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Review

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.

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

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many countries and regions. Although studies suggest service utilisation had returned to expected volumes in some countries by the third quarter of 2020,[12] 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).[5,11,12] 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)[11] 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.[12] 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).[12] 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).[16]

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.[18] 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

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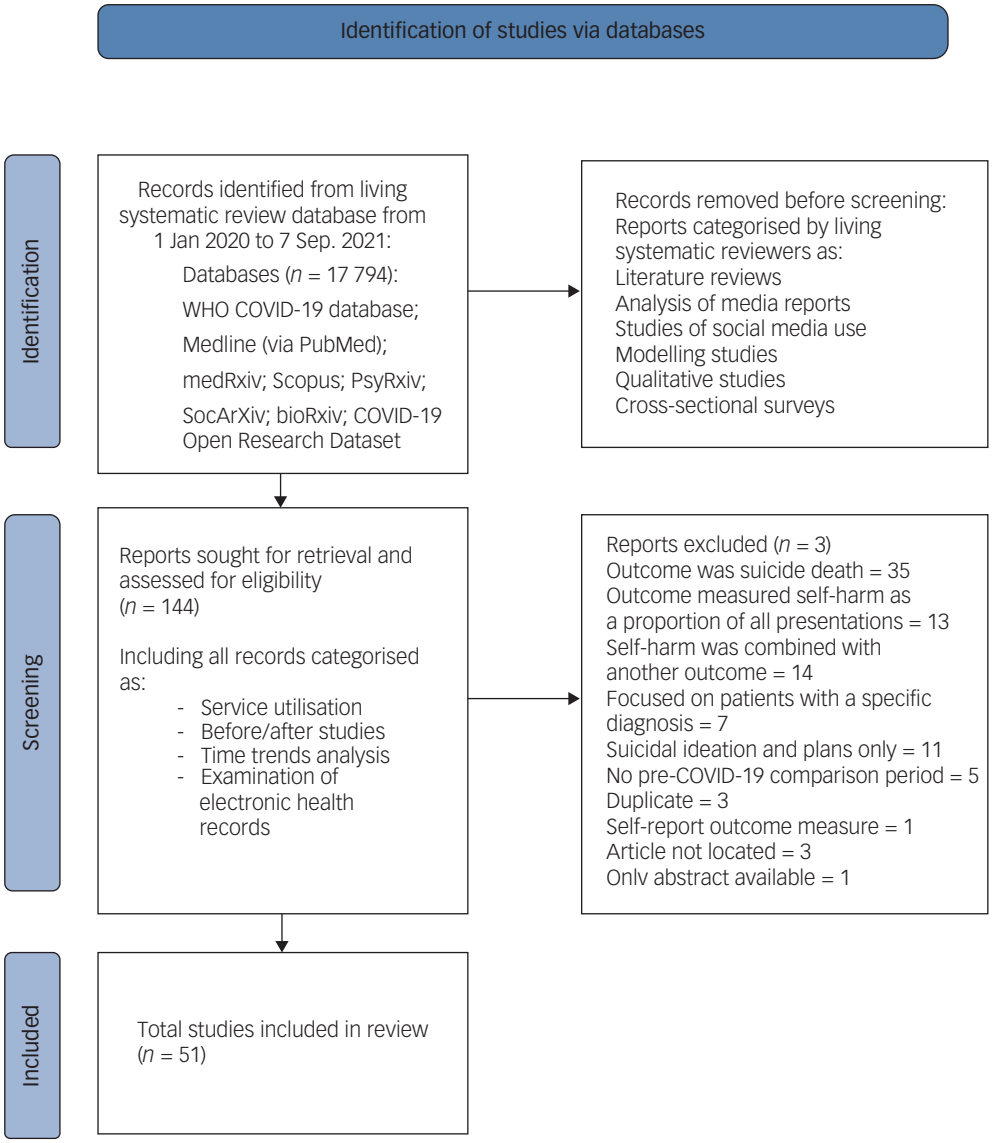

Fig. 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.[16,17]

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

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Table 1 Characteristics of included studies, from 1 January 2020 to 7 September 2021

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
1	Capuzzi et al, 2020[39]	Peer-reviewed article	Emergency department (psychiatric)	Decrease	Not reported	−13%	May 2020			Low	High income
2	Carr et al, 2021[7]	Peer-reviewed article	Primary and secondary	Decrease	Yes	−38% (CI 35–50%)	Apr 2020	No change	Sep 2020	High/moderate	High income
3	Chen et al, 2020[40]	Peer-reviewed article	Liaison psychiatry referrals	Decrease	Yes	Not provided	Aug 2020			Moderate	High income
4	Dragovic et, al 2020[19]	Peer-reviewed article	Emergency department	Decrease	Yes	−26%	May 2020			Moderate	High income
5	DelPozo-Banos et al, 2022[32]	Preprint	Primary and secondary	Decrease	Yes	−40%	Aug 2020	−30%	Mar 2021	High-moderate	High income
6	Gesi et al, 2021[41]	Peer-reviewed article	Emergency department	Decrease	Not reported	−13%	Jun 2020			Low	High income
7	Goncalves-Pinho et al, 2021[20]	Peer-reviewed article	Emergency department (psychiatric)	Decrease	Not reported	−56%	May 2020			Low	High income
8	Harmon et al, 2021[21]	Peer-reviewed article	Emergency department	Decrease	No	−26%	Jun 2020	No change	Nov 2020	Moderate	High income
9	Hawton et al, 2021[22]	Peer-reviewed article	Emergency department	Decrease	Yes	−37%	Jun 2020			Moderate	High income
10	Jollant et al, 2021[8]	Peer-reviewed article	Hospital admissions	Decrease	Yes	−21%	Aug 2020			Moderate	High income
11	Mansfield et al, 2021[6]	Peer-reviewed article	Primary and secondary	Decrease	Yes	−56%[a]	Jul 2020			High/moderate	High income
12	McIntyre et al, 2021[23]	Peer-reviewed article	Liaison psychiatry referrals	Decrease	Not reported	−8.50%	May 2020			Moderate	High income
13	Mourouvaye et al, 2021[38]	Peer-reviewed article	Children's hospital	Decrease	Yes	−50%	Jun 2020			Moderate	High income
14	Nuzum, 2020[42]	Preprint	Emergency department	Decrease	Not reported	−34%	May 2020			Moderate	High income
15	Ontiveros et al, 2021[43]	Peer-reviewed article	Poison registry	Decrease	Yes	−17%	May 2020			Low	High income
16	Pignon et al, 2020[24]	Letter	Emergency department (psychiatric)	Decrease	Not reported	−57%	Apr 2020			Low	High income
17	Steeg et al, 2021[30]	Peer-reviewed article	Primary and secondary	Decrease	Yes	−31 to −41%[b]	Apr 2020	−8% to −14%	May 2021	High-moderate	High income
18	Walker et al, 2020[44]	Peer-reviewed article	Emergency department	Decrease	Not reported	−39%	Apr 2020			Low	High income
19	Yard et al, 2021[29]	Report	Emergency department (12–25 years)	Decrease	Yes	−17% to −26%[c]	Apr 2020	No change	Mar 2021	High-moderate	High income
20	Bothara et al, 2021[45]	Peer-reviewed article	Emergency department	Increase	Yes	Not applicable[d]	Apr 2020			Low	High income
21	Canzi et al, 2020[46]	Peer-reviewed article	Trauma admissions	Increase	Yes	280%	May 2020			Low	High income
22	Gracia et al, 2021[47]	Letter	Multi-service ages 12–18 years	Increase	No	25%	Mar 2021	Change related to Mar 2020–Mar 2021	Mar 2021	Low	High income
23	Habu et al, 2021[48]	Peer-reviewed article	Ambulance calls	Increase	Not reported	36%	Aug 2020			Low	High income
24	Henry et al, 2021[49]	Peer-reviewed article	Emergency department	Increase	Yes	10%	May 2020			Low	High income
25	Holland et al, 2021[33]	Peer-reviewed article	Emergency department	Increase	Yes	6%	Oct 2020			Moderate	High income
26	Karakasi et al, 2020[13]	Letter	Emergency department (psychiatric)	Increase	Not reported	40%	May 2020			Low	High income
27	Moore et al, 2021[50]	Peer-reviewed article	Ambulance calls	Increase	Not reported	8%	Jul 2020			Moderate	High income
28	Nia et al, 2021[51]	Peer-reviewed article	Trauma admissions	Increase	Yes	50%	Apr 2020			Low	High income
29	Olding et al, 2021[14]	Peer-reviewed article	Trauma admissions	Increase	Not reported	60%	Apr 2020			Low	High income
30	Popp et al, 2021[25]	Peer-reviewed article	Plastic surgery	Increase	Yes	Not applicable[d]	Apr 2020			Moderate	High income
31	Rhodes et al, 2020[15]	Peer-reviewed article	Trauma admissions	Increase	Not reported	83%	Apr 2020			Low	High income
32	Bruns et al, 2021[52]	Preprint	Children's trauma admissions	No change	No		May 2020			Low	High income
33	Chang et al, 2020[53]	Peer-reviewed article	Trauma admissions	No change	No		Mar 2020			Low	High income
34	Chiba et al, 2021[54]	Peer-reviewed article	Trauma admissions	No change	No		Jun 2020			Low	High income

(*Continued*)

Table 1 (*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[55]	Preprint	Emergency department (up to 19 years)	No change	No		Not applicable			Low	High income
36	Gil-Jardiné et al, 2021[26]	Peer-reviewed article	Emergency health contact centre	No change	Not reported		May 2020			Low	High income
37	Jacob et al, 2020[27]	Peer-reviewed article	Trauma admissions	No change	Not reported	36%	Apr 2020			Low	High income
38	Joyce et al, 2021[35]	Peer-reviewed article	Emergency department	No change	Not reported		Apr 2020			Moderate	High income
39	Page et al, 2021[16]	Letter	Emergency department	No change	No		Jul 2020			Low	High income
40	Prados-Ojeda et al, 2021[56]	Peer-reviewed article	Emergency department	No change	Not reported		May 2020			Low	High income
41	Rajput et al, 2021[57]	Peer-reviewed article	Trauma admissions	No change	no		May 2020			Low	High income
42	Shields et al, 2021[36]	Peer-reviewed article	Emergency department	No change	No		May 2020			Moderate	High income
43	Yeates et al, 2021[58]	Peer-reviewed article	Trauma admissions	No change	No		Jun 2020			Low	High income
44	Ougrin et al, 2021[28]	Peer-reviewed article	Emergency department (up to 18 years)	Decrease	Yes	−23%	Apr 2020			Moderate	Middle and high income
45	Eray and Sahin, 2021[59]	Peer-reviewed article	Children's hospital admissions	Decrease	Not reported	−57%	Sep 2020			Low	Upper-middle income
46	Fidancı et al, 2021[60]	Peer-reviewed article	Children's hospital	Decrease	Not reported	−83%	Oct 2020			Low	Upper-middle income
47	Thongchuam et al, 2021[34]	Peer-reviewed article	Surgery after self-poisoning	Increase	Yes	55%	Jun 2020			Moderate	Upper-middle income
48	Stašević-Karličić et al, 2021[61]	Peer-reviewed article	Emergency department (psychiatric)	Increase	Yes	14%	Aug 2020			Low	Middle income
49	Knipe et al, 2021[31]	Peer-reviewed article	Hospital admission after self-poisoning	Decrease	Yes	−32% (CI 12–48%)	Aug 2020			High-moderate	Lower-middle income
50	Jhanwar et al, 2020[62]	Peer-reviewed article	Emergency department	Decrease	Yes	−37%	Apr 2020			Low	Lower-middle income
51	Shrestha et al, 2021[37]	Peer-reviewed article	Emergency department	Increase	Not reported	44%	Jun 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.

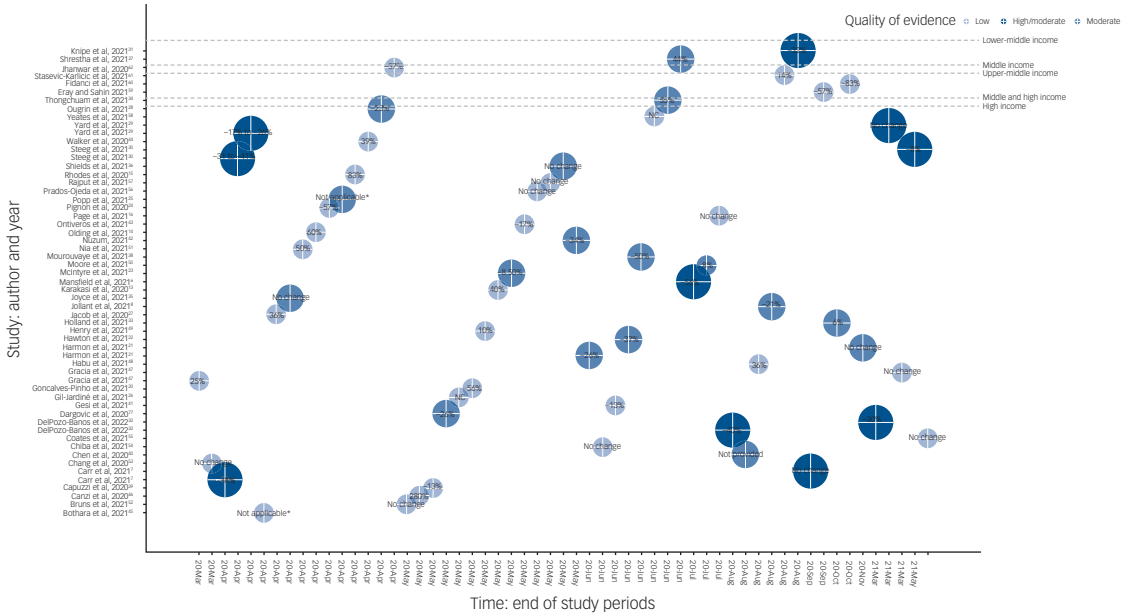

Fig. 2 Percentage change in presentations to health services ordered by country income level and latest month of study observation period, grouped by study quality. Studies are grouped by country income level and ordered alphabetically within income level. The size of the data points corresponds to study quality, with larger bubbles denoting higher-quality studies. Some studies report percentage changes for more than one time period and therefore have more than one data point. *Zero at baseline. ¶ −26% among ages 12–17 years and by −17% among ages 18–25 years. § −31% for all episodes and −41% for incident episodes.

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 presentations[35] 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.[31] 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

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17% among ages 18–25 years in April 2020. However, when examining presentation rates over the longer term through to March 2021, increases compared with equivalent weeks in 2019 were found for girls aged 12–17 years. Among boys aged 12–17 years and all adults aged 18–25 years, rates through to March 2021 were in line with those in 2019.[29] Another high-moderate quality study, based in the UK, reported increased numbers of presentations to primary and secondary care among all adolescents aged 10–17 years, up to May 2021.[30] These findings are in contrast to those reported in other moderate-quality studies that used earlier COVID-19 observation periods (up to June 2020), where younger people were found to have significantly fewer self-harm presentations than in the equivalent period in 2019.[28,38]

Discussion

Main findings

All of the studies assessed as high-moderate quality reported decreases in numbers of presentations to health services following self-harm, and were conducted in settings reflecting a broad spectrum of self-harm with higher frequency of presentations, such as primary care. We found that settings treating episodes of self-harm with lower frequency and higher lethality, such as trauma admissions and ambulance calls, were overrepresented among studies that reported increased or no change in demand. Among higher-quality studies that included months from 2021 in their observation period, numbers of people seeking help from health services were found to be either closer to pre-pandemic levels, although still lower than expected, or in line with expected numbers. Evidence from 2021 also suggested there was increased utilisation of health services following self-harm among adolescents, particularly so for girls. However, there were relatively few studies including follow-up months from 2021, and they were limited to those originating from high-income countries.

Strengths and limitations

This systematic review is the first to examine up-to-date evidence regarding associations between the COVID-19 pandemic and frequency of health service presentations for self-harm. An established, peer-reviewed, living systematic review methodology,[11] with ongoing data extraction by a panel of suicide prevention experts, was used as the basis for this review. This approach, along with a specific focus on studies comparing frequency in presentation to health services following self-harm in different settings during the COVID-19 pandemic versus antecedent pre-pandemic periods, enables timely synthesis of the evolving evidence base.

The findings of our study should be interpreted with some important caveats in mind. We excluded six studies that reported self-harm and suicidal thoughts as a combined measure, as it was not possible to make a like-for-like comparison with findings pertaining specifically to acts of self-harm. However, we included studies using a broad range of definitions of self-harm, including those that measured and reported on suicide attempts or self-poisoning methods only. We also did not include temporal trends in the proportion of all presentations that were for self-harm as a primary outcome, because of the limitation that this outcome would be affected by changes in the overall number of presentations for reasons other than self-harm. A minority ($n = 4$) of studies included in our systematic review were preprints and therefore not peer-reviewed. We considered it important to include preprints to capture the rapidly evolving evidence-base during the COVID-19 pandemic. Finally, one of our aims was to synthesise evidence on health service presentations beyond 2020. Although only four of 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.[1] 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 higher-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.[63] Consequently, many low- and middle-income countries have experienced major subsequent waves of COVID-19 well into 2021.[64] 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.[65] 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.[66] Continued surveillance is therefore needed in all settings.

Our findings are consistent with reports of increased acuity of presentations in some mental health services.[67,68] 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.[69] 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.[4] There is some evidence that, following initial deteriorations in 2020, some people's mental health improved following easing of lockdown measures.[70] 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.[70] 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

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by the same person.[71] 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.[72,73]

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.[74] Another study conducted in a paediatric emergency department in New York City, USA, found that although overall there were significant decreases in emergency attendances, visits 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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Supplementary material

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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.W. and D.J.G. conducted the initial screening. 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.A.M., L.S. and N.K. established the underpinning living review 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

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