


Original Research

The impact of the COVID-19 pandemic on presentations of self-harm over an 18-month period to a tertiary hospital

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Abstract

Objectives: To examine and compare rates and methods of self-harm presenting to a tertiary referral hospital during an 18-month period since the onset of the COVID-19 pandemic with a similar period immediately prior to the pandemic onset.

Methods: Data from an anonymized database compared rates of self-harm presentations and methods employed between 1st March 2020 and 31st August 2021 to a similar time-frame prior to the onset of the COVID-19 pandemic.

Results: A 9.1% increase in presentations with self-harm was noted since the onset of the COVID-19 pandemic. Periods of more stringent restrictions were associated with higher levels of self-harm (daily rate of 2.10 v 0.77). A higher lethality of attempt was demonstrated post-COVID-19 onset ($\chi^2 = 15.38, p < 0.001$). Fewer individuals presenting with self-harm were diagnosed with an adjustment disorder since the onset of the COVID-19 pandemic ($n = 84, 11.1\%$, v. $n = 112, 16.2\%$, $\chi^2 = 7.898, p = 0.005$), with no other differences pertaining to psychiatric diagnosis noted. More patients actively engaged with mental health services (MHS) presented with self-harm ($n = 239 (31.7\%)$ v. $n = 137, (19.8\%)$, $\chi^2 = 40.798, p \leq 0.001$) since the onset of the COVID-19 pandemic.

Conclusions: Despite an initial reduction, an increase in rates of self-harm has occurred since the onset of the COVID-19 pandemic with higher rates evident during periods of higher government mandated restrictions. An increase in active patients of MHS presenting with self-harm potentially relates to reduced availability of supports and particularly group activities. The recommencement of group therapeutic interventions for individuals attending MHS in particular is warranted.

Key words: COVID-19; emergency services; psychiatric; psychiatry; self-harm; self-injurious behavior; suicidal ideation

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Introduction

On March 11th 2020, COVID-19, the infectious disease associated with the coronavirus, SARS-CoV-2 was characterized as a global pandemic by the World Health Organization (WHO). This pandemic has resulted in significant economic and societal disruption worldwide, and as of August 9th 2022, there have been approximately 586 million COVID-19 cases and approximately 6.42 million deaths attributable to COVID-19 (World Health Organisation 2022). The declaration of the pandemic was followed by robust public containment measures. These restrictions initially included “cocooning” of individuals who were either over 70 years of age, or immunologically vulnerable (periods of complete restriction to the home environment, without visitors). Limitations on travel from one's home (i.e. two kilometre radius only allowed at one point

from one's accommodation with some exceptions) and strict ‘social distancing’ measures such as restrictions on public and private gatherings, and the requirement for a two metre radius distance when approaching others were additionally imposed. This resulted in the closure of many facilities deemed ‘non-essential’ or unsuitable for facilitating such measures safely where remote service provision was deemed an option, and included facilities attended by individuals with mental health disorders such as day hospitals and day centres (Hoey 2020). From March 12th, 2020, there have been periods of gradual easing and re-implementation of restrictions, which until recently (February 28th, 2022) was based on the advice of the National Public Health Emergency Team (NPHEM). Many therapeutic interventions normally available for individuals with mental health difficulties both within and outside the MHS were unattainable during this time, including group psychotherapeutic activities (Alcoholics Anonymous Ireland 2020). Where therapeutic sessions continued, many were forced to adapt to the public health measures, with face-to-face interactions often replaced by teleconsultations (Kopelovich *et al.* 2021; Li *et al.* 2021; Rojnic-Kuzman *et al.* 2021).

The impact of these prolonged periods of restrictions and lockdowns for individuals' mental well-being is somewhat unclear with divergent data available to date. Studies in individuals without pre-existing mental health disorders (including in Ireland) have noted

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an increase in psychiatric pathology, including higher levels of depressive and anxiety symptoms (Hyland *et al.* 2020; Wang *et al.* 2020). A relatively modest deleterious psychological impact of COVID-19 for individuals with pre-existing anxiety disorders (Plunkett *et al.* 2020; Hennigan *et al.* 2021), bipolar disorder (McLoughlin *et al.* 2021), and schizophrenia (Fahy *et al.* 2021; Rainford *et al.* 2022) was previously demonstrated; with social functioning most impacted; however, individuals with a diagnosis of Emotionally Unstable Personality Disorder (EUPD) demonstrated both greater symptomatology and impaired social functioning (McLoughlin *et al.* 2021).

Concerns have been expressed regarding a potential increase in suicide rates or episodes of self-harm related to the COVID-19 pandemic (Gunnell *et al.* 2020; Reger *et al.* 2020). To date however, there is divergent and relatively sparse data pertaining to the impact of the COVID-19 pandemic on rates of self-harm, with this area potentially important given the known association between increased rates of self-harm and subsequent increased rates of suicide (Carroll *et al.* 2014; Bostwick *et al.* 2016). Previous pandemics have provided inconsistent data regarding suicide rates (Leaune *et al.* 2020); with initial evidence relating to this current pandemic demonstrating no definitive association with suicide (Pirkis *et al.* 2021; Deisenhammer & Kemmler 2021). In recent months, several reports including case studies, case series and retrospective studies across multiple settings have evaluated a range of constructs including suicidal ideation, self-harm, and suicide. However, ascertaining an association between the COVID-19 pandemic and these constructs including rates of self-harm has not been clear (Farooq *et al.* 2021). An 8% reduction in the rates of self-harm in the first two months of the COVID-19 pandemic was previously noted, however a significant increase in lethality of the method of self-harm was noted (McIntyre *et al.* 2021). Studies conducted in France and India additionally support our initial findings where either a decrease or marginal increase in rates of self-harm were noted, but again a greater lethality of method was employed (Jollant *et al.* 2021; Kar *et al.* 2021).

Consequently, in this study, we wanted to ascertain (over a longer time-frame), if the rates of individuals presenting with self-harm or lethality of method of self-harm at University Hospital Galway was different in the 18 months prior to compared to the 18 months following the onset of the COVID-19 pandemic. Additionally, we wanted to ascertain if rates of self-harm since the onset of the COVID-19 pandemic were related to levels of governmental mandated restrictions.

Methods

Procedure

As detailed previously (McIntyre *et al.* 2021), a database of all individuals referred to the liaison psychiatry team at University Hospital Galway is maintained (including all individuals referred by the Emergency Department, medical and surgical wards for review both within and outside working hours who have engaged in self-harm) and was examined. Basic demographic and clinical data including referral source, type of self-harm diagnosis, current engagement with psychiatric services, and psychiatric diagnosis were reviewed. Data were extracted for all individuals (of any age) referred to the liaison psychiatry team with self-harm for the 18-month period prior to (September 1st 2019–February 29th 2020) and the 18 month period since the onset of the COVID-19 pandemic (March 1st 2020–August 31st 2021). These individuals were deemed ‘participants’ in the study and will be referred to henceforth as such. The term ‘service user’ when used refers to individuals currently engaged with a

psychiatric service. Data attained from the database was subsequently manually checked by sourcing participant clinical notes, with data checked to ensure only one referral was included pertaining to any incident of self-harm. All episodes of self-harm were categorized according to common methods of self-harm; poisoning, self-laceration, drowning and hanging. All other methods were categorized as ‘other’. The requirement for medical admission (either to a high dependency or intensive care unit or medical or surgical ward) was utilized as a proxy measure of self-harm lethality. The violence of attempts was additionally measured with hanging or drowning both coded as violent methods and self-laceration and self-poisoning as non-violent methods of self-harm.

Episodes of self-harm were recorded as occurring during governmental mandated restriction (NPHE) levels 1–3 or 4–5. NPHE levels 4 and 5 restrictions included measures such as complete restriction of any household visitors, restrictions on public movements to within the county of residence or within the home respectively, and closure of all public or private indoor gatherings significantly impacting schools and leisure activities. Individuals were required to work from home unless they were deemed ‘essential workers’. NPHE levels 1–3, allowed for various numbers of household visitors, limited work attendance and opening of general retail services. Levels 1 and 2 allowed for travel outside of the county and for indoor social and leisure activities to be held (Government of Ireland 2020).

Statistical analysis

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) 27.0 for Windows (SPSS Inc., IBM, New York, USA). Descriptive analyses (frequencies, percentages, means and standard deviation) on key demographic and clinical data were performed for both categorical and continuous variables, as appropriate. Chi-Square (χ^2) analysis or Fishers’ Exact tests (where appropriate) were utilized to compare categorical data pre-and post- the onset of the COVID-19 pandemic.

Results

A 9.1% increase (754 v 691 individuals) in the overall rate of individuals referred to the liaison psychiatry team following an episode of self-harm was noted in the time period following the onset of the COVID-19 pandemic (daily rate of 1.37 v 1.26). Figure 1 demonstrates that after an initial reduction, an increase in presentations with self-harm were noted from May 2020, with seven of the 18 months post-onset of the COVID-19 pandemic associated with higher numbers than those seen for any month in the pre-pandemic period. The four months with more than 50 presentations of self-harm all occurred since the onset of the COVID-19 pandemic (August 2020, April, May, and July 2021). Mandated governmental restrictions (NPHE levels 4 and 5) were *in situ* for 251 of the 549 days in the 18 month study period, with higher rates of self-harm (daily rates of 2.10 v 0.77) evident during these periods compared to those with a lower level of restrictions.

Table 1 describes selected clinical and demographic variables for participants for both time periods. No difference in age, or gender distribution was noted between the two time periods. The most common mental health disorders in both time periods were EUPD and psycho-active substance use disorder, with both disorders present in approximately 30% of individuals at both time points; with the presence of no mental health disorder more common than any diagnosed mental disorder for both time periods. More individuals in the pre-COVID-19 pandemic period had a diagnosis of

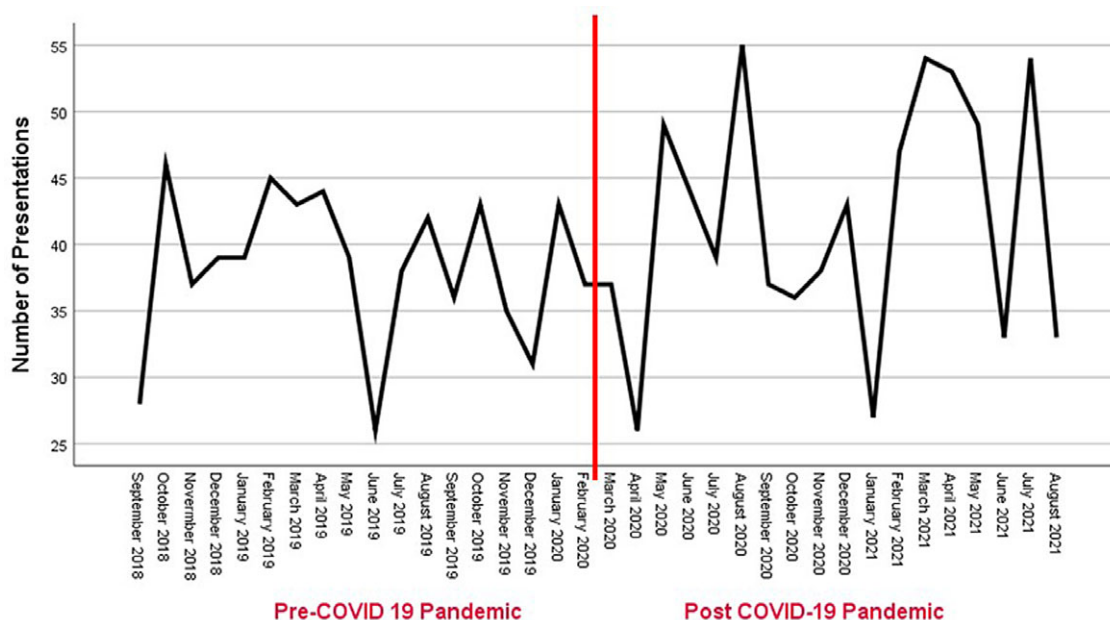


Fig. 1. Number of presentations.

an adjustment or acute stress disorder ($n = 112$ (16.2%) v. $n = 84$ (11.1%), $\chi^2 = 7.90$, $p = 0.005$), however no other anxiety disorder (or other mental health disorder) was more prevalent in the pre-pandemic period.

Self-poisoning (59.3% pre-pandemic and 62.3% post-pandemic onset) and self-laceration (24.0% pre-pandemic, 25.3% post-pandemic onset) were the most common methods of self-harm at both time points; with no difference in the prevalence of any method of self-harm, or violence of attempt as a proportion of the overall total number in either time-period, although a non-significant trend towards less violent methods (12.1 v 15.7%, $\chi^2 = 3.74$, $p = 0.053$) since the onset of the COVID-19 pandemic (see Table 1) was noted. A greater lethality of attempt was demonstrated since the onset of the COVID-19 pandemic (209 (27.7%) v. 131 (19.0%), $\chi^2 = 15.38$, $p < 0.001$) (Fig. 2), however this was not clearly more evident during periods of greater governmental mandated restrictions ($n = 104$ (28.9%) v. $n = 105$ (26.7%), $\chi^2 = 0.442$, $p = 0.506$).

A statistically significant increase in the percentage of individuals presenting with self-harm who were active attendees of mental health service (MHS) (239 (31.7%) v. $n = 137$ (19.8%) v $\chi^2 = 40.80$, $p < 0.001$) was noted in the period after the onset of the COVID-19 pandemic with approximately 50% of all individuals at both time-points having no prior contact with any MHS.

Discussion

In the 18 months, since the onset of the COVID-19 pandemic, there has been a 9% increase in the rate of self-harm presentations, despite an initial reduction during the first two months. During periods of increased mandated restrictions (NPHET levels 4 and 5), episodes of self-harm were almost three times as frequent compared to periods of lower levels of restrictions (NPHET levels 1–3). The method of self-harm was not significantly different between the pre- and post-pandemic onset periods, although a trend towards increased lethality of attempt was noted since the onset of the COVID-19 pandemic. Approximately one-third of

individuals presenting with self-harm were active attendees of the MHS, which was significantly higher than that noted (approximately one-fifth of presentations), prior to the onset of the COVID-19 pandemic.

International studies to date have indicated a reduction in both primary and secondary care presentations with self-harm (DelPozo-Banos *et al.* 2022); however, this finding is not consistent (Stegg *et al.* 2022). In this study, over a longer time-period compared to previous research, it was noted that any initial reduction, potentially related to individuals not presenting for medical review with less lethal episodes of self-harm was not sustained. It was additionally noted that increased mandated governmental restrictions were associated with greater levels of self-harm, a finding not previously reported. This potentially demonstrates greater distress evident during such periods of restrictions and/or reduced availability of supports for individuals (less group therapeutic interventions and less face-to-face reviews).

No significant differences in psychiatric diagnosis were evident in individuals presenting with self-harm pre- and post-the onset of the COVID-19 pandemic. Whilst increased levels of distress in individuals with EUPD (McLoughlin *et al.* 2021) had previously been described, this has not translated into a significantly higher percentage of individuals with EUPD (despite a small increase in actual numbers of service users with this diagnosis presenting) presenting with self-harm since the onset of the COVID-19 pandemic. This does not preclude increased distress or symptomatology in this patient cohort however. A statistically significant albeit modest reduction in the number of people presenting with an adjustment disorder or acute stress reaction presenting with self-harm was noted; however other anxiety and mood disorders were not associated with any such association. It is probable that this reduction was not related to a clinically significant change and will require further clarification over a longer time-period.

Our previous finding of an increased lethality of self-harm method was replicated (McIntyre *et al.* 2021). Initially, this may have reflected that individuals with self-harm episodes associated

Table 1. Demographic and clinical data relating to patients presenting with self-harm before and after the COVID-19 pandemic

Variable	Pre-Pandemic Onset <i>n</i> (%)	Post-Pandemic Onset <i>n</i> (%)	Statistics χ^2 , <i>p</i>
Gender			
Male	254 (36.8)	280 (37.1)	0.022, 0.882
Female	437 (63.2)	474 (62.9)	
Diagnosis			
Emotionally Unstable Personality Disorder	205 (29.7)	231 (30.6)	0.161, 0.688
Substance Use Disorder	216 (31.3)	235 (31.2)	0.001, 0.970
Depressive Disorder	93 (13.5)	94 (12.5)	0.315, 0.575
Adjustment Disorder/Acute Stress Reaction	112 (16.2)	84 (11.1)	7.898, 0.005
Anxiety Disorder*	71 (10.3)	73 (9.7)	0.141, 0.707
Bipolar Disorder	16 (2.3)	19 (2.5)	0.064, 0.801
Schizophrenia Spectrum Disorder	14 (2.0)	16 (2.1)	0.016, 0.898
Eating Disorder	5 (0.7)	9 (1.2)	0.830, 0.362**
No psychiatric diagnosis	124 (17.9)	142 (18.8)	0.189, 0.664
Other diagnoses***	7 (1.0)	10 (1.3)	0.304, 0.581
Types of harm engaged in			
Poisoning	410 (59.3)	470 (62.3)	7.155, 0.129
Self-Laceration	172 (24.0)	191 (25.3)	
Drowning	36 (5.2)	21 (2.8)	
Hanging	44 (6.4)	38 (5.0)	
Other****	29 (4.2)	34 (4.5)	
Violent Method	108 (15.7)	91 (12.1)	3.741, 0.053
Lethality of Method			
Admitted to ICU/HDU	37 (5.4)	25 (3.3)	28.971, <0.001
Admitted to a medical/surgical ward	94 (13.6)	184 (24.4)	
No medical admission required	560 (81.0)	545 (72.3)	
Engagement with Mental Health Services			
Not engaged	343 (49.6)	375 (49.7)	40.798, <0.001
Previous engagement	211 (30.5)	140 (18.6)	
Active engagement	137 (19.8)	239 (31.7)	

HDU, high dependency unit; ICU, intensive care unit.

*Anxiety Disorder included Generalized Anxiety Disorder, Panic Disorder, Social Phobia and Obsessive-Compulsive Disorder.

**Fisher's Exact test utilized.

***Other diagnoses included Attention Deficit Hyperactivity Disorder, Autism Spectrum Disorder and Body Dysmorphism.

****Other types of self-harm included burning, head banging, hitting, and biting.

Where individuals had comorbid psychiatric disorders recorded both diagnoses were presented above; thus, the total in the variable "Diagnosis" >100%.

with less severe medical sequelae avoided attending hospital in the early months of the COVID-19 pandemic only. A fear of contracting COVID-19 was particularly evident in the initial period of the pandemic and led to many individuals with significant medical conditions including for example those who experienced cardiac events avoiding hospitals (Kristoffersen *et al.* 2020; Mafham *et al.* 2020). A previous study also noted an increased lethality of method of self-harm but was of shorter duration compared to this study (Jollant *et al.* 2021). Avoidance of hospitals may remain the on-going reason for the increased lethality of attempt and consequently the 9.1% increase in number of individuals engaging in self-harm is an underestimate. However, the continued increased lethality of attempt (albeit not more violent) may simply reflect ongoing greater distress and suicidality.

A significant increase in service users actively engaged with MHS presenting with self-harm was noted since the onset of the COVID-19 pandemic. The COVID-19 pandemic has been associated with significant restrictions in the provision of multiple supports both within and outside the MHS. For example, day centers and training centers have been closed or had very limited, if any, group activities, with many psychotherapeutic interventions, particularly those in group format often taking place in day hospital facilities cancelled, and clinical reviews with members of the multi-disciplinary teams that service users regularly engage with unavailable via a face-to-face format. These restrictions have similarly impacted addiction and mental health supports based outside MHS, with psychotherapeutic services less available, with minimal group sessions and reduced face-to-face therapeutic sessions

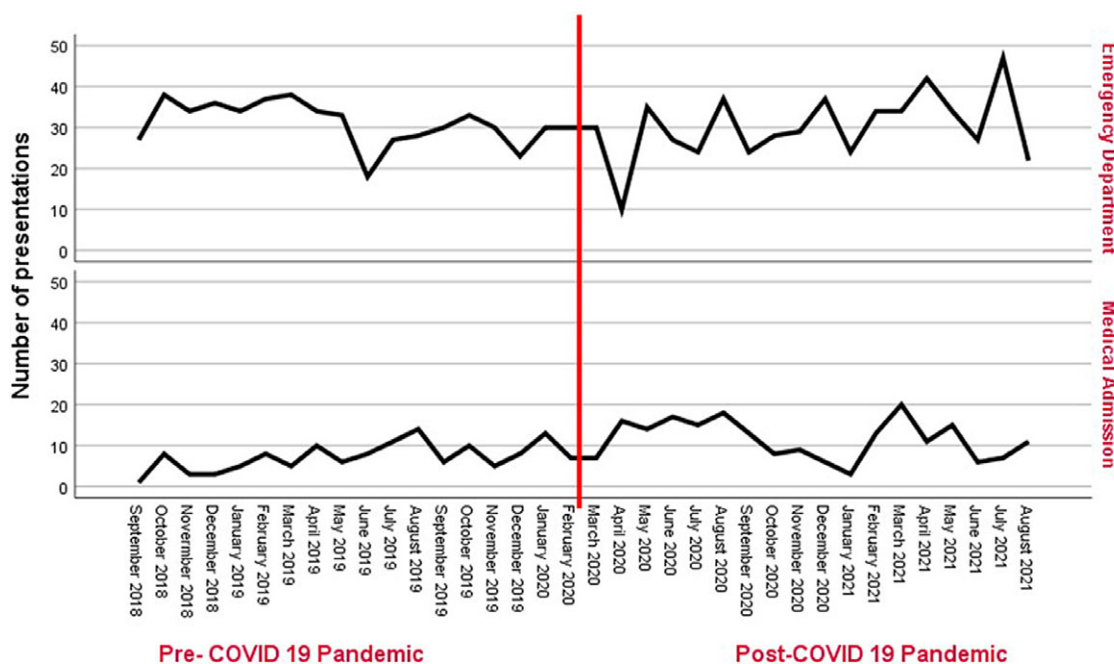


Fig. 2. Lethality of episode.

available (Alcoholics Anonymous Ireland 2020). Other voluntary or service-user led supports often involving group therapeutic sessions and supports linked to non-therapeutic activities (i.e. group sporting activities) have largely been unavailable. It is possible that these reduced supports available for service users have impacted rates of self-harm presentation in this population. In this service, measures were implemented to mitigate the impact of unmet mental health need on the emergency services to reduce the risk of infection among our patient cohort (Tong *et al.* 2021). Another potential reason for the increased number of individuals actively engaged with MHS who presented with self-harm since the onset of the COVID-19 pandemic relates to increased referral rates to community MHS (College of Psychiatrists of Ireland 2020), with these increased case-loads potentially including many individuals who had previously engaged with MHS requesting additional supports due to the perceived and potential deleterious impact of the COVID-19 pandemic on their mental health. Whilst studies have previously noted predominantly minimal deleterious consequences of the COVID-19 pandemic on active service users' mental well-being, reduced social functioning and quality of life was reported (Fahy *et al.* 2021; Hennigan *et al.* 2021; Plunkett *et al.* 2021; Rainford *et al.* 2022); with MHS users with EUPD (associated with often higher rates of self-harm) experiencing the most significant impact on their mental well-being (McLoughlin *et al.* 2021). These findings suggest an increase in distress in individuals attending MHS and may be reflected in some part in the increased rates of self-harm noted in this study.

Limitations of this study include the retrospective design and basis on a service database, out-ruling the incorporation of patient-reported measures. However, the use of a database allowed for the avoidance of selection bias regarding episodes of self-harm, as all patients referred for self-harm episodes were included. It would be optimal to include qualitative data pertaining to participants' views regarding the potential relationship of the COVID-19 pandemic to their episode(s) of self-harm and this is planned as a future avenue of research.

Conclusion

A moderate increase in presentations of self-harm since the onset of the COVID-19 pandemic over an 18-month period is noted, despite an initial decline in the rate of self-harm presentations. Periods of more significant governmental mandated restrictions were associated with higher rates of self-harm, suggesting that this potential adverse consequence should be considered if further periods of mandatory restrictions are being considered in the future. Active users of MHS are more likely since the onset of the COVID-19 pandemic to engage in self-harm and thus the provision and recommencement of therapeutic interventions for this cohort in particular is warranted.

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Author contributions. All authors participated in the design of the study, data attainment, and critical review of the manuscript.

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Conflicts of interest. The authors have no conflicts of interest to disclose.

Ethical standards. Ethical approval was obtained from the Galway University Hospitals Research Ethics Committee (C.A. 2386; obtained February 2021). As all data were anonymised, written consent was not required. 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.

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