

Original Research

One year of psychiatric presentations to a hospital emergency department during COVID-19

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Abstract

Objectives: To examine the impact of the first full year of the COVID-19 pandemic and its associated restrictions on the volume and nature of psychiatric presentations to an emergency department (ED) in a large academic hospital.

Methods: Anonymised clinical data on psychiatric presentations to the ED were collected for the 52-week period from the start of the COVID-19 pandemic and compared with corresponding 1 year periods in 2019 and 2018.

Results: There was a significant increase in psychiatric presentations overall to the ED during the first year of the COVID-19 pandemic compared to previous years, in contrast to a reduction in total presentations for all other specialties. There was a marked increase in psychiatric presentations of those below 18 years, and in the 30–39 years and 40–49 years age groups, but a decrease in the 18–29 years group. There was a significant increase in anxiety disorder presentations but a decrease in alcohol related presentations. There was no significant change observed in the rates of presentations for self-harm or suicidal ideation.

Conclusions: Psychiatric presentations to the ED have increased during the first year of the COVID-19 pandemic in contrast to a decrease in presentations for other medical specialties, with this increase being driven by out-of-hours presentations. The fourfold increase in presentations of young people below the age of 18 years to the ED with mental health difficulties is an important finding and suggests a disproportionate burden of psychological strain placed on this group during the pandemic.

Keywords: Coronavirus; COVID-19; emergency department; mental health; psychiatry.

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Introduction

The first case of infection with COVID-19 was reported in the Republic of Ireland on 29th February 2020 (Government of Ireland, 2021). Schools and hospitality businesses closed on the twelfth of March 2020, and events such as the 17th March St Patrick's Day Festival were cancelled. On 27th March 2020, severe societal restrictions (i.e. level 5 of the 'Plan for Living with COVID-19'; Government of Ireland, 2020) were implemented, which remained in place until they were gradually lifted in Summer 2020. Two further phases of level five restrictions were implemented: from late October to early December 2020, and from late December 2020, which remained in place until Summer 2021.

There is increasing recognition of the impact of the COVID-19 pandemic on those with mental illness: a diagnosis of schizophrenia is second only to age as the highest risk factor for death from COVID-19 infection (Nemani *et al.* 2021) and increased mortality

rates for those with mental illness have already been observed (Chen *et al.* 2020). Many population-level cross-sectional studies have indicated high levels of psychological distress during the COVID-19 pandemic (Ferrucci *et al.* 2020; Fu *et al.* 2020; Lei *et al.* 2020; Li *et al.* 2020; Maciaszek *et al.* 2020; Qiu *et al.* 2020; Ran *et al.* 2020; Rossi *et al.* 2020; Sharma *et al.* 2020; Shi *et al.* 2020; Tian *et al.* 2020; Venugopal *et al.* 2020; Flaudias *et al.* 2021), with longitudinal studies indicating a high burden of depressive symptoms (Novotný *et al.* 2020; González-Sanguino *et al.* 2021) with those with psychiatric illness being disproportionately affected (Özdin & Bayrak Özdin, 2020; Talevi *et al.* 2020; Rahman *et al.* 2021; Solé *et al.* 2021).

The global pandemic has also resulted in an almost overnight change in the delivery of psychiatric care with a large scale shift to the use of telepsychiatry, the curtailment of face to face care, and the need to manage outbreaks within mental health inpatient facilities (Bojdani *et al.* 2020, Burn & Mudholkar, 2020; Carpiniello *et al.* 2020).

During the first wave of COVID-19 infections, the impact was primarily physical morbidity and mortality from the disease itself, however, as subsequent waves have occurred, there has been an increasing burden on the mental health of people with and without pre-existing mental illness (O'Connor *et al.* 2020; Tsang *et al.*

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2004). It is crucial to examine how this elevated psychological burden manifests in emergency psychiatric presentations so that mitigating steps can be taken to manage this on a local and national level and to advocate for appropriate service funding and staffing within mental health services.

This study describes one full year of psychiatric presentations to a large academic hospital's emergency department (ED) from the arrival of COVID-19 in the Republic of Ireland and compares this to the preceding 2 years.

Methods

This study was undertaken in Beaumont Hospital Emergency Department. Beaumont Hospital (BH) is a large academic hospital in the north of Dublin City, Ireland, with 820 beds, serving the adult population aged 16 years and older. There is a co-located purpose-built 46-bed inpatient psychiatric unit on the hospital grounds, serving a population of 250 000 in North County Dublin (Mental Health Commission, 2020).

The BH Liaison Psychiatry Department uses an electronic patient record to document patient assessments in both the ED and within the hospital wards. Anonymised data on psychiatric presentations to the ED during the study period were extracted using Diver 7, a business analytical software application. Data were also collected on referrals to the alcohol liaison clinical nurse specialist from the hospital's inpatient wards. A 52 week period from the start of the COVID-19 emergency in the Republic of Ireland (2nd March 2020 to 28th February 2021) was compared with corresponding one year periods in 2019 (4th March 2019 to 1st March 2020) and 2018 (5th March 2018 to 3rd March 2019).

The extracted data were stored on Microsoft Excel, where basic data processing was undertaken. Statistical analyses were performed using IBM Statistical Package for Social Sciences Version 25 for Macintosh. Graphical data were analysed using GraphPad Prism Version 9 for Macintosh. In addition to descriptive statistics, poisson regression was performed to test for significant differences in the weekly rate of total presentations and psychiatric presentations to the ED compared to the previous 2 years. A 2-sample proportion test was used to test for significant changes between the COVID-19 era and the last 2 years on the proportion of psychiatric presentations of total ED presentations, self-harm and suicidal ideation, anxiety disorders, and alcohol or substance use disorders as a proportion of total psychiatry referrals. Pearson's chi-square test was undertaken to test for significant changes in the age profile and gender of presentations during COVID-19 compared to the previous 2 years.

The local ethics committee confirmed that ethics committee approval was not required to conduct this study. This paper is a follow-up study to McAndrew et al. (2021) and follows a similar methodology.

Results

There were 51 757 total (all specialities) presentations to the ED in the COVID-19 period, a mean of 995 per week (± 123.4) compared to 57 807 and 58 174 in the preceding 2 years, respectively, a weekly mean of 1115.2 (± 52.3), representing a significant reduction in all presentations to the ED (poisson rate test estimated difference -119.9 , 95% CI 104.9–134.8, $p < 0.0001$). When the rate of presentations to the ED during maximum societal restrictions or lockdown periods (i.e. restriction of movement within a certain radius from home and curtailment of social contacts) was compared to non-lockdown periods, the difference was more

significant, with an estimated difference of minus 168.1 (poisson rate test, 95% CI 150.6–185.5, $p < 0.0001$) that is, per weekly period, there were 168 fewer total ED presentations per week during lockdown periods *versus* non-lockdown periods. During the first lockdown period, psychiatric presentations decreased relative to the previous 2 years. However, in subsequent lockdowns, presentations increased and overall, presentations were greater during the pandemic than in the comparative years, see Fig. 1.

From the 2nd March 2020 to the 28th February 2021, there were 1292 psychiatric presentations to BH ED, a mean weekly rate of 24.9 (± 6). This compares to 1209 and 1174 in the 4th March 2019 to 1st March 2020 and 5th March 2018 to 3rd March 2019 periods, respectively, with a pre-COVID-19 mean weekly rate of 22.9 (± 4.8). The increase of psychiatric presentations was statistically significant (poisson rate test estimated difference 1.9, 95% CI 1.52–2.39, $p = 0.02$). The relative proportion of psychiatric presentations significantly increased during the COVID-19 period, representing 2.5% of all ED presentations, whereas they had previously represented 2.06% (2-sample proportion test, estimate for difference 0.00445, 95% CI 0.0029–0.006, $p < 0.0001$).

There was a significant difference in the age distribution of psychiatric presentations during the COVID-19 pandemic *versus* the previous years ($\chi^2 = 60.55$, $df = 6$, $p < 0.0001$), most markedly in the increase in presentations of those aged below 18. Between March 2018 and February 2019 there were no presentations of those below 18 years, in the following year there were 24, while in the COVID-19 period there was a dramatic increase to 90 patients below the age of 18 presenting with emergency mental health needs to Beaumont Hospital Emergency Department. There were increases in presentations of those aged 30–39 (299 in 2020 *v.* mean of 264 in 2018/2019) and those aged 40–49 (225 in 2020 *v.* mean of 204 in 2018/2019). There was a reduction in presentations of those aged 18–29 during the COVID-19 pandemic (416 *v.* mean of 441 in 2018/2019) (Figure 2).

Presentations were stratified by ICD-10 diagnostic categories as described in our prior study (McAndrew et al. 2021), and results are presented in Table 1 and Fig. 3. There was a significant proportional increase in presentations of anxiety disorders during the COVID-19 period with 222 cases *versus* the pre-COVID-19 period, where there was an annual mean of 150 cases. There was a decrease in the proportion of alcohol disorders during the COVID-19 pandemic with 163 annual presentations compared with a mean of 218 in the preceding 2 years. There was also a reduction in referrals to the alcohol liaison clinical nurse specialist from the inpatient wards in the COVID-19 period with 615, a decrease from 714 in the preceding year. It was not possible to examine these statistically. There was an increase in eating disorder presentations by more than double during the COVID-19 period but this did not reach statistical significance (see Table 1).

There was a significantly increased proportion of presentations out of hours (i.e. outside Monday to Friday, 09:00 a.m. to 05:00 p.m.) during the COVID-19 period (2-sample proportion test, estimate for difference 0.057 95% CI 0.024–0.091, $p = 0.0009$), with 660 presenting on-call during the COVID-19 period compared to a mean of 540 in the preceding 2 years. There was a slight reduction of psychiatric presentations seen during regular working hours (i.e. within Monday to Friday, 09:00 a.m. to 05:00 p.m.) during the COVID-19 period with 633 compared to a mean of 651 in 2018 and 2019.

There was an increase in the weekly rate of self-harm presentations, with 8.4 (± 3.2) during the COVID-19 period compared to a 7.7 (± 2.5) in the preceding 2 years, and an increase in

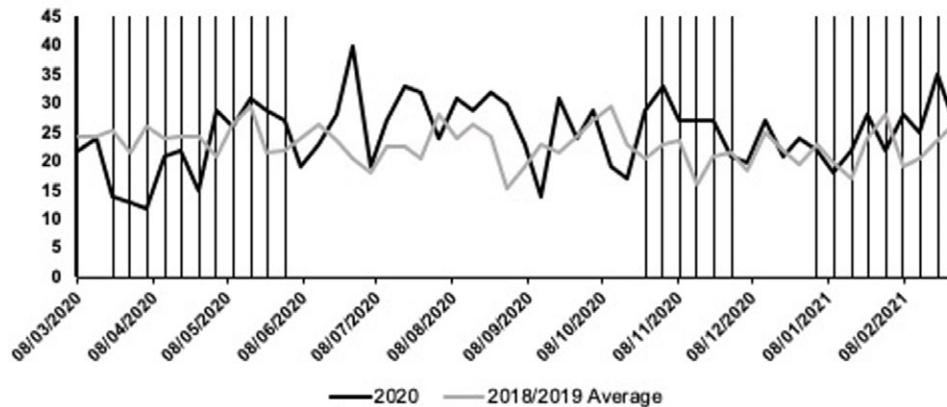


Fig. 1. Weekly psychiatric presentations to ED 2020 versus 2019/2018. Vertical lines indicate periods severe societal restrictions, that is, ‘lockdown’ periods.

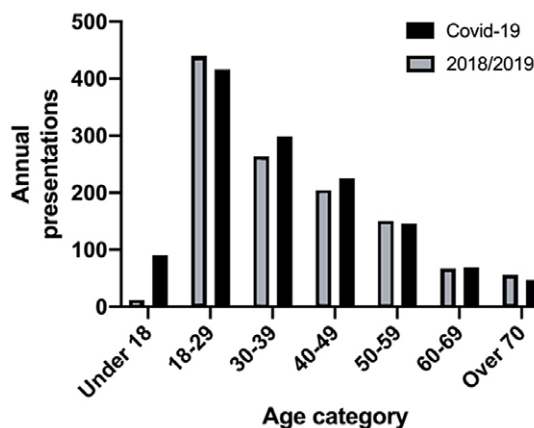


Fig. 2. Distributions of psychiatric presentations by age.

presentations with suicidal ideation, with 13.3 per week (± 4.2) during the COVID-19 pandemic versus 12.2 (± 3.9) in two preceding years observed. However, these increases did not reach statistical significance. There was no significant change in gender for those presenting for psychiatric assessment between the COVID-19 and pre-COVID-19 periods ($\chi^2 = 2.46, p = 0.12$).

There was a slight increase in presentations to the ED of people already attending a community mental health team during the COVID-19 pandemic, 407 compared to a mean of 384 in the preceding 2 years, but this did not reach statistical significance ($p = 0.67$).

Discussion

This paper describes one full year of the COVID-19 pandemic’s impact on emergency psychiatric presentations to a large teaching hospital and compares with the same time periods of the two preceding years. Previous studies so far have only examined the initial weeks or months of the pandemic, where an early reduction in psychiatric presentations to ED had been observed in France (Pham-Scottet *et al.* 2020; Pignon *et al.* 2020), Germany (Hoyer *et al.* 2020; Seifert *et al.* 2021), the United States (Ferrando *et al.* 2021; Heppner *et al.* 2021; Goldenberg & Parwani, 2021; Mitchell & Fuehrlein, 2021; Szmulewicz *et al.* 2021), Portugal (Gonçalves-Pinho *et al.* 2021), Australia (Dragovic *et al.* 2020), the United Kingdom (Chen *et al.* 2020; Henry *et al.* 2021), Spain (Gómez-Ramiro

et al. 2021; Hernández-Calle *et al.* 2020), Italy (Beghi *et al.* 2021; Capuzzi *et al.* 2020; Stein *et al.* 2020), Greece (Karakasi *et al.* 2020), Switzerland (Ambrosetti *et al.* 2021), and India (Jhanwar *et al.* 2020).

Total ED presentations to BH have reduced during the COVID-19 period, as found elsewhere in the literature (Holland *et al.* 2021), particularly during periods of maximum societal restrictions, yet psychiatric presentations have not only been maintained, but have, over the course of the year increased despite an early reduction in the first 8 weeks of the restrictions. Psychiatry now accounts for a significantly greater proportion of all ED visits observed elsewhere (Holland *et al.* 2021). The increase in psychiatric presentations was primarily driven by increases in presentations out-of-hours, and this shift to on-call presentations was also observed in one German study (Seifert *et al.* 2021). The reduction in patients attending who are not diagnosed with a mental disorder during the COVID-19 period suggests more hesitancy to attend an ED among the public.

A link between epidemics and increased rates of suicide was first described by Wasserman (Wasserman, 1992), who observed that the rate of death by suicide increased during the 1918 Influenza outbreak. The 2003 SARS epidemic was associated with increased rates of suicide in older adults (Cheung *et al.* 2008). However, two recent systematic reviews indicate that the evidence for linking viral disease outbreaks and suicidal behaviour is still weak (Leaune *et al.* 2020; Kahil *et al.* 2021). Two recent publications indicate that there is not yet an observed excess of suicide deaths (Faust *et al.* 2021; Leske *et al.* 2021), but given the time lag in reporting, it may be some time before the accurate picture is understood. There was a slight overall increase in suicidal ideation and self-harm across the year, notwithstanding the initial reduction in the March to May 2020 period. Another Irish study described a similar initial reduction in self-harm presentations in the early phase of the pandemic, followed by a steep rise in both the number and lethality of presentations (McIntyre *et al.* 2020) in May 2020. An early reduction of presentations with suicidal ideation was also noted in several other papers (Hawton *et al.* 2021; Smalley *et al.* 2021), whereas a large-scale study by Holland *et al.* (Holland *et al.* 2021) observed an increase in suicide attempts from March to October 2020 when compared to the same months in 2019.

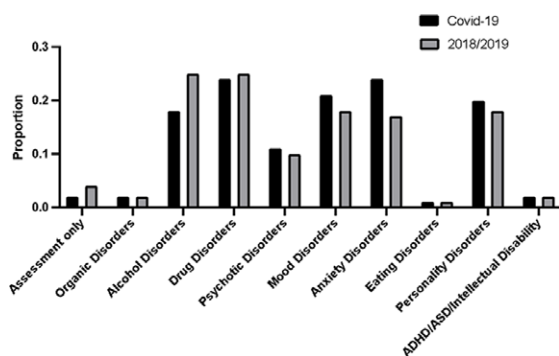
While it is widely accepted that an ED is not a therapeutic environment for individuals in a mental health crisis, this is especially true for a young person. In the early stages of the pandemic, a

Table 1. Distribution of psychiatric presentations by ICD-10 category COVID-19 period versus pre-COVID-19

Diagnostic category	Pre-COVID-19 ^a	Pre-COVID-19 proportion	COVID-19	COVID-19 proportion	Estimated difference ^b	<i>p</i>
Assessment only (Z00.4)	36	0.03	15	0.01	0.018	0.0005
Organic Disorders (F00 group)	21	0.02	18	0.01	0.004	0.3977
Alcohol Disorders	218	0.18	163	0.13	0.056	<0.0001
Drug Disorders	223	0.19	217	0.17	0.019	0.148
Psychotic Disorders (F20 group)	85	0.07	101	0.08	0.007	0.4447
Mood Disorders (F30 group)	158	0.13	189	0.15	0.0137	0.2494
Anxiety Disorders (F40 group)	150	0.13	222	0.17	0.0459	0.0001
Eating Disorders	5	0.00	11	0.01	0.0043	0.0986
Personality Disorders	154	0.13	183	0.14	0.0124	0.2914
ADHD/ASD/Intellectual Disability	19	0.02	14	0.01	0.0047	0.2444

^aAnnual mean in pre-COVID-19 years.

^b2-sample proportion test.

**Fig. 3.** Distribution of psychiatric presentations by diagnostic category.

reduction in presentations of young people for emergency psychiatric assessment was widely observed (Ougrin, 2020; Díaz de Neira *et al.* 2021; Leff *et al.* 2021; Sheridan *et al.* 2021). Unfortunately, this reduction has been more than reversed, as evidenced by the nearly quadrupling of presentations of young people (i.e. those under the age of 18 years) to our ED. The observations in this study are only part of the picture as patients aged under the age of 16 years present to paediatric hospital EDs rather than to an adult ED. The increase in the psychiatric presentation to the ED of young people signifies the pandemic's critical impact on this age group's mental health. Similar to our findings, McNicholas *et al.* (2021) reported that referrals to Child and Adolescent Mental Health services have been observed, after an initial decline, to have rapidly increased from September 2020 onwards. Social restriction and associated isolation are important influencing factors, with loneliness implicated in adverse mental health in children and adolescents, particularly increasing rates of depression in females and anxiety among males (Loades *et al.* 2020). Depression rates amongst young people during COVID-19 have been reported to range from 23% to 44%, while anxiety is reported in 19–37%, though these studies are limited due to lack of comparison to pre-pandemic levels (Nearchou *et al.* 2020). Elevated rates of suicidal ideation were observed even early in the pandemic (Hill *et al.* 2021). Children and adolescents with mental health difficulties predating the pandemic were reported to experience a deterioration in their mental health, coupled with barriers to accessing services due to restrictions (Young Minds, 2020). Young people are just as, if not more,

vulnerable to the same anxiety from COVID-19 related news coverage as adults, and the increased internet and social media use necessitated by social distancing and remote learning exposes the youth to an increased risk of cyber bullying (Singh *et al.* 2020). The loss of supports from the school environment cannot be understated (Lee, 2020), not to mention social isolation leading to increased risk of domestic abuse or neglect which can later manifest as mental disorder (de Figueiredo *et al.* 2021).

Despite it being reported that women are more vulnerable to COVID-19 related mental distress (Ferrucci *et al.* 2020; Flaudias *et al.* 2020; Novotný *et al.* 2020; Qiu *et al.* 2020; Talevi *et al.* 2020), there was no gender difference in those presenting during COVID-19 than compared to previous years. A population prevalence of anxiety during the pandemic was found to be over one third of people, and higher again in those with pre-existing conditions and COVID-19 infection (Luo *et al.* 2020). Therefore, an increase in presentations with anxiety disorders, which include adjustment disorder and acute stress reactions, is unsurprising and is similar to findings of other studies (Dragovic *et al.* 2020; Ferrando *et al.* 2021; Seifert *et al.* 2021).

There is a more than doubling of presentations with eating disorders to the ED, which did not reach statistical significance, but it must be noted that presentations of eating disorders to the ED represent the most medically compromised patients. The COVID-19 pandemic and lockdown periods have been shown to increase the severity of eating disorder psychopathology (Flaudias *et al.* 2020; Monteleone *et al.* 2021) and there has already been a rapid increase in hospitalisations of children and adolescents with eating disorders (Barrett & Richardson, 2021).

The significant reduction in alcohol-related presentations is a surprising finding. Recently published figures indicate that overall per capita alcohol consumption in Ireland reduced by 6.6% in 2020 (Alcohol Action Ireland, 2021). The pattern of alcohol sales has shifted with a marked reduction in beer and cider sales by 17.3% and 11.4%, respectively, a slight increase in spirit sales by 0.7% and a significant increase in wine sales by 12% (Revenue Commissioners, 2021). The reduction in presentations due to alcohol use is possibly reflective of alcohol consumption moving away from pubs and nightclubs and into the home. Reduced alcohol consumption has been recognised to suppress rates of suicidal ideation and self-harm, as previously observed during Prohibition in the United States (Wasserman, 1992). However, the reduced alcohol presentations in our cohort was noted in

conjunction with a slight increase in suicidal ideation and self-harm presentations.

This paper highlights the significant effect of the COVID-19 pandemic on psychiatric service demand. Of course, it only describes one aspect of the utilisation of psychiatric services, in this case within the acute setting. Further research is needed to observe the effects on primary, secondary and voluntary mental health services. This paper is strengthened by the long study period and large number of cases included and is one of the first examining a full year of the COVID-19 pandemic on emergency psychiatric presentations. Limitations of this study are that it examined only one clinical site though was conducted in a large hospital in a capital city. Individualised clinical data was not collected and so comparisons for individual clinical factors was not possible.

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Conflicts of interest. None.

Ethical standards. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation with the Helsinki Declaration of 1975, as revised in 2008. This project received approval from the BH Clinical Governance Department Audit and Service Evaluation Committee (Registration Number CA2021/37), and no individual patient data was collected.

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