-4%	0.375
Self-referrals	82%	75%	-7%	0.266
Triaged as Urgent	64%	62%	-2%	0.945
Presentations resulting in hospital admission	34%	30%	-4%	0.489
September - December 2020 (Period 3)				
Mental Health/All Presentations	1.9%	3.6%	1.7%***	<0.001
Aged 12 - 15	83%	81%	-2%	0.157
Female	64%	69%	5%	0.315
Out of Hours	49%	47%	-2%	0.945
Self-referrals	71%	70%	-1%	0.597
Triaged as Urgent	70%	69%	-1%	0.270
Presentations resulting in hospital admission	44%	41%	-3%	0.620
January - February 2021 (Period 4)				
Mental Health/All Presentations	2.5%	4.1%	1.6%***	<0.001
Aged 12 - 15	79%	85%	6%	0.943
Female	66%	71%	5%	0.251
Out of Hours	53%	55%	2%	0.620
Self-referrals	74%	84%	10%	0.149
Triaged as Urgent	76%	64%*	-12%*	0.014
Presentations resulting in hospital admission	45%	47%	2%	0.909

*Significance: ***p<0.001, **p<0.01, *p<0.05. P-values are based on difference in daily proportion, other than out of hours which is based on weekly. Out of hours is defined as from 6pm to 8am Monday to Friday and all day/night at weekends and bank holidays. Self-referrals are visits not referred by a General Practitioner (GP). Percentage (%) for mental health presentations is of total presentations, while all other percentages are of mental health presentations. Triaged as urgent is defined as a score of 1 or 2 on the 5-point Irish Children's Triage System.*

Mental health presentations in September to December (Period 3) were 45.6% above prior year (2020: 552; 2019: 379), however there was considerable variation in the extent of the year-on-year increase over this period. MH presentation increases were modest in September (+8.7% (2020: 113; 2019: 104)), and more pronounced in October (+30.5% (2020: 137; 2019: 105)). Weekly MH attendance increased once again in mid-October, reducing over the school midterm in late October (Figure 2). As the schools reopened after the one-week midterm break, with COVID-19 case numbers rising and more severe restrictions introduced, MH presentations peaked. November experienced the highest monthly MH attendance on record with a 51.3% increase compared to prior year (2020: 171; 2019: 113). December was the lowest monthly MH attendances in 2019, however December 2020 was 129.8% higher (2020: 131; 2019: 57), though 40 patients (23.4%) below the November 2020 peak.

As the country entered a further period of lockdown on 28th December and schools remained closed in January and February (Period 4), MH presentations were 14.5% below prior years (2021: 194; 2020: 227). February 2021 was in line with prior year.

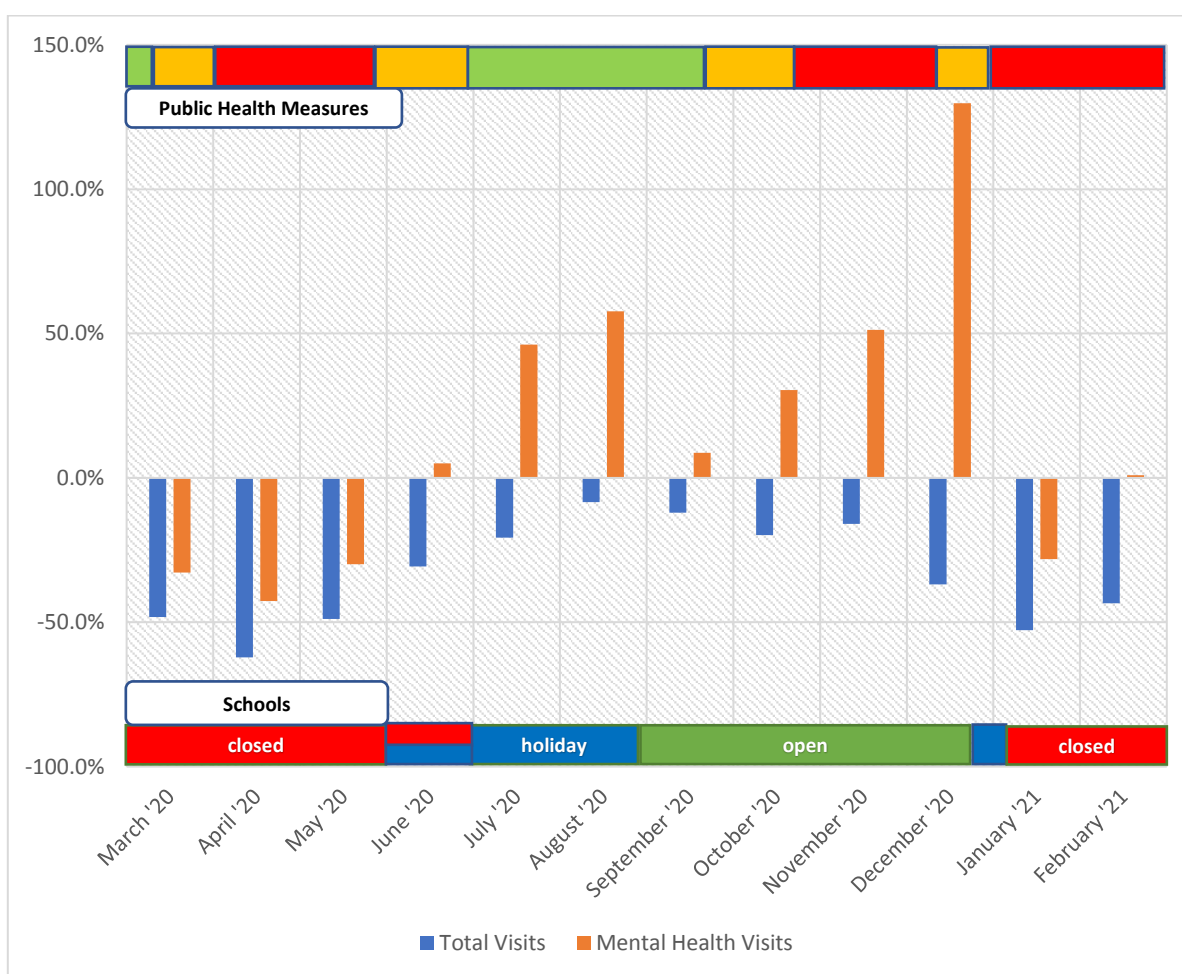


Figure 1: Emergency Department Attendance Age 5 to 15: monthly change versus prior year.

Notes: The extent of public health restrictions impacting children & adolescents are represented on the top bar by colour: green (minimal restrictions e.g. social distancing, mask wearing in shops/indoor venues and hand hygiene), amber (varying levels of restrictions on travel, social gatherings and sporting & cultural activities) and red (stay-at-home, no visitors, closure of non-essential businesses). The bottom bar indicates whether schools were open (green), on holiday (blue – note primary schools usually close July and August, while secondary schools close for three months in June for those not taking state exams) or closed (red).

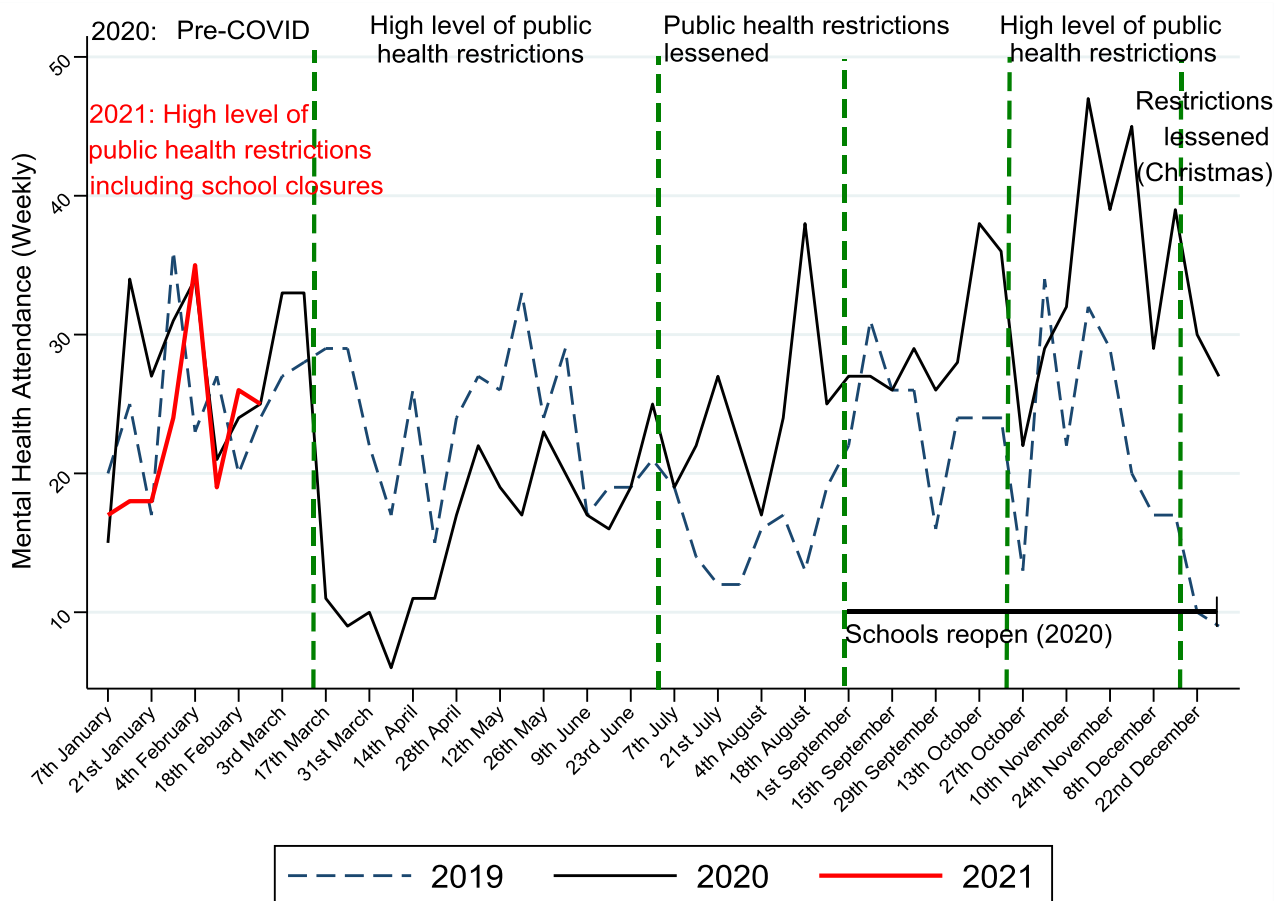


Figure 2: Weekly Emergency Department Attendance Age 5 to 15 for Mental Health.

Discussion

Paediatric MH presentations at EDs for school-aged children fell during the most restrictive stage of public health measures introduced to curtail the spread of COVID-19, consistent with findings from many countries including the US and the UK^{3,4}, but in contrast to findings from Australia¹³, where the prevalence of COVID-19 was lower¹⁴. The collective experience of coping with the challenges of the pandemic as a community and the opportunity to spend more quality time with family members may have had a positive impact for some young people¹⁵. For others, a break from school may have provided a welcome respite¹⁵. However, as restrictions were lessened and the prevalence of COVID-19 remained low, MH presentations at EDs increased, with attendance for each month from June to December above prior year, while ED presentations for other reasons remained lower than prior years. This subsequent increase may suggest unmet need during the initial lockdown, with fear of contracting COVID-19 in a hospital setting and concerns about the health service being overwhelmed leading to delayed access⁵.

The evidence also supports the concern that the pandemic has adversely impacted MH. An Irish survey of young people conducted in late June/early July provides some insight on the MH of many adolescents, with MH identified by respondents as the most common negative effect of COVID-19, including overthinking, concern, worry, anxiety, depression and a sense of utter hopelessness⁶. The spike in attendance prior to many schools re-opening may be due to concerns held about the imminent return to school and school safety. A UK survey of adolescents with pre-existing MH problems indicated that many found the immediate return to school challenging due to academic pressure and the need to make-up for lost time, concerns about safety and social distancing measures, and difficult relationships with peers¹⁶. Nonetheless, MH attendance was above prior years in the weeks before and following school re-opening, with a dramatic increase in November 2020 suggestive of the enduring stressor associated with the pandemic leading to ongoing MH problems. The disproportionate increase in MH presentations compared to decreases for all other presentations warrants further investigation.

The COVID-19 pandemic has caused severe disruption for CAMHS worldwide¹⁰, with many children and adolescents unable to access much needed MH supports^{12,15}. While many countries reported that MH is part of their national COVID-19 response plans, few have allocated sufficient funding to support the response¹⁰. Pre-COVID-19, ED MH presentations by children and adolescents were rising¹⁰ and the pandemic has added momentum to this increase. CAMHS in Ireland were recognized to be grossly under-resourced, with demand exceeding availability, lack of out of hours services⁹, and an over reliance on ED care.

This study uses a unique dataset compiled from attendances at the three public paediatric EDs serving the greater Dublin area, representing over one third of paediatric ED attendances nationally. Therefore, these findings relate to a substantial number of children and, as public health restrictions were consistent across the country, should be nationally representative. Nonetheless, regional variation in CAMHS resourcing and the structure and response by EDs and CAMHS to the challenges presented by the pandemic may limit the generalizability of these findings outside the greater Dublin area. A further limitation of this analysis was the inability to carry out a temporal analysis by MH diagnosis due to a change in the practice of coding diagnosis on the ED administrative system at one participating hospital in late 2019, a lack of granularity in coding at another site, and the temporary closure of one of the three EDs during this period.

This report suggests increased demand on the ED for acute MH care, particularly in the period following the reopening of schools. Urgent resourcing of CAMHS and consideration to out of hour's access needs to be part of the response to COVID-19. Furthermore, the impact of the COVID-19 imposed restrictions on youth needs to be carefully assessed, least the cure is worse than the cause.

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Declaration of Conflicts of Interest:

The authors have no conflicts of interest to declare.

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