The impact of the COVID-19 pandemic on presentations to health services following self-harm: systematic review

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Background
Evidence on the impact of the pandemic on healthcare presentations for self-harm has accumulated rapidly. However, existing reviews do not include studies published beyond 2020.

Aims
To systematically review evidence on presentations to health services following self-harm during the COVID-19 pandemic.

Method
A comprehensive search of databases (WHO COVID-19 database; Medline; medRxiv; Scopus; PsyRxiv; SocArXiv; bioRxiv; COVID-19 Open Research Dataset, PubMed) was conducted. Studies published from 1 January 2020 to 7 September 2021 were included. Study quality was assessed with a critical appraisal tool.

Results
Fifty-one studies were included: 57% (29/51) were rated as 'low' quality, 31% (16/51) as 'moderate' and 12% (6/51) as 'high-moderate'. Most evidence (84%, 43/51) was from high-income countries. A total of 47% (24/51) of studies reported reductions in presentation frequency, including all six rated as high-moderate quality, which reported reductions of 17–56%. Settings treating higher lethality self-harm were overrepresented among studies reporting increased demand. Two of the three higher-quality studies including study observation months from 2021 reported reductions in self-harm presentations. Evidence from 2021 suggests increased numbers of presentations among adolescents, particularly girls.

Conclusions
Sustained reductions in numbers of self-harm presentations were seen into the first half of 2021, although this evidence is based on a relatively small number of higher-quality studies. Evidence from low- and middle-income countries is lacking. Increased numbers of presentations among adolescents, particularly girls, into 2021 is concerning. Findings may reflect changes in thresholds for help-seeking, use of alternative sources of support and variable effects of the pandemic across groups.

Keywords
Epidemiology; self-harm; primary care; suicide; COVID-19.

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The COVID-19 pandemic has led to a deterioration in population mental health and has placed considerable additional strains on health systems.1,2 The pandemic has also heightened many of the risk factors for suicidal behaviour, such as job insecurity and unemployment; access to food, education and healthcare; and the availability of family and community support.3 Understanding and quantifying trends in help-seeking for self-harm is a vital part of the public mental health response to COVID-19. It could help to expound the apparent paradox observed during the early stages of the pandemic, whereby although population mental health deteriorated,4 fewer people sought help for their mental health from primary and secondary care services.5 Examining self-harm presentations across health settings could help understand longer-term population effects and inform planning of services and interventions in the future phases of the pandemic. Numerous studies from high-income countries reported marked reductions in health service utilisation during the second quarter of 2020, following the start of the COVID-19 pandemic. For example, considerable reductions in diagnoses for acute physical and mental illnesses were found in the UK after introduction of the national lockdown in March 2020, with only partial recovery by July 2020.6 In another UK study, reductions of around a third in health service contacts specifically for self-harm were found.7 Focusing specifically on hospital admission for self-harm, overall reductions of just over 8% were reported in France, although increases in more serious potentially lethal acts of self-harm were observed.8 Evidence relating to the indirect health impacts resulting from the pandemic in low- and middle-income countries also suggests that care for non-communicable diseases and mental disorders has been severely disrupted.9 A systematic review on the impact of the pandemic on suicide and self-harm in low- and middle-income countries found mixed evidence, with either a decrease or no discernible impact in reported self-harm episodes, along with increases in certain age groups.10

In 2020, a living systematic review was established to provide an up-to-date resource and data synthesis of evidence on the impact of the COVID-19 pandemic on self-harm and suicidal behaviour.11 The most recent update of the review included studies up to 19 October 2020 and included 20 health service utilisation studies, including 11 focusing specifically on health service presentations following self-harm/suicide attempts.12 The review reported that most studies reported a decrease in presentations to health services for self-harm during the early months of the COVID-19 pandemic. However, all 20 studies were on high-income countries, and the latest month of observation was August 2020.13–15 In the subsequent months, many health services adapted and ‘stay-at-home’ orders have eased, although these restrictions later returned in...
many countries and regions. Although studies suggest service utilisation had returned to expected volumes in some countries by the third quarter of 2020, it is not known how subsequent restrictions and ongoing pressures on health systems in response to further waves of COVID-19 have affected help-seeking and access to healthcare for self-harm. In this article, we report on evidence concerning the frequency (reported incident or prevalent episode counts or rates) of presentations to health services following self-harm after the onset of the pandemic, compared with before the pandemic. There has been no synthesis of studies published since October 2020, some of which would be expected to include the later observation periods covering the latter months of 2020 and first half of 2021, as the pandemic continued to affect populations globally. Our aim was to systematically identify, review and synthesise evidence relating to presentations to health services for self-harm since the COVID-19 pandemic began in the first quarter of 2020.

Method

The protocol for the methodology applied in conducting the systematic review is registered within a living systematic review of the impact of the COVID-19 pandemic on self-harm and suicidal behaviour (PROSPERO identifier CRD42020183326; registered on 1 May 2020). Additional inclusion and exclusion criteria specific to our research question were applied, and further screening, data extraction and study quality assessments were conducted. To address our research question, ‘Did the frequency of health service presentation for self-harm during the pandemic change compared with antecedent periods?’, we applied the following inclusion and exclusion criteria.

Inclusion criteria

The following inclusion criteria were applied for each study: (a) published from 1 January 2020 to 7 September 2021; (b) written in any language; (c) investigation of health service utilisation among the general population, including presentations to general hospital emergency departments, primary healthcare services, specialist mental healthcare services (accessible to general population), other secondary healthcare services that treat people who have self-harmed/attempted suicide (e.g. surgery) and admission to hospitals; (d) outcomes were presentations for self-harm, including broad definitions of self-harm (defined as non-fatal intentional self-injury, intentional self-poisoning involving drugs or non-ingestible substances, including non-suicidal acts) or attempted suicide (including hospital attendance and/or admission for these reasons) and narrower definitions, e.g. studies focused only on suicide attempts or specific methods of self-harm; and (e) comparisons in health service presentation frequencies (including incident or prevalent episode counts or rates) for self-harm before and after the beginning of the COVID-19 pandemic, considering specific time periods separately (e.g. both initial and subsequent lockdown periods).

Exclusion criteria

The following exclusion criteria were applied for each study: (a) studies without pre-pandemic observation periods or measurements, including those reporting use of service initiatives implemented in response to the pandemic, with no pre-pandemic comparison period; (b) reports where only an abstract was available; (c) studies focusing on specific groups, such as those with a specific physical or psychiatric diagnosis (including COVID-19), or where the baseline population was existing patients within a specialist service, such as psychiatric in-patients; (d) studies reporting self-harm and suicidal thoughts as a combined measure; (e) studies reporting proportions of self-harm presentations, without reporting absolute figures; and (f) studies of suicides.

Data analysis

The list of studies used for screening was obtained from the main living systematic review database. This database is updated automatically, using daily electronic searches of multiple databases (World Health Organization COVID-19 database; Medline; medRxiv; Scopus; PsyRxiv; SocArXiv; bioRxiv; COVID-19 Open Research Dataset, PubMed) (for the search strategy for each database, see Supplementary Appendix 2 available at https://doi.org/10.1192/bjp.2022.79). Screening was conducted in two stages: the citations returned by the automated searches were assessed by seven screeners (E.E., D.D., C.M.-H., D.K., A.J., R.T.W. and D.J.G.) to identify potentially relevant studies, then authors A.J., D.G., D.K. or R.T.W. assessed the full text of the studies to identify studies to be included in the main living systematic review. In addition, expert reviewers (A.J., D.G., D.K. and R.T.W.) completed daily assessments of the automated results, which included basic data extraction and assigning studies manually to a study design category, along with a description of the study design.

Identification and screening of studies for the current review was conducted with a methodology developed as part of an existing living systematic review (Fig. 1). Studies included publications identified in the living systematic review from 1 January 2020 up to 7 September 2021. Screening was conducted according to the inclusion and exclusion criteria for the current review. The list of studies was extracted from the main living systematic review database on 14 September 2021. Categories assessed for inclusion in the current review were ‘service utilisation’, ‘before/after studies’, ‘time trends analysis’ and ‘examination of electronic health records’ (Fig. 1).

As part of the identification and screening procedure, further screening and data extraction was completed for the current systematic review, using a proforma designed to collect standardised information from each study (Supplementary Table 1). Study quality and risks of bias were assessed with an adapted version of an existing National Institute for Health (NIH) quality assessment tool designed specifically for studies using before and after designs. The NIH tool was adapted by authors D.K., J.P.T.H. and D.G. to include consideration of the pandemic and associated lockdown periods and other societal restrictions as the intervention of interest, and to account for the use of health service data sources in the study designs. The overall assessment tool was used to judge the quality of evidence relating to frequency of presentation to health services following self-harm within the studies, rather than the overall study quality, with predefined criteria established for evidence to be rated as high or moderate quality. Studies were assessed according to all criteria listed in the tool, although a study was only assessed as being of high or moderate quality if questions 3, 6, 7 and 8 all scored yes. Screening, data extraction and quality assessments were conducted by S.S. A second rater (D.D.) assessed eligibility for 18% (26 out of 144) of the studies sought for retrieval, and conducted independent data extraction and analysis on 10% (five out of 51) of the included studies. There was agreement on all eligibility assessments (the independent reviewer reached the same decision to include or exclude the 26 studies in the systematic review) and study quality ratings (the quality ratings of five out five studies independently reviewed were the same). If a source was not available in English, data extraction was conducted by expert reviewers fluent in the language that the article was written in. Where included studies were preprints, searches for peer-reviewed version were conducted.
and the updated peer-reviewed version was used for data extraction where available. Data synthesis was conducted by extracting, assessing and tabulating key aspects of the studies, including setting, study design, data sources, outcome measures, follow-up and comparison periods, main findings and study quality. The main effect measure of interest was percentage difference in presentation frequency during a defined COVID-19 period compared with a pre-COVID-19 comparison period. If this data were missing, the overall direction of change (e.g. increase/no change/decrease) was recorded. Higher-quality studies were prioritised and reported separately during data synthesis and presentation of results.

**Results**

**Description of included studies**

Fifty-one studies were included. These were from healthcare settings, including general hospital emergency departments (39%, n = 20), trauma and surgery admissions (22%, n = 11), children’s hospitals (8%, n = 4), primary care (8%, n = 4), general hospital admissions (6%, n = 3), paediatric emergency departments (6%, n = 3), ambulance calls (4%, n = 2), liaison psychiatry referrals (4%, n = 2) paediatric trauma admissions (2%, n = 1) and a multi-service setting (2%, n = 1) (Table 1 and Supplementary Table 1). Quality of the evidence within the studies was mixed; 57% (n = 29) were rated as ‘low’ quality, 31% (n = 16) as ‘moderate’ and 12% (n = 6) as ‘high-moderate’. Reasons for studies being rated as low quality commonly included small event counts, absence of clearly defined patient eligibility criteria and poorly described data extraction/collection methodology. Most of the evidence (84%, n = 43 studies) was from investigations conducted in high-income countries (Table 1). Forty-two of the 51 studies were reported in peer-reviewed articles, four were preprints, four were letters or editorials and one was a report.

**Findings of included studies**

Almost half (47%, n = 24) of the studies reported reductions in presentation frequency (Fig. 2) for the duration of the period studied, the majority of which included months no later than August 2020. All six studies rated as high-moderate quality (including one preprint) found decreases in frequency of presentations during the early months of the pandemic, with reductions of between 17 and 56% reported.6,7,29–32 These studies were of...
| Study ID | Authors | Report type | Healthcare setting | Increase, decrease or no change | Statistically significant change? | Approximate % change (95% CI if provided) | Latest month of study period | Change post-lockdown (if studied) | Additional, post-September 2020 period examined | Quality of evidence relating to self-harm by setting |
|----------|---------|-------------|-------------------|-------------------------------|----------------------------------|------------------------------------------|-------------------------------|---------------------------------|---------------------------------------------|-----------------------------------------------|
| 1        | Capuzzi et al, 2020 | Peer-reviewed article | Emergency department (psychiatric) | Decrease | Not reported | −13% | May 2020 | No change | | High |
| 2        | Carr et al, 2021 | Peer-reviewed article | Primary and secondary | Decrease | Yes | −38% (CI 35–50%) | Apr 2020 | No change | Sep 2020 | High/moderate |
| 3        | Chen et al, 2020 | Peer-reviewed article | Liaison psychiatry referrals | Decrease | Yes | −40% | Aug 2020 | −30% | | Moderate |
| 4        | Dragovic et al, 2020 | Peer-reviewed article | Emergency department | Decrease | Yes | −26% | May 2020 | | | High |
| 5        | DelPozo-Banos et al, 2022 | Peer-reviewed article | Liaison psychiatry referrals | Decrease | Yes | −13% | Jun 2020 | | | Low |
| 6        | Goncalves-Pinho et al, 2021 | Peer-reviewed article | Emergency department (psychiatric) | Decrease | Not reported | −56% | May 2020 | | | High/moderate |
| 7        | Harmon et al, 2021 | Peer-reviewed article | Liaison psychiatry referrals | Decrease | Yes | −26% | Jun 2020 | No change | Nov 2020 | Moderate |
| 8        | Hawton et al, 2021 | Peer-reviewed article | Emergency department | Decrease | Yes | −37% | Jun 2020 | No change | | Moderate |
| 9        | Jollant et al, 2021 | Peer-reviewed article | Hospital admissions | Decrease | Yes | −21% | Aug 2020 | | | Moderate |
| 10       | Mansfield et al, 2021 | Peer-reviewed article | Primary and secondary | Decrease | Yes | −56% | Jul 2020 | | | High/moderate |
| 11       | McIntyre et al, 2021 | Peer-reviewed article | Emergency department | Decrease | Not reported | −8.50% | May 2020 | | | Moderate |
| 12       | Mourouvaye et al, 2021 | Peer-reviewed article | Children’s hospital | Decrease | Yes | −50% | Jun 2020 | | | Moderate |
| 13       | Nuzum, 2020 | Preprint | Emergency department | Decrease | Not reported | −34% | May 2020 | | | Moderate |
| 14       | Ontiveros et al, 2021 | Peer-reviewed article | Poison registry | Decrease | Yes | −17% | May 2020 | | | Moderate |
| 15       | Pignon et al, 2020 | Letter | Emergency department (psychiatric) | Decrease | Not reported | −57% | Apr 2020 | | | Moderate |
| 16       | Steeg et al, 2021 | Peer-reviewed article | Primary and secondary | Decrease | Yes | −31 to −41% | Apr 2020 | −8% to −14% | May 2021 | Moderate |
| 17       | Walker et al, 2021 | Peer-reviewed article | Emergency department | Decrease | Not reported | −39% | Apr 2020 | No change | Mar 2021 | Moderate |
| 18       | Yard et al, 2021 | Report | Emergency department (12–25 years) | Decrease | Yes | −17% to −26% | Apr 2020 | No change | Mar 2021 | Moderate |
| 19       | Bothara et al, 2021 | Peer-reviewed article | Emergency department | Increase | Yes | Not applicable | Apr 2020 | | | Low |
| 20       | Canzi et al, 2020 | Peer-reviewed article | Trauma admissions | Increase | Yes | 280% | May 2020 | | | Low |
| 21       | Gracia et al, 2020 | Letter | Multi-service ages 12–18 years | Increase | Yes | No | 25% | Mar 2021 | | Low |
| 22       | Habu et al, 2021 | Peer-reviewed article | Ambulance calls | Increase | Not reported | 36% | Aug 2020 | | | Low |
| 23       | Henry et al, 2021 | Peer-reviewed article | Emergency department | Increase | Yes | 10% | May 2020 | | | Low |
| 24       | Holland et al, 2021 | Peer-reviewed article | Emergency department | Increase | Yes | 6% | Oct 2020 | | | Moderate |
| 25       | Karakasis et al, 2020 | Letter | Emergency department (psychiatric) | Increase | Yes | 40% | May 2020 | | | Low |
| 26       | Moore et al, 2021 | Peer-reviewed article | Ambulance calls | Increase | Not reported | 8% | Jul 2020 | | | Moderate |
| 27       | Nia et al, 2021 | Peer-reviewed article | Trauma admissions | Increase | Yes | 50% | Apr 2020 | | | Low |
| 28       | Olding et al, 2021 | Peer-reviewed article | Trauma admissions | Increase | Not reported | 60% | Apr 2020 | | | Low |
| 29       | Popp et al, 2021 | Peer-reviewed article | Plastic surgery | Increase | Yes | Not applicable | Apr 2020 | | | Moderate |
| 30       | Rhodes et al, 2020 | Peer-reviewed article | Trauma admissions | Increase | No change | 83% | May 2020 | | | Low |
| 31       | Bruns et al, 2021 | Preprint | Children’s trauma admissions | Increase | No change | No | Mar 2020 | | | Low |
| 32       | Chang et al, 2020 | Peer-reviewed article | Trauma admissions | No change | No | No | Jun 2020 | | | Low |
| 33       | Chiba et al, 2021 | Peer-reviewed article | Trauma admissions | No change | No | No | | | | Low |

(Continued)
| Study ID | Authors | Report type | Healthcare setting | Increase, decrease or no change | Statistically significant change? | Approximate % change (95% CI if provided) | Latest month of study period | Change post-lockdown (if studied) | Additional, post-September 2020 period examined | Quality of evidence relating to self-harm | Global setting |
|----------|---------|-------------|-------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|-----------------------------|---------------------------------|--------------------------------|-------------|
| 35       | Coates et al, 2021 | Preprint | Emergency department (up to 19 years) | No change | No | Not applicable | Not | No change | May 2020 | Low | High income |
| 36       | Gil-Jardiné et al, 2021 | Preprint | Emergency health contact centre | No change | No | Not reported | Not reported | No change | May 2020 | Low | High income |
| 37       | Jacob et al, 2020 | Peer-reviewed article | Trauma admissions | No change | No | Not reported | 36% | No change | Apr 2020 | Low | High income |
| 38       | Joyce et al, 2021 | Peer-reviewed article | Letter | No change | No | Not reported | 36% | No change | Apr 2020 | Low | High income |
| 39       | Page et al, 2021 | Peer-reviewed article | Emergency department | No change | No | Not reported | 36% | No change | Apr 2020 | Low | High income |
| 40       | Prados-Ojeda et al, 2021 | Peer-reviewed article | Trauma admissions | No change | No | Not reported | 36% | No change | May 2020 | Low | High income |
| 41       | Rajput et al, 2021 | Peer-reviewed article | Trauma admissions | No change | No | Not reported | 36% | No change | May 2020 | Low | High income |
| 42       | Shields et al, 2021 | Peer-reviewed article | Emergency department | Decrease | Yes | −23% | Apr 2020 | No change | Jun 2020 | Low | High income |
| 43       | Yeates et al, 2021 | Peer-reviewed article | Emergency department (up to 18 years) | Decrease | Yes | −23% | Apr 2020 | No change | Jun 2020 | Low | High income |
| 44       | Ougrin et al, 2021 | Peer-reviewed article | Children's hospital admissions | Decrease | Not reported | −57% | Sep 2020 | No change | Oct 2020 | Low | Upper-middle income |
| 45       | Eray and Sahin, 2021 | Peer-reviewed article | Children's hospital | Decrease | Not reported | −83% | Oct 2020 | No change | Sep 2020 | Low | Upper-middle income |
| 46       | Fidancı et al, 2021 | Peer-reviewed article | Surgery after self-poisoning | Increase | Yes | 55% | Jun 2020 | No change | Dec 2020 | Moderate | Upper-middle income |
| 47       | Muhamed Cuhadjar et al, 2021 | Peer-reviewed article | Emergency department (psychiatric) | Increase | Yes | 14% | Aug 2020 | No change | Dec 2020 | Low | Middle income |
| 48       | Knipe et al, 2021 | Peer-reviewed article | Hospital admission after self-poisoning | Decrease | Yes | −32% (CI 12–48%) | Aug 2020 | No change | Apr 2020 | Low | Lower-middle income |
| 49       | Jhanwar et al, 2020 | Peer-reviewed article | Emergency department | Decrease | Yes | −32% | Apr 2020 | No change | May 2020 | Low | Lower-middle income |
| 50       | Shrestha et al, 2021 | Peer-reviewed article | Emergency department | Increase | Not reported | 44% | Jun 2020 | No change | Jul 2020 | Moderate | Lower-middle income |

a. Difference in weekly contacts per million population.
b. −31% for all episodes and −41% for incident episodes.
c. −26% among ages 12–17 years and by −17% among ages 18–25 years.
d. Zero at baseline.
primary and secondary care settings combined (four studies), emergency department presentations among ages 18–25 years (one study) and self-poisoning presentations to hospital (one study). Four studies used healthcare records in the UK to compare expected versus observed primary and secondary care–recorded episodes of self-harm, and found reductions of between 26 and 44%.6,7,30,32 Another study based in Sri Lanka found a 32% reduction in hospital presentations for self-poisoning compared with pre-pandemic numbers. However, these estimates included months no later than August 2020.

Five studies (including one preprint) used national or nationally representative data. Four of these were assessed as high-moderate quality and reported decreases in presentations to health services of between 26 and 56%. One moderate quality study reported a 6% increase in emergency department presentations.33 This USA-based study only included self-harm episodes classified as suicide attempts, and therefore may not reflect service use for self-harm more broadly.

Increases were reported in 15 (29%) studies, none of which were assessed as being of high-moderate quality and five of which were rated as moderate quality. An examination of the number of people admitted to a surgical department following self-harm by ingestion of corrosive substances was found to increase by 55% in one Bangkok hospital, although numbers in the study were relatively low.34 Other moderate quality studies reporting increased patient numbers included emergency department, ambulance and surgery services, which are settings that are likely to be encountering patients with more medically severe episodes of self-harm.

Twelve out of 51 (24%) studies (two were preprints) reported no change in frequency of presentations to health services, including no high-moderate quality studies and two assessed as moderate quality. These were both conducted in emergency department settings, with one New Zealand emergency department reporting no change in self-harm presentations35 and a UK-based study reporting no change in hospital admission following emergency department presentations for self-harm.36 A further six studies were conducted in trauma settings, although all were rated as low quality.

Most studies (n = 46) included up to a maximum of 8 months of follow-up from the first wave of the pandemic (March to October 2020). Among the four studies including months from 2021 in their observation period (up to May 2021), three were rated as high-moderate quality. Among these, two studies of primary and secondary care–recorded self-harm reported longer-term reductions of between 8 and 30%, respectively,30,32 and another study of emergency department presentations by young people aged 12–25 years found no overall change.29 Studies including follow-up months beyond 2020 were limited to those originating from high-income countries.

Findings by study settings and subgroups

Seven out of 51 (14%) studies were conducted in upper-middle income (n = 3), middle-income (n = 1) and lower-middle income (n = 3) countries, one of which was rated as high-moderate quality. Four studies found a decrease in service use and three reported an increase. The study rated as high-moderate quality reported on self-poisoning episodes in a lower-middle income setting; using health record data from a toxicology unit in a Sri Lankan hospital, a 32% reduction in hospital presentations for self-poisoning was found, compared with pre-pandemic numbers.33 A study of moderate quality conducted in one Nepalese emergency department found an increase of 44% in presentations for self-harm during the lockdown period compared with the same period the previous year, with indications that severity of self-harm was higher, although the numbers of presentations in both the lockdown and comparison periods were relatively small.37

Eighteen studies included examination of service use for self-harm specifically among children and/or young people, with five rated as high-moderate quality. One high-moderate quality study including approximately 71% of emergency departments in the USA, across 49 states, examined presentations among ages 18–25 years and found reductions of 26% among ages 12–17 years and
The reviewed studies included follow-up time from 2021, the evidence relating to 2021 was considerably higher quality, with three out of four rated as high-moderate quality – half of all the high-moderate studies that were included in the whole review.

We conducted a comprehensive narrative synthesis of the data rather than a meta-analysis, because of heterogeneity in the pandemic and antecedent comparison periods, definitions of self-harm applied and healthcare settings that studies were conducted in. Performing a meta-analysis will be considered for future updates of the living systematic review. The studies included in our review are of mixed quality and are greatly underrepresentative of middle- and low-income countries. Although we have reported findings according to these characteristics, overall findings should be interpreted in light of these considerations.

Implications and comparison with existing evidence

This systematic review includes an additional 39 studies reporting on health service presentation frequencies since a previous published synthesis. Our findings relating to a fall in presentation frequencies following self-harm during the early months of the pandemic strengthen this evidence base. Furthermore, findings from high-quality studies suggested either there were continued reductions in health service presentations into 2021, although to a lesser extent than earlier months of the pandemic, or that service use had broadly returned to pre-pandemic levels. However, most of the studies came from high-income countries, and these findings cannot necessarily be generalised to low- and middle-income countries. For example, allocation of COVID-19 vaccinations has been disproportionately skewed toward high-income countries. Consequently, many low- and middle-income countries have experienced major subsequent waves of COVID-19 well into 2021. The effects of these further waves of infection on many of the factors associated with self-harm (e.g. unemployment, mental and physical ill health, poor access to healthcare) are likely to be considerable. Subsequent waves of COVID-19 have also been experienced by high-income countries into the latter half of 2021. For example, from November 2021, some European countries introduced further societal restrictions. Continued surveillance is therefore needed in all settings.

Our findings are consistent with reports of increased acuity of presentations in some mental health services. The increases in presentation frequency reported by studies that were conducted in healthcare settings treating more potentially lethal episodes of self-harm, such as ambulance calls and trauma admissions, indicates that the pandemic has affected the threshold for help-seeking. Evidence also shows that non-statutory mental health services, such as charities, experienced increased demand in the months following the onset of the pandemic. This may explain the apparent paradox observed during the first year of the pandemic, where deterioration in population mental health alongside reductions in health services utilisation was observed. This indicates that reductions seen in settings capturing a broader spectrum of self-harm do not simply reflect decreased incidence of self-harm or reduced clinical need. For example, a systematic review found increases in prevalence and global burden of depressive and anxiety disorders, both of which are risk factors for self-harm, in 2020 as a result of the pandemic. There is some evidence that, following initial deteriorations in 2020, some people’s mental health improved following easing of lockdown measures. However, the subsequent COVID-19 waves and the broader economic consequences of the pandemic have continued to adversely affect the mental health of a large proportion of the population. People who have harmed themselves non-fatally have a markedly elevated suicide risk subsequently, irrespective of self-harm method at the index episode, and degrees of suicidal intent can fluctuate between different self-harm episodes.
by the same person. Therefore, it is vital that people harming themselves receive clinical intervention, and that health services across the world work to ensure services are available to provide timely and accessible care.2,7,8

Studies examining changes in proportions of groups presenting with certain characteristics, and those examining combined suicidal thoughts and self-harm outcomes, were not included in this systematic review as we were interested in absolute numbers of people using health services for self-harm. However, such studies can provide valuable information about help-seeking behaviour in different groups. For example, a study of hospital attendance for suicidal ideation and self-harm in Australia's Gold Coast region identified a number of groups with particularly reduced likelihood of presentation during March to August 2020, including Indigenous Australians and individuals with less severe suicidal and self-harm, whereas people younger than 18 years had increased numbers of presentations.7 Another study conducted in a paediatric emergency department in New York City, USA, found that although overall there were significant decreases in emergency visits, attends for suicidal ideation and self-harm among young people increased.75 Increases in numbers of adolescents referred to mental health services in Ireland were found from September 2020, following an initial decline in April 2020.76 Our findings of increased numbers of presentations to health services for self-harm into the early months of 2021 among adolescents, particularly girls, within this context, are concerning and warrant urgent attention.

In conclusion, all high-quality studies reported a fall in attendance frequency for self-harm during the early months of the pandemic, strengthening earlier evidence. New evidence relating to the first and second quarters of 2021 indicated that longer-term impacts on health services were less marked than during the first wave of the pandemic, although reductions in frequency of presentation persisted compared with expected levels. These patterns likely reflect changes in thresholds for help-seeking, increases in frequency of higher-acuity episodes of self-harm and increased use of non-statutory health services. The increased numbers of health services presentations among adolescents, particularly girls, into the early months of 2021 warrants particular attention. However, evidence from low- and middle-income countries is still limited. High-quality, multicentre studies examining the longer-term impacts on health service utilisation for self-harm, particularly in low- and middle-income countries, including observation periods into 2021 and among children and young people, are urgently needed.

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Data availability
Not applicable; the study that is reported on in this article is a systematic review.

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Author contributions
S.S., A.J., D.J.G. and R.T.W. conceived and designed the study. E.E., D.D., C.M.-H., D.K., A.J., R.T. and D.J.G. conducted the initial sampling. A.J., D.J.G., D.K. and R.T.W. conducted expert reviewing. S.S. and D.D. conducted quality assessments. S.S., D.D. and L.S. conducted data analysis. A.J., D.J.G., E.A., E.E., J.P.T.H., K.H., L.M., J.S. and N.K. established the overarching living evidence methodology and databases. S.S. wrote the manuscript and all authors provided critical review and proposed revisions to the manuscript.

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Declaration of interest
D.G., K.H. and N.K. are members of the Department of Health and Social Care (England) National Suicide Prevention Strategy Advisory Group. S.S., A.J., D.D., L.S., D.K., E.A., J.P.T.H., E.E., C.M.-H., L.M. and R.T.W. have nothing to disclose.

References
1. Pierce M, Hope H, Ford T, Hatch S, Hotopf M, John A, et al. Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. Lancet Psychiatry 2020; 7(10): 883–92.
2. Pierce M, McManus S, Hope H, Hotopf M, Ford T, Hatch SL, et al. Mental health responses to the COVID-19 pandemic: a latent class trajectory analysis using longitudinal UK data. Lancet Psychiatry 2021; 8(7): 610–9.
3. Kola L, Kohrt BA, Harlon C, Naslund JA, Sikander S, Balaji M, et al. COVID-19 mental health impact and responses in low-income and middle-income countries: reimagining global mental health. Lancet Psychiatry 2021; 8(6): S53–50.
4. Santomano DF, Herrera AMM, Shadd J, Zheng P, Ashbaugh C, Pigott DM, et al. Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. Lancet 2021; 398(10313): 1700–12.
5. John A, Okole C, Eyles E, Webb R, Schmidt L, McGuinness L, et al. The impact of the COVID-19 pandemic on self-harm and suicidal behaviour: a living systematic review [version 1; peer review: 1 approved]. F1000Res 2020; 9: 1097.
6. Mansfield KE, Mathur R, Tzare J, Henderson AD, Mulick AR, Carreira H, et al. Indirect acute effects of the COVID-19 pandemic on physical and mental health in the UK: a population-based study. Lancet Open Health 2021; 4(4): e217–30.
7. Carr MJ, Steeg S, Webb RT, Kapur N, Chew-Graham CA, Abel KM, et al. Effects of the COVID-19 pandemic on primary care-recorded mental illness and self-harm episodes in the UK: a population-based cohort study. Lancet Public Health 2021; 6(2): e124–35.
8. Jollant F, Rousset A EC, Chauvet-Gellin J-C, Falissard B, Milleafof Y, et al. Hospitalization for self-harm during the early months of the COVID-19
Self-harm during the COVID-19 pandemic

pandemic in France. a nationwide retrospective observational cohort study. Lancet Psychiatry 2021; 6: 100102.

9 organisation for economic cooperation and development, world health organization. health at a glance: Asia-pacific 2020. measuring progress towards universal health coverage. organisation for economic cooperation and development and world health organization, 2020 [https://www.oecd.org/health/disease/163697313bd-id=11482029-name=guest-checksum=42A2B60012E42CBF7F138E53D6E3F6].

10 knipe d, john a, padmanathan p, pyles e, dekel d, riggins j, et al. suicide and self-harm in low- and middle-income countries during the covid-19 pandemic: a systematic review. plos glob public health 2022; 2(6).

11 john a, mcguinness l, okolie c, olorisade b, schmidt l, webb r, et al. the impact of the covid-19 pandemic on self-harm and suicidal behaviour: update of a living systematic review [version 1; peer review: 1 approved, 1 approved with reservations]. f1000res 2020; 9: 644.

12 john a, webb r, okolie c, schmidt l, arensmann e, hawton k, et al. the impact of the covid-19 pandemic on self-harm and suicidal behaviour: update of a living systematic review [version 2; peer review: 1 approved, 2 approved with reservations]. f1000res 2021; 9: 1097.

13 karakasi m-v, zaatouz a, theofilidis a, ieriodakonou-benou i, nasika z, nimbautou i. impact of the sars-cov-2 pandemic on psychiatric emergencies in northern greece: preliminary study on a sample of the greek population. psychiatry clin neurosci 2020; 74(11): 613–5.

14 olding j, zisman s, olding c, fan k. penetrating trauma during a global pandemic: changing patterns in interpersonal violence, self-harm and domestic violence in the covid-19 outbreak. Surgeon 2021; 19(1): e9–13.

15 rhodes hx, petersen k, biswas s. trauma trends during the initial peak of the covid-19 crisis in the uk: analysis of a large trauma registry. Curr issues in trauma care. curus 2020; 12(8): e9811.

16 page mj, mckenzie je, bossuyt pm, boutron i, Hoffmann TC, Mulrow CD, et al. the prisma statement: an updated guideline for reporting systematic reviews. PLoS Med 2020; 17(3): e1003583.

17 jose yepes-nunez j, urrutia g, romero-garcia m, alonso-fernandez s. the PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Rev Esp Cardiol 2021; 74(10): 790–9.

18 national institute for health, national heart, lung, and blood institute. study quality assessment tools: quality assessment tool for before-after (pre-post) studies with no control group. national heart, lung, and blood institute. 2021. available from: https://www.ncbi.nlm.nih.gov/health-topics/study-quality-assessment-tools.

19 dragovic m, pascu v, hall t, ingram j, waters f. emergency department mental health presentations before and during the covid-19 outbreak in western australia. Australas Psychiatry 2020; 28(6): 627–31.

20 goncalves-pinho m, mata p, ribeiro j, Macedo s, freitas a. the impact of covid-19 pandemic on psychiatric emergency department visits - a descriptive study. J Affect Disord 2021; 293: 995–1000.

21 harmon kj, fliss md, marshall sw, petclosa k, proescholdbell sk, waller ae. the impact of the covid-19 pandemic on the utilization of emergency department services for the treatment of injuries. Am J Emerg Med 2021; 47: 88–91.

22 hawton k, casey d, bale e, brand f, ness j, waters k, et al. self-harm during the early period of the covid-19 pandemic in england: comparative trend analysis. J Affect Disord 2021; 332(2): 324–30.

23 shields c, bernard j, mirza qr, reeves d, wells a, heagerty a. covid-19, lock-down and self-isolation: evaluation of deliberate self-harm admissions. Front Psychiatry 2021; 12: 662885.

24 shrestha r, siwakoti s, singh s, shrestha ap. the impact of the covid-19 pandemic on suicide and self-harm among patients presenting to the emergency department of a teaching hospital in nepal. Plos One 2021; 16(4): e0250706.

25 mouroumey b, bottemanne h, bonny g, fourcade l, angoulvant f, Cohen jf, et al. association between suicide behaviours in children and adolescents and the covid-19 lockdown in france: a retrospective observational study. Arch Dis Child 2021; 106(9): 918–9.

26 capuzzi e, di brita c, Caldillo a, colmegna f, naua r, buoni m, et al. psychiatric emergency care during coronavirus 2019 (COVID-19) pandemic lockdown: results from a department of mental health and addiction of northern italy. Psychiatry Research 2020; 293: 113463.

27 chen s, Jones pb, underwater BR, moore a, bullmore et, banerjee s, et al. the early impact of COVID-19 on mental health and community physical health services and their patients’ mortality in cambridgeshire and peterborough, UK. J of psychiatric research 2020; 131: 244–54.

28 gesi c, Grassi f, dragogna f, Versaci m, Paletta s, Pelli p, et al. how did COVID-19 affect suicidality? data from a multicentric study in Lombardy. Journal of Clinical Medicine 2021; 10(11): 2410.

29 nuzum e, martin e, morgan d, dutta r, mueller c, polling c, et al. self-harm presentations to Emergency Departments and Place of Safety during the ‘first wave’ of the UK COVID-19 pandemic: South London and Maudsley data on service use from February to June 2020. [Preprint] 2020. available from: https://www.medrxiv.org/content/10.1101/2020.12.10.20247155v1.

30 ontiveros st, levine MD, cantrell fl, thomas c, Minns AB. Despair in the time of COVID: a look at suicidal ingestions reported to the California poison control system during the pandemic. Academic Emergency Medicine 2021; 28(3): 300–5.

31 Walker LE, Heaton HA, monroe RJ, Reichard RR, Kendall M, Mullan AF, et al. impact of the SARS-CoV-2 pandemic on emergency department presentations in an integrated health system. Mayo Clinic Proceedings 2020; 95(1): 2395–407.

32 bothara RK, raina a, carne B, walls T, McCombie A, ardaghi MW, et al. Paediatric presentations for suspected suicide attempts among children and adolescents in Paris, during the SARS-CoV-2 pandemic: an interrupted time-series analysis. Lancet Psychiatry 2021; 8(10): 892–900.

33 deiplozo-banos M, lee sc, friedmann y, akbari t, foralib f, lloyd k, et al. healthcare presentations with self-harm and the association with COVID-19: an e-cohort whole-population-based study using individual-level linked routine electronic health records in wales, UK. 2016–2021. Plos One 2022; 17(4): e0264697.

34 holland KM, Jones c, Vivolto-Kantor AM, Idaiikadnar N, Zwalt M, Hoots B, et al. trends in US emergency department visits for mental health, overdose, and violence outcomes before and during the COVID-19 pandemic. JAMA Psychiatry 2021; 78(4): 372–80.
50 Moore HE, Sihwardana AN, Gussy M, Tarsier F, Hill B, Spaight R. Mental health emergencies and COVID-19: the impact of ‘lockdown’ in the east midlands of the UK. BJPsych Open 2021; 7(4).

51 Nia A, Popp D, Diendorfer C, Apprich S, Munteanu A, Hajdu S, et al. Impact of lockdown during the COVID-19 pandemic on number of patients and patterns of injuries at a level I trauma center. Wiener Klinische Wochenschrift. 2021; 133(7–8): 336–43.

52 Bruns N, Willemsen L, Holtkamp K, Kamp O, Dudda M, Kowall B, et al. Trends in accident-related admissions to pediatric intensive care units during the first COVID-19 lockdown in Germany. [Preprint] 2021. Available from: https://www.medrxiv.org/content/10.1101/2021.08.06.21261728v1.

53 Chang YR, Kim KM, Kim HJ, Kim DH, Kim J, Noh D, et al. Impacts of social distancing during the COVID-19 outbreak in Korea: level I trauma center data of domestic incidents and intentional injury. Osong Public Health and Research Perspectives 2020; 11(6): 345–50.

54 Chiba H, Lewis M, Benjamin ER, Jakob DA, Liassidis P, Wong MD, et al. “Safer at home”: The effect of the COVID-19 lockdown on epidemiology, resource utilization, and outcomes at a large urban trauma center. Journal of Trauma and Acute Care Surgery 2021; 90(4): 708–13.

55 Coates L, Marshall R, Johnson K, Foster BA. Mental Health Utilization in Children in the time of COVID-19. [Preprint] 2021. Available from: www.medrxiv.org/content/10.1101/2021.08.11.21261712v1.

56 Prados-Ojeda JI, Gordillo-Urbano RM, Carrillo-Perez T, Vazquez-Calvo A, Herrera-Cortes MA, Carreno-Ruiz MA, et al. Suicide presentations to an emergency department pre and during the COVID lockdown, March–May 2020, in Spain. Archives of Suicide Research [Epub ahead of print] 25 Feb 2021. Available from: https://doi.org/10.1080/13811118.2021.1887023.

57 Rajput K, Sudi A, Rees M, Nultka O. Epidemiology of trauma presentations to a major trauma centre in the north west of England during the COVID-19 level 4 lockdown. European Journal of Trauma and Emergency Surgery 2021; 47(3): 631–4.

58 Yeates EO, Grigorian A, Barrios C, Schellenberg M, Owattanapanich N, Barmparas G, et al. Changes in traumatic mechanisms of injury in Southern California related to COVID-19: penetrating trauma as a second pandemic. Journal of Trauma and Acute Care Surgery 2021; 90(4): 714–21.

59 Eray S, Sahin V. Covid-19 Pandemic may have unique effects on emergency admissions for pediatric psychopathology: a single-center study. Psychiatry and Behavioral Sciences. 2021; 11(2): 1.

60. Fidancı I, Taşar MA, Akınbük B, Fidancı I, Bulut I. The impact of the COVID-19 pandemic on paediatric emergency service. International Journal of Clinical Practice 2021; 75(9): e14398.

61 Stasevic-Karlic I, Djordjevic V, Dutina A, Stasevic M, Janjic V, Ignjatovic-Ristic D, et al. The impact of COVID-19 pandemic on suicide attempts in the Republic of Serbia. Srpski Arhiv Za Celokupno Lekarstvo 2021; 149(7–8): 455–60.

62 Ihanwar S, Krishnan V, Rohilla J. Consultation-liaison psychiatry during COVID-19 lockdown: a retrospective chart review. Cureus 2020, 12(10): e11048.

63 Figueroa JP, Bottazzi ME, Holtez P, Batista C, Ergonul O, Gilbert S, et al. Urgent needs of low-income and middle-income countries for COVID-19 vaccines and therapeutics. Lancet 2021; 397(10274): 562–4.

64. Saha S, Tanmoy AM, Tanni AA, Goswami S, Sium SMA, Saha S, et al. New waves, new variants, old inequity: a continuing COVID-19 crisis. BMJ Global Health 2021; 6(8): e007031.

65 Kola L. Global mental health and COVID-19. Lancet Psychiatry 2020; 7(8): 655–7.

66 Mason J, Parodi E. Europe Becomes COVID-19’s Epicentre Again, Some Countries Look at Fresh Curbs. Reuters. 2021 [https://www.reuters.com/world/europe/covid-19-epicentre-again-some-countries-look-at-fresh-curbs-2021-11-12/].

67 Jehanzeb S, Suleman M, Tumelty E, Okusanya J, Karunanithy L, Thomas L, et al. The impact of first COVID-19 peak on patient referrals to liaison psychiatry service and staff perception about service provision in Birmingham and Solihull Mental Health Trust Birmingham - a service evaluation project. BJPsych Open 2021; 7(suppl 1): S329.

68 Mukadam N, Sommerlad A, Wright J, Smith A, Szczap A, Solomou S, et al. Acute mental health presentations before and during the COVID-19 pandemic. BJPsych Open 2021; 7(4): e134.

69 UK Government. Preventing Suicide in England: Fifth Progress Report of the Cross-Government Outcomes Strategy to Save Lives. The Stationery Office, 2021 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/973935/fifth-suicide-prevention-strategy-progress-report.pdf].

70 Banks JF, Fancourt D, Xu X. World Happiness Report 2021. Chapter 5: Mental Health and the COVID-19 Pandemic. Sustainable Development Solutions Network, 2021 [https://worldhappiness.report/ed/2021/mental-health-and-the-covid-19-pandemic/].

71 Kapur N, Cooper J, O’Connor RC, Hawton K. Non-suicidal self-injury v. attempted suicide: new diagnosis or false dichotomy? Br J Psychiatry 2013; 202(5): 326–8.

72 National Institute for Health and Care Excellence. Self-Harm: Longer-Term Management. Evidence Update April 2013. Evidence Update 39. National Institute for Health and Care Excellence, 2013 [https://www.nice.org.uk/guidance/ng33/documents/ng33-selharm-long-term-management-evidence-update2].

73 World Health Organization (WHO). Preventing Suicide: A Global Imperative. WHO, 2014. [https://www.who.int/publications/i/item/9789241564779].

74 Sveticic J, Stapelberg NJC, Turner K. Suicide prevention during COVID-19: identification of groups with reduced presentations to emergency departments. Australasian Psychiatry 2021; 29(3): 333–6.

75 Sokoloff WC, Kriel WI, Gusto KA, Mohalin T, Murphy-Hackett C, Rocker J, et al. Pediatric emergency department utilization during the COVID-19 pandemic in New York City. Am J Emerg Med 2021; 45: 100–4.

76 McNicholas F, Kehler I, Hedderman E, Lynch F, Healy E, Thornton T, et al. Referral patterns for specialist child and adolescent mental health services in the Republic of Ireland during the COVID-19 pandemic compared with 2019 and 2018. BJPsych Open 2021; 7(3): e91.

77 Dragovic M, Pascu V, Hall T, Ingram J, Waters F. Emergency department mental health presentations before and during the COVID-19 outbreak in Western Australia. Australasian Psychiatry 2020, 28(6): 627–31.

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