

'Admissions to paediatric medical wards with a primary mental health diagnosis: a systematic review of the literature'

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ABSTRACT

Objective: To systematically review the literature describing children and young people (CYP) admissions to paediatric general wards because of primary mental health reasons, particularly in MH crisis.

Design: PubMed, Embase, PsychINFO, Web of Science and Google Scholar were searched, with no restriction on country or language. We addressed five search questions to inform: trends and/or the number of admissions, the risk factors for adverse care, the experiences of CYP, families/carers and health care professionals (HCPs) and the evidence of interventions aimed at improving the care during admissions.

Two reviewers independently assessed the relevance of abstracts identified, extracted data and undertook quality assessment. This review was registered with Prospero (CRD42022350655).

Results: Thirty-two studies met the inclusion criteria. Eighteen addressed trends and or numbers/proportions of admissions, 12 provided data about the views/experiences of HCPs, two provided data about CYPs' experiences and four explored improving care. We were unable to identify studies examining risk factors for harm during admissions, but studies did report the length of stay in general

paediatric/adult settings while waiting for specialised care, which could be considered a risk factor while caring for this group.

Conclusions: MH admissions to children's wards are a long-standing issue and are increasing. CYP will continue to need to be admitted in crisis, with paediatric wards a common location whilst waiting for assessment. For services to be delivered effectively and for CYPs and their families/carers to feel supported and HCPs to feel confident, we need to facilitate more integrated physical and MH pathways of care.

INTRODUCTION

Mental health (MH) disorders represent a significant burden on the health of children and young people (CYP) (1) with some CYP admitted to hospital because of a deterioration in their MH (2). In an emergency, such admissions tend to be to medical children's wards (3) which may serve as an acute place for safety/assessment (4) or provide interventions such as treatment for overdose (5) or nutritional rehabilitation (6). Paediatric wards can also be a place of admission while waiting for a specialist MH admission, sometimes called "psychiatric boarding/psychiatric boarders (PBs)" (7,8). Although CYP with acute MH presentations have always formed part of the caseload of paediatric medical wards (3), clinicians are reporting that these admissions are becoming more common and more complex since the SARS-CoV-2 pandemic (7,9,10). MH admissions to paediatric wards present challenges for service users and providers alike. Paediatric wards may not be safely prepared for the numbers or specialist care needed (3).

A number of systematic reviews have also found limited efficacy for interventions to reduce admissions of CYP with a MH crisis (2,11), and there is evidence that CYP admitted with a MH diagnosis are more likely to require readmission (12). Therefore, such admissions are not just considerations for providing care in paediatric medical wards in the here and now but are likely to remain so for the foreseeable future. This calls for a focus on the quality and safety of care for such admissions for CYP, families/carers and the teams caring for them (13) to which an up-to-date synthesis of the published literature can contribute.

Whilst several systematic reviews have focused on the care of CYP presenting to emergency departments (ED) with MH disorders (14–16), at the time of writing we were unable to find any systematic reviews on admissions to paediatric wards. Our broad systematic review of the literature on acute MH admissions to paediatric medical wards was carried out using PRISMA guidelines. We asked five questions: 1) To inform the size of the problem, what is the evidence for trends in the number of admissions and/or the number/proportions of CYP admitted to paediatric or adult wards because of a primary MH diagnosis?; 2) To inform factors that can impact care, what are the risk factors for poor care for CYP and families/carers during admissions to paediatric wards (or adult general wards) because of a primary MH diagnosis?; 3) To examine the context of care, what are the reported experiences of HCPs on paediatric wards (or adult general wards) during the admissions of CYP because of a primary MH diagnosis?; 4) To understand CYP and families/carers' experiences as part of the context of care, what are the reported experiences of CYP and their families/carers during admissions to paediatric wards (or adult general wards) because of a primary MH diagnosis?; 5) To inform about support during MH admissions, is there evidence of interventions or quality improvement projects aimed at improving the care of CYP and families/carers during admissions to paediatric wards (or adult wards) because of a primary MH diagnosis?

METHODS

Protocol and registration

Our review protocol was registered with PROSPERO registry of systematic reviews (CRD42022350655) (Appendix 1).

Eligibility criteria

We included full-text publications since 1990 with no language restrictions and including observational studies, qualitative studies, reports by professional bodies, systematic reviews and randomised controlled trials reporting on admissions of CYP (≤ 18 years) to any paediatric ward or adult general ward with a

primary MH diagnosis. We included studies involving CYP with any mental disorder or mental health presentation, so long as it was the primary reason for admission. In studies where only average age was reported, studies were eligible if the average age of participants was ≤ 18 years. We excluded studies which exclusively reported on CYP presenting to the ED and those that reported admissions solely of participants aged >18 years.

Search method for identification of studies

We searched PubMed, Embase, PsychINFO and Web of Science (1990 to April 2023). An additional search of Google Scholar was performed to identify reports which might contain unpublished data/additional studies. Search terms developed in conjunction with a clinical librarian were: (admission* OR admitted OR admittance OR hospitalized OR hospitalised OR treated OR inpatient* OR in patient* OR boarding OR boarders OR psychiatric boarders) and (paediatric ward* OR children* ward* OR pediatric ward*) and (mental health* OR psychiatric or psychological). Specific search terms for each database are shown in Appendix 2. Reference lists of selected articles were reviewed to identify additional studies.

Study selection process

After duplicates were removed, two researchers (AVV, AS) independently reviewed titles and abstracts for inclusion. Differences were resolved by discussion with a third reviewer (LH). The same reviewers independently extracted information from selected studies to address the five review questions above.

Quality assessment

The reviewers independently assessed included studies for quality. For qualitative studies, the Critical Appraisal Skills Programme (CASP) tool was used. This consists of 10 questions (scored as 'yes', 'can't tell' or 'no') that address the rigour of the research methodology and the findings' credibility. We then

followed Fullen et al's (17) proposal that if two-thirds scored 'yes', it was rated 'high', between four and six 'yes' was rated as 'moderate', and if over two-thirds were rated 'no', it was scored as 'poor' quality. For quantitative studies, the Appraisal tool for Cross-Sectional Studies (AXIS) was used. The AXIS tool aims to aid systematic interpretation of a study and to inform decisions about the quality of the study.

Analysis

We found insufficient studies to perform meta-analysis and so present out findings in narrative format for each of our five questions.

RESULTS

Description of included studies

Thirty-two studies met the inclusion criteria (Figure 1). The most common reasons for exclusion were full text unavailable, ED admissions only and irrelevance to our questions. Ten were US studies, seven were from the UK, six were from Australia, and the remaining were from Paraguay (n=1), Chile (n=1), France (n=1), Taiwan (n=2), Canada (n=1), the Republic of Ireland (n=2) and Germany (n=1). Detailed findings of the included studies are collated in Tables 1-4. Eighteen studies addressed trends and or numbers/proportions of admissions (3,4,6-8,18-30), 12 provided data about HCPs views/experiences (4,31-41), two provided data about CYP views/experiences (37,42) and four aimed at improving the care during admissions (6,40,43,44).

The review included CYP ≤ 18 years, with a range from 4 to 18 years, with only 15 studies providing a sex description (6,7,26,27,29,37,42,8,18-24). In most of the studies, females made up 51% to 97% of the sample; only one study included gender-minority participants (42). CYP were admitted to paediatric wards with various MH diagnoses such as anxiety disorders, depression, obsessive-compulsive disorder, eating disorders, suicide attempts (SA) and suicidal ideation (SI). Finally, the review also included HCPs

with a variety of roles, such as generalist HCPs, paediatricians, dieticians, paediatric nurses and paediatric residents.

Quality assessment

We assessed nine studies using the CASP tool (Appendix 3, Table S1). Six studies were rated high quality (31,35,36,39,41,42), which represents 67% of the total studies assessed (n=9), two (33,37) moderate quality (22%) and only one (40) low quality (11%). We assessed fifteen studies using the AXIS scale (Appendix 3, Table S2). In 11 studies (73%) it was unclear what methods were used to determine the sample size (7,8,18,21–25,28,29,32). Only one study (7%) provided clear information about the measurements undertaken to address non-response (22), and none reported clear information about concerns around non-response bias. Five studies (33%) did not provide clear methods to determine statistical significance or precision estimates (8,18,21,24,28) and 10 (67%) did not disclose if funding sources or conflicts of interest might affect authors' interpretation of the results (19–24,26,28,32).

We were unable to assess two mixed methods because of the lack of a clear mixed-method question/objectives (38) and insufficient information on the qualitative methods to address the data collection (34) (see screening questions of the Mixed Methods Appraisal Tool 2018-<http://mixedmethodsappraisaltoolpublic.pbworks.com/>). One cross-sectional study was not assessed due insufficient information on the methodology (3). Moreover, we did not find an appropriate tool that allowed us to assess studies that focused on describing the implementation/description of workshops, teaching weeks, working models/programs and clinical audits (4,6,30,43,44).

Insert Figure 1

Trends/number/proportions of admissions of CYP

We found 18 studies reporting numbers and proportions of primary MH admissions of CYP ≤18 years to paediatric settings (Table 1). Nine used a retrospective chart review design for reporting admissions to

single hospitals (7,8,18,21–23,26,28,29). Ibeziako et al (7) reported 3799 paediatric MH admissions to the ED and inpatient units at a paediatric hospital from March 2019 – February 2021. Duarte and Zelaya (26) reported 180 admissions of patients with psychiatric diagnoses (January-August 2015); 74.4% required admission to the paediatric ward or hospital inter-consultation because of psychiatric pathology or primary psychiatric disorders. Wallis (28) reported 111 emergency admissions (83 patients) of CYP with MH needs to the paediatric ward between August 2017 and July 2017. Gallagher et al (8) reported 437 PBs admissions on inpatient paediatric units between January and December 2013. Santillanes et al (29) reported 308 visits (265 patients on involuntary psychiatric hold) from April 2013 to April 2015; 1% of visits resulted in admissions to the paediatric ward. Claudius et al (18) reported 1108 patients on an involuntary psychiatric hold between July 2009 and December 2010; 50.1% were admitted to the general paediatric medical unit. Smith et al (21) reported that yearly admissions to the paediatric unit of patients with a psychiatric diagnosis ranged from 25 per year to 45 per year over the five years studied (1998 to 2003). Mansbach et al (22) reported 315 paediatric admissions at inpatient and ED units from July 1999 to June 2000; 33% were boarded on the medical/service floor. Valdivia et al (23) reported 46 patients admitted for suicide SA at a paediatric ward between October 1995 and September 1999.

Four studies analysed large databases that included the reporting of MH admissions and discharges (19,20,25,27). Using the Paediatric Health Information database Plemmons et al (27) identified, between 2008 and 2015, 115,856 SA and SI encounters across 31 hospitals of which 67,588 resulted in an inpatient hospitalization in a children's hospital. Using the representative Kids' database for 2000, Levine et al (20) reported that care for SA patients (n= 32,655) was provided in adult hospitals (83.3%), children's units (10.2%) and children's hospitals (4.4%). Using the Nationwide Inpatient Sample (NIS), Case et al (19) analysed data between 1900 and 2000 (n≈1000 hospitals) reporting non-significant changes in CYP MH disorders discharges from community hospitals (Per 1000 children: 1.9 vs 2.0 [95% CI -0.4 - 0.6], respectively). However, CYP discharges ages 6-13 years rose significantly (26.7% [5,727/21,450] in 1990 vs 34.4% [10,179/29,590] in 2000; p<0.001). Finally, Kölch et al (25) analysed data for MH admissions in CYP from Germany, comparing the first six months of 2019 (pre-pandemic) and of 2021 (during the

pandemic). They found no change in the number of admissions to specialist MH inpatient care for CYP with anxiety disorders or obsessive-compulsive disorders between time points. However, there was increase in patients with anorexia nervosa (AN) to both general paediatric wards and specialist MH inpatient setting, with a higher burden of cases reported in paediatrics wards - 2019: 611 vs 2021: 1,057). Three studies reported data from surveys. Hudson et al (4) surveyed paediatricians working in acute paediatric services in England and received responses from 22% of all acute wards in England; they found that 88% of respondents reported increases in MH admissions between January and March 2021 compared with the same period in 2020 (4). Gasquet and Choquet (24) reported 430/11,242 SA records between December 1988 and March 1990 among 164 hospitals; 174/430 patients were admitted to the paediatric wards (24). Royal College of Paediatrics and Child Health surveyed all general paediatric services in the UK in 2019 and found that across sites 6% of the general paediatric inpatient beds in the UK were occupied by CYP with a primary MH disorder (3). Finally, two studies that describe the development/implementation of programs for patients with eating disorders (EDs) reported, as part of this description, the number of admissions. Street et al (9) reported that from August 2012–August 2015, 31 patients with EDs were admitted to the general paediatric ward in Exeter. Compared to admissions between 2008 and 2010 (seven admissions), admissions increased. Suetani et al (30) reported an increase in the number of patients admitted into the paediatric inpatient unit for treatment of EDs at the Flinders Medical Centre in Australia. From over 20 per year in 2007/2008 to 80 in 2012/2013.

Insert Table 1

HCPs' experiences

Twelve papers reported experiences of HCPs (Table 2). Six were qualitative (semi-structured or in-depth interviews and focus groups) (31,33,35–37,39) and two mixed-method (38,41). These studies used a range of epistemological perspectives (grounded theory, content analysis, thematic analysis and phenomenology) for data analysis. Four other observational studies used a questionnaire to survey HCPs

caring for CYP during admissions (4,32,40), with one applying thematic content analysis using data derived from open-ended questions (34). Eight studies provided evidence suggesting that a concern of HCPs was lack of skills/knowledge and confidence to care for CYP admitted in acute paediatric wards (4,31,32,34,36,39–41). Four studies also reported HCPs' concerns about the appropriateness of paediatric ward environments for the treatment of this group of patients. Commonly, HCPs reported difficulty in focusing on patients with MH problems in the acute ward due to the busy and complex make-up of patients across wards, and stressed the need for separate units/rooms to treat this group (32,35,38,39). Other reported experiences was a lack of support from MH professionals (4,40), feeling frustration because of the lack of knowledge/time/resources while caring for this group (33,40,41) and the difficulty of establishing therapeutic relationships (31,35,41). HCPs however reported their desire for more knowledge about MH resources and how to safely allocate and plan care for them (36) and also positive impacts of training applied to experience caring for CYP with mental health problems to enhance competence/confidence (32,34).

Insert Table 2

CYPs' experiences

We found two qualitative studies examining CYP experiences during admissions (37,42) (Table 3). Worsley et al (42) explored the experiences of adolescents during boarding hospitalization following SI or SA (n=27). Participants expressed appreciation for compassionate clinicians and for information about what to expect during their hospital stay. Ramjan and Gil (37) interviewed 10 adolescents with anorexia (AN) admitted to the acute care paediatric setting within an inpatient behavioural program. One participant described her first admission as a “terrible, traumatic” experience. Others recalled emotions, including fear, anger, depression, and confusion.

Insert Table 3

Improving the care of CYP and their families/carers during admissions

We found four studies aimed at improving the care of CYP during admissions (6,40,43,44) (Table 4). Todd et al (43) carried out a MH teaching week with HCPs to improve the quality of care/confidence when working with this group. Overall, after the teaching session, 89% per cent reported improvement in their confidence in managing MH presentations in paediatrics. However, there were no sustained improvements in the care of MH patients when comparing the audit from March 2021 (pre-teaching week) with the post-teaching week audit (January 2022). Bolland et al (44) carried out an interactive workshop to promote HCPs' communication skills with CYP with MH needs. Participants (n=34) completed an evaluation of the session and reported that the workshop provided them with tools/strategies to try in practice. Six weeks after the workshop, there was evidence of improved communication skills and participants felt more confident when communicating with CYP. Street et al (9) developed a joint working model with Child and Adolescent Mental Health Services (CAMHS) to avoid specialist CAMHS-eating disorders inpatient unit admissions. They reported positive impacts provided by communication and joint working between professionals, in particular between physical health and MH professionals. Watson et al (37) reported on a project to improve paediatric nursing liaison with CAMHS nurses providing support/advice to paediatric nurses. A two-day programme was carried out which aimed to enable nurses to become better informed on the holistic aspects of MH care. Feedback indicated that nurses felt able to contact CAMHS colleagues for advice/guidance. Nurses were more confident in challenging approaches/attitudes of paediatricians/other disciplines as they established new working practices/methods for care.

Insert Table 4

DISCUSSION

To our knowledge, this is the first systematic review on CYP admissions to paediatric wards with a primary MH indication. We found a range of studies reporting on numbers of such admissions indicating that these admissions are common across a range of countries, however only a small number of studies addressed trends over time. Those that did suggested increased numbers over time, especially since the pandemic. Reasons cited for increased admissions in those papers included lack of joint working between paediatric medical and MH services (6), unavailability of inpatient psychiatric placements (7,8,22), shortage of paediatric liaison psychiatry services (28) and the increasing prevalence of MH conditions in CYP such as suicide ideation or attempt and depressive disorders (19,27). We also found evidence of HCP working on paediatric wards of concerns about skill sets to manage CYP with MH presentations, and from some questioning the appropriateness of the acute ward for this care. Specific concerns included a lack of guidelines or standards for delivering care in this acute setting (28), lack of knowledge about what MH resources exist and how to allocate them (36), little knowledge of CAMHS provision (40), lack of separate units in the ward to care/treat this group (32,35,38,39) and not being able to offer specific skills, such as competency in communicating with this group (41) and restraint practices (4). Available evidence of CYP experiences was very limited and we found no studies on families/carers experiences. A main finding from CYP experience was a need for clear communication and compassionate clinicians caring for them. We found no studies addressing the impact of CYP admitted to wards with a mental health indication upon other patients or vice-versa. Finally, we found a limited number of studies reporting efforts to improve the care of CYP during admission. These were all service evaluation papers rather than trials, limiting the quality of evidence provided, but they highlighted the importance of co-working and training to improve competencies and confidence, albeit with a need for repetition of training over time to maintain these. We found no published evidence of specific risk factors for adverse care for CYP and families/carers during admissions.

Our review therefore provides important information for care of CYP admitted to general paediatric wards as well as key areas of need for further research. Better training and support for staff, as well as clear communication to CYP through their admission are important. Training opportunities may need to be repeated to ensure sustained impact. Joint working, between professionals with physical health and MH expertise also appears important, fraught as this is with availability, and calls for joint training across professions for this domain. Whilst several papers have reported absolute numbers, there is a clear need for bigger studies utilizing nationally available data on trends of admissions to better inform and plan care and workforce needs at both a local and national level. The number of studies examining CYP and carer experience and needs is lacking and requires more study, as does the potential bidirectional impact of CYP admitted with MH problems on wards and CYP there for other reasons. Lastly, there is a clear need for the development of interventions to improve the experience and quality of care for CYP admitted to paediatric wards and where possible these interventions should be tested and reported with better quality methodology such as trials. Given CYP's experiences, such studies should utilize the input of CYP and carers in co-design.

Strengths and limitations.

We conducted a broad search across a range of important questions on this topic using five databases, and with independent screening of study eligibility. That said, despite finding sufficient suggestive evidence for clinical and research recommendations, we found few relevant studies, generally with small sample sizes and of limited in quality in relation to the questions we were asking. Although we carried out a Google Scholar search to identify unpublished data and snowballed references, we know that paediatric centres frequently have unpublished audits and service evaluations which we will have missed.

In summary, for services to be delivered effectively, for CYPs and their families/carers to feel supported and HCPs to feel confident, we need to strengthen the evidence base, but meanwhile to facilitate more robustly evaluated integrated physical and MH pathways of care, better (and regular) training and

communication to CYP. These admissions are common and appropriate and safe care requires a significant increase in the amount and quality of research to provide this.

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Contributors: LH, FH, RV conceived the study. LH and AVV designed the search strategy. AVV and AS carried out the literature searches. AVV and AS screened the titles, abstracts and full texts and carried out the data extraction and quality assessment. AVV wrote the first draft and LH and HR were involved in the interpretation of data and provided valuable contribution towards reviewing, editing and completion of the final draft. All authors had access to all the data in the study and the responsibility for the decision to submit for publication.

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Competing interests: None declared.

Data availability: All data relevant to the review are included in the article or uploaded as supplementary information.

What is already known on this topic?

- Anecdotally, there is evidence that both the number of paediatric admissions and the severity of MH crisis in CYP have increased.
- Such admissions can present specific challenges for both service users and providers.
- There is no published systematic review on this topic.

What this study adds?

- This is the first systematic review on CYP admissions to paediatric wards with a primary MH indication.
- Evidence suggested increased numbers of admissions over time and HCPs reported concerns about skill sets to manage CYP with MH presentations.
- There is limited evidence on CYP experiences. A main finding was a need for clear communication and compassionate clinicians caring for them.

How might this study affect research, practice or policy?

- The data provided by the review will be used to produce recommendations and transformation plans to share with policymakers, commissioners, service leads, and professionals.
- This review will enable advocating for and improving cultural views on CYP with MH crises as part of the acute paediatric system.

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Table 1. What is the trend in the number of admissions and the number/proportions of CYP admitted to paediatric wards or adult wards because of a MH diagnosis?

Study	Design	Setting/sample	Results
Kölch et al (2023), Germany	Research letter Analysis of Nationwide Hospital Treatment Data	Cases with psychiatric diagnoses treated on an inpatient basis in child and adolescent psychiatric and psychotherapeutic settings and in paediatrics	Data was analysed for the first six months of 2019 (pre-pandemic) and 2021 (during pandemic). A fall in case numbers was seen in the analysed diagnosis during the pandemic in child and adolescent psychiatry and psychotherapy (24,408 vs 23,777; %change= 2.6%) and in paediatrics settings (14,853 vs 12,213; %change= 17.8%). Increases and decreases in numbers were seen for individual diagnosis by specialty. For example, in patients with anxiety disorders or obsessive-compulsive disorders changes were only seen in paediatrics (2019: n=368 vs 2021: n=452). In patients with AN, changes were seen in both specialties, with higher cases reported in paediatrics in 2021 (psychiatry and psychotherapy - 2019: 800 vs 2021: 962) and paediatrics wards - 2019: 611 vs 2021: 1,057).
Hudson et al (2022), UK	Audit – online survey	General paediatrics units 36 paediatricians	Thirty-six responded, representing 22% of all acute wards in England. Between 1 January and 31 March 2021, 88% sites reported increases in numbers of admissions of CYP with a primary MH diagnosis compared with previous years (2019 survey reported that 6% general paediatric beds were occupied by CYP with MH problems), with more than half reporting that at least a quarter of all admissions were for a primarily MH reason. Median reported admission rate across centres was 13 per month, with a median of 0.5-1 patient per month requiring care under the MH Act.
Ibeziako et al (2022), US	Retrospective chart review from March 2019 to February 2021	Paediatric hospital (ED and inpatient units) CYP ≤18 years	There were 3799 pediatric MH admissions to the ED and inpatient medical/surgical units during the 2-year study period. Length of admission (2.5 vs 5.5 days, p<0.001) and length of boarding (2.1 vs 4.6 days, p<0.001) more than doubled during the pandemic year. Of all the pediatric patients who presented with MH related complaints during the pandemic, 71.5% (n = 1272) boarded in the ED and/or inpatient units for ≥1 day and 50.4% (n = 896) experienced extended boarding periods of ≥2 days awaiting placement, compared with 56.9% (n = 1150) and 30.2% (n = 611), respectively, during the pre-pandemic year. The pediatric MH related emergency visits and admissions that were reported from March 2019 – February 2021 was 3.9% of the total number of ED visits/admissions and pediatric ward admissions at the hospital during those months.
Royal College of Paediatrics and Child Health (2020)	Report of a survey aimed of getting a snapshot of the state of general paediatric services in the UK.	192 general paediatric services in the UK, 124 (65%) responded	6% of the general paediatric inpatient beds (an average of 23.1 beds per hospital) in the UK were occupied by CYP with a primary MH disorder during the weekday.
Duarte and Zelaya (2019), Paraguay	Retrospective, chart review from January 2015 to August 2015.	Pediatric wards of a general pediatric hospital CYP ≤18 years	During the study period, 7,042 patients were hospitalized, of which 2.5% (180/7,042) had a psychiatric diagnosis. 67.3% (121/180) of the cases that required admission were identified in the ED. Of the total number of patients with a psychiatric diagnosis, 74.4% (134/180) were admitted to the ward or required hospital inter-consultation due to psychiatric pathology or primary psychiatric disorders.

CYP: Children and young people; MH: Mental Health; AN: Anorexia nervosa; MH Act: Mental Health Act; ED: Emergency department; SI: suicide ideation; SA: suicide attempt

Table 1. Continued

Study	Design	Setting/sample	Results
Plemmons et al (2018), US	Retrospective analysis of administrative billing data from the Pediatric Health Information System database between 2008 and 2015	49 children's hospitals CYP 5-10 years	During the study period, 115 856 encounters for SI and SA were identify, representing 1.21% of the 9 574 229 total encounters across 31 hospitals. More than half of SI and SA encounters resulted in an inpatient hospitalization in a children's hospital (n = 67 588; 58.3%); of these, 8913 (13.2%) required intensive care.
Wallis et al (2018), Republic of Ireland	Retrospective chart review between 1 August 2016 and 31 July 2017	Paediatric ward CYP <17 years	There were 111 admissions of 83 individuals totalling 475 bed-days. Authors reported that they have experienced a high level of emergency paediatric admissions following presentations of CYP with perceived MH and behavioural problems.
Gallagher, et al (2017), US	Retrospective chart review between January and December 2013	Inpatient pediatric units The average PBs was a 15.16 ± 2.80-year-old	437 (37.7%) instances of PBs occurred between January and December 2013 representing a more than 50% increase from PB admissions in 2011 and 2012. Compared to 2011 (241, 30.8%) and 2012 (261, 31.2%), PBs increased in both number and proportion of overall psychiatry consultation services. Average length of boarding was 3.11 ± 3.34 days.
Santillanes, et al (2017), US	Retrospective study from April 2013 – April 2015	Paediatric ED and other units CYP <10 years	There were 308 visits by 265 patients in a two-year period. Ninety percent of involuntary psychiatric holds were initiated in the prehospital setting. Fifty-six percent of visits resulted in discharge from the ED, 42% in transfer to a psychiatric hospital and 1% in admission to the pediatric medical ward.
Street et al (2016), UK	Joint working model with CAMHS using short, structured, supported feeding admissions to supplement outpatient treatment in high risk or 'stuck' cases	Acute general paediatric wards CYP with eating disorders (<18 years)	Compared to 2008 and 2010 (seven patients were admitted), admissions to the general paediatric ward increased during August 2012–August 2015 (31 patients were admitted, 30 females, ages 10–17 years). The average length of stay was shorter over 2012-2015 (20 days) in comparison to 2008-2010 (80 days).
Suetani et al (2015), Australia	Description of the Flinders Medical Centre Paediatric Eating Disorder Program (FMC PEDP)	Paediatric inpatient unit CYP <18 years	Significant increase in the number of patients admitted into the unit for treatment of eating disorders. The number of admissions increased from just over 20 per year in the 2007/2008 financial year to 80 in the 2012/2013 financial year.
Claudius et al (2014), US	Retrospective chart review between July 2009 and December 2010	Paediatric ED and other units CYP <18 years	Of 1640 visits, 1108 patients were <18 years on an involuntary psychiatric hold. At the end of their ED stay, 555 (50.1%) were admitted to the general pediatric medical unit. 94.2% (523/555) were admitted for boarding due to lack of psychiatric inpatient bed availability. The 523 patients admitted to the medical ward for boarding accounted for 15.2% of ED admissions to the hospital's pediatric medical unit for that period.

CYP: Children and young people; MH: Mental Health; PBs: Psychiatric boarders; CAMHS: Child and Adolescent Mental Health Service; ED: Emergency department.

Table 1 Continued

Study	Design	Setting/sample	Results
Case et al (2007), US	Analysis of the Healthcare Cost and Utilization Project Nationwide Inpatient Sample (NIS) between 1990 and 2000	Analyses used the 2 yearly end points in which there were 21 450 CYP MH discharges in the 1990 sample and 29 590 in the 2000 sample CYP <18 years	The number and population-based rate of CYP MH disorder discharges from community hospitals did not significantly change between 1990 and 2000 (Total: 120,744 vs 143,729 [95%CI=-8197 - 54,167], respectively; Per 1000 children: 1.9 vs 2.0 [95% CI -0.4 - 0.6], respectively). Significant changes were observed for age, the proportion of child discharges aged 6 to 13 years rose significantly over the period (26.7% [5,727/21,450] in 1990 vs 34.4% [10,179/29,590] in 2000; p<0.001). Median length of stay declined 63% over the decade from 12.2 days to 4.5 days.
Levine et al (2005), US	Retrospective cohort analysis	Representative Kids' Inpatient Database for 2000 CYP median age was 16 years (IQR= 15-19 years)	Care for 32 655 adolescents who attempted suicide was provided in adult hospitals (83.3%; n=27,210), children's units in general hospitals (10.2%; n=3,325) and children's hospitals (4.4%; n=1,453). The median length of stay was 2 days (IQR= 1-6 days).
Smith et al (2004), Canada	Retrospective chart review over the years 1998 to 2003	Paediatric ward CYP <16 years	The total number of admissions of patients with a psychiatric diagnosis ranged from 25 per year to 45 per year over the five years studied. Moreover, in the last three years, the rate of Form 1 (involuntary admission) application increased from one in 1999 to 2000 to 11 in 2002 to 2003 (a 10-fold increase).
Mansbach et al (2003), US	Retrospective cohort study from July 1999 to June 2000	Inpatient and ED units of a children's hospital CYP between ages 4 and 19	315 patients presented to the ED and required psychiatric admission during the study period (<13 years n=184; 10-13year n=94; <10 years n=31). 103 (33%) were boarded on the medical service/floor. 50% of 10-13 years boarded on the medical floor. The total number of boarding days for all boarded patients was 304 with a median of 2 days and a range of 1 to 51 days.
Valdivia et al (2001), Chile	Retrospective chart review between October 1995 and September 1999	Pediatric wards CYP between 7 and 15 years	46 patients were admitted for attempted suicide to the pediatric wards during the four-year period. Thirty-six (78.3%) were female.
Gasquet and Choquet (1994), France	Analysis of the data of a multi-hospital survey carried out between December 1988 and March 1990	Paediatric wards and other departments CYP mean age 16.5 (\pm 1.7 years)	Of 11,242 records collected, 430 were hospitalized suicide attempters. Most youngsters were first admitted to the emergency room and then transferred to an inpatient department: 41.4% (n=174) to a pediatric ward, the others (n = 251) to a variety of medical units-both general and specialized (e.g., haematology, nephrology, dermatology) (27.5%), in-patient emergency wards (17.4%), and psychiatry (9.3%). The suicide attempters referred to a pediatric ward were generally the youngest patients (under 16 years).

CYP: Children and young people; ED: Emergency department.

Table 2 What are the reported experiences of clinical staff on paediatric wards (or adult general wards) during the admissions of CYP admitted because of a primary MH diagnosis?

Study	Design	Setting/sample	Results
Chang et al (2023), Taiwan	Qualitative study - semi-structured interviews Content analysis approach	General paediatric ward 16 HCPs, including 10 nurses, 3 dieticians, and 3 paediatric gastroenterologists	<ol style="list-style-type: none"> 1. Building a trusting relationship first: HCPs cannot easily establish a therapeutic relationship with a patient at the first encounter. Patients are highly defensive and reluctant to express her thoughts and feelings. 2. The key to treatment success: The most difficult aspect of the treatment and care of adolescents with anorexia is whether the patient understands that they have an illness. 3. Consistency of team treatment goals: The nurse and the patient set a weight goal together, and upon achieving the goal, the patient will be allowed outside or discharged from the hospital. 4. Empowerment with knowledge about anorexia: Participants described the lack of knowledge of HCPs, especially nurses and dieticians, in the care of anorexia and the expectation of continuing education related to anorexia. 5. Using different interaction strategies: Some participants would use coercive methods while others use gentleness or physical comfort.
Hudson et al (2022), UK	Cross-sectional – online survey	General paediatrics units 36 paediatricians	In free-text responses, paediatricians reported a lack of MH support and insufficient skills and training, for example restraint practices.
Lakeman and McIntosh (2018), Australia	Quantitative and qualitative data – online survey with open-ended questions Thematic content analysis using data derived from open-ended questions	Emergency department, medical, paediatric wards and MH services of the Cairns and Hinterland Hospital and Health Service (CHHHS) 136 clinicians working with patients with EDs	73% reported little or no confidence working with EDs. Those who reported 70 or more hours of training were 2.7 times more likely to report feeling competent and confident (OR = 2.7, CI = 95%, p < 0.05).
Wu and Chen (2021), Taiwan	Qualitative exploratory study – semi-structured interview Content analysis approach	General paediatric ward at a Children's Hospital 10 nurses	<ol style="list-style-type: none"> 1. Struggling to develop therapeutic relationships: Patients with AN tend to be very defensive, so it is not easy for nurses and patients to establish a therapeutic relationship. 2. Selective focusing: Due to the nature of the acute ward, nursing staff often need to take care of multiple patients simultaneously, which means insufficient time interacting with patients and lack of positive feelings in the AN patient care. 3. Difficulty changing minds: Refers to the fact that patients with AN usually lack a sense of illness. They are involuntarily hospitalized, so they passively cooperate with medical treatment.

CYP: Children and young people; MH: Mental Health; HCPs: Health care professionals; EDs: Eating disorders; AN: Anorexia.

Table 2 Continued

Study	Design	Setting/sample	Results
Hampton et al (2015), US	Qualitative study – focus groups Grounded theory method	Urban paediatric clinics 26 paediatric residents	1. Capabilities: Residents expressed uncertainty regarding knowledge and skills about MH care. 2. Comfort: Residents predominantly expressed discomfort with the provision of MH care. 3. Organizational capacity: Time limitations and continuity of care were specifically mentioned as barriers within their clinic. 4. Coping: They coped by reducing their scope of medical practice by triaging and referring MH care rather than accepting more responsibility. 5. Education: Residents desired more knowledge of what MH resources exist, how to appropriately allocate them, the processes for making referrals, and the strategies for managing patients with specialists.
Ramjan and Gill (2012), Australia	Qualitative study – semi-structured interview Thematic analysis This study examined an inpatient behavioural program for adolescents with AN	One adolescent ward in an acute care pediatric setting 10 paediatric nurses	In general, nurses believed the program's intentions were “honourable” and that they had a duty to follow the program. However, having the role of “prison warden” diffculted the development of therapeutic relationships. Moreover, caring for adolescent patients in this program became “very routine” and “monotonous” for most nurses. Nearly all saw themselves go into “autopilot” on the ward because they “[knew] the routine inside out.”
Buckley (2010), Republic of Ireland	Exploratory mixed methods approach (descriptive statistics and qualitative findings) - Content analysis 'Questionnaire on Nurse's Experiences of Nursing Young People with MH Problems in the Paediatric Ward Setting' (adapted from The Adolescent Mental Health Nursing Questionnaire).	General paediatric wards 39 registered staff nurses	Most nurses (66.6%) were not satisfied with their ability to care for CYP with MH conditions. A total of 76.7% of nurses highlighted that the most difficult problem is nursing a CYP with a MH condition on an acute medical/surgical unit. Overall, 67% of nurses were dissatisfied with having to nurse this group on a general paediatric ward. 86.6% stated that this group should be cared for in separate units. A total of 15.3% of this 86.6% response rate indicated that this group required single rooms on the general paediatric wards.
Happell et al (2009), Australia	Participatory action research – Focus groups Thematic analysis	Paediatric unit of a rural general hospital A purposive convenience sample of all paediatric nursing staff (n = 20; of 24 nurses).	MH care was identified as particularly problematic because of the absence of clear clinical pathways. A lack of understanding of general nurses' role in the management of CYP admitted to the paediatric unit with an acute mental illness, meant participants' confidence in caring for such patients was affected. Participants worried that the unit was not always a place of safety, given the occasionally unpredictable nature of adolescents, particularly those with a MH issue. Participants were concerned that their lack of training and experience with patients with MH issues was detrimental to the delivery of optimal patient care.

CYP: Children and young people; MH: Mental Health; AN: Anorexia.

Table 2 Continued

Study	Design	Setting/sample	Results
Watson (2006), UK	Survey to identify nurse's concerns and attitudes	General wards - Birmingham Children's Hospital National Health Service (NHS) Trust 90 nurses	Sixty-four per cent of those who responded said they nursed CYP with MH issues in their clinical area, and 79% stated that they did not feel experienced in meeting the needs of this group. Moreover, 67% reported little or no support from MH professionals. Nurses appeared to have little knowledge of CAMHS provision. Most (84%) agreed that this is what frustrated them indicating a need to raise awareness about CAMHS structure, input, roles and assessment procedures throughout the trust. This lack of awareness may explain why most respondents felt the trust does not do enough for this group.
Anderson et al (2003), UK	Quantitative and qualitative methods (semi-structured interviews), and a contemporary grounded theory approach to analysis	A&E, paediatric medicine and child and adolescent MH services 45 HCPs	Experiences of frustration in practice: Not having enough time and resources to enhance their relationships with CYP who had engaged in suicidal behaviour. Strategies for relating to CYP: Nurses working in paediatric medicine and A&E came a realisation that they were less able to offer specific skills (i.e., competency in communicating with this patient group).
Ramritu et al (2002), Australia	Questionnaire (Adolescent Mental Health Nursing Questionnaire [AMHNQ]) to survey registered nurses	Paediatric tertiary referral hospital (one acute medical ward and one combined acute medical/surgical ward) 30 generalist nurses	1. Experience in care provision: 57% of participants felt confident in assessing changes in the adolescents' MH and 30% did not feel confident. There was a significant association between years of MH experience and confidence in assessing this group ($p<0.02$) and between the years of MH experience and the usefulness of in-service education provided by MH nurses ($p<0.03$). 2. Satisfaction with ability to care for adolescents: 40% were satisfied with their ability to care for this group. 3. Challenges encountered in care: 90% stated that they encounter problems in caring for this group. The most frequently identified problem was nursing adolescents in an acute medical ward.
King and Turner (2000), Australia	Qualitative research - Audio-taped in-depth interviews Phenomenology	Paediatric wards of general hospital Five registered nurses without psychiatric nursing or MH qualifications	Succinct statement of the phenomenon (6 emergent themes were interwoven): Caring for adolescent females with anorexia nervosa was a journey of frustration. A turmoil of emotions was experienced, which inevitably eroded their resolve of maintaining core nursing values. The feeling of failure and loss of faith was the nadir of despair in the experience. This negative self-image impelled them to change their focus and redirect their efforts to understand the reality of the predicament of the anorexics. This became the pivot for altering attitudes and building resolutions that enabled them to care for their patients.

CYP: Children and young people; MH: Mental Health; HCPs: Health care professionals; CAMHS: Child and Adolescent Mental Health Service; A&E: Accident and emergency.

Table 3. What are the reported experiences of CYP and their families during admissions to paediatric wards (or adult general wards) because of a primary MH diagnosis?

Study	Design	Setting/sample	Results
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Worsley et al (2019), US	<p>Qualitative design using semi-structured interviews</p> <p>Conventional content analysis</p>	<p>Inpatient unit of a children's hospital</p> <p>Convenience sample of 27 CYP (9 – 18 years) hospitalized for SI or SA while they were awaiting transfer to an inpatient psychiatric facility</p>	<p>Specifically, adolescents felt more secure when clinicians described the processes of the emergency department visit, pediatric hospitalization, and inpatient psychiatric hospitalization to them; this helped them feel less stressed about the current hospitalization and the plan for an inpatient psychiatric hospitalization. Adolescents expressed interest in receiving several types of information about psychiatric hospitalization: food, visitation policies, length of stay, entertainment, daily activities and schedules, location, clinicians providing treatment, types of therapy provided, and the physical structure and layout of inpatient psychiatric units. Many participants described feelings of stress, anxiety, and embarrassment when they were asked repeatedly by different clinicians to explain their health history and reason for hospitalization.</p> <p>Many adolescents compared their current hospitalization with previous medical hospital experiences. For some patients, being in a medical hospital felt familiar and comfortable. For other patients, fears related to previous medical experiences emerged; several patients worried about the possibility of painful treatment.</p>
Ramjan and Gil (2012), Australia	<p>Qualitative, naturalistic design, using in-depth, face-to-face, semi structured interviews</p> <p>Thematic analysis</p> <p>This study examined an inpatient behavioural program for adolescents with AN</p>	<p>One adolescent ward in an acute care pediatric setting</p> <p>10 adolescent patients</p>	<p>Adolescents entered the system in one of two ways. Either they were taken to the emergency department by a concerned family member, or they were attending a clinic appointment when the decision was made to admit them.</p> <p>One participant described her first admission as a “terrible, traumatic” experience. Others recalled many emotions, including fear, anger, depression, and confusion, about why they were being admitted. Another participant “never thought that someone could come into hospital for that kind of condition,” and it made her think “I shouldn't be in here.” Another thought she was “en route for a holiday” when her family suddenly admitted her for treatment. As she recalls the day: “I didn't even know we were stopping at the hospital. We were stopping in for counselling or something. I didn't know.... Then I found out straightaway that I was being admitted and my parents had to leave within ... half an hour of dropping me off.”</p>

CYP: Children and young people; MH: Mental Health; SI: suicide ideation; SA: suicide attempt; AN: Anorexia

Table 4. Is there evidence of interventions or quality improvement projects aimed at improving the care of CYP and families during admissions to paediatric wards (or adult wards) because of a primary MH diagnosis?

Study	Design	Setting/sample	Results
Todd et al (2023), UK	An audit of care was carried out followed by a MH teaching week with clinical staff to improve quality of care and staff confidence when working with CYP with MH issues.	Acute paediatric ward of a general paediatric department in a London district general hospital 15 responses prior teaching week 9 responses after teaching week	Staff confidence prior to the multidisciplinary teaching week showed that no doctors felt 'very confident' when reviewing CAMHS patients, with 60% feeling 'somewhat confident' and 19% feeling 'not confident' (n=15). After the teaching week, 89% reported that the teaching week had improved their confidence in managing MH presentations and 100% said that more teaching on this subject would be beneficial. The MH simulation scenario on taking a history from a suicidal adolescent was thought to be the most useful session, followed by teaching from the CAMHS team on the use of rapid tranquilisation in paediatrics and fellow paediatric trainees. However, there were no sustained improvements in the care of MH patients when comparing the Audit from 1 March 2021 with the post-intervention audit from January 2022.
Bolland et al (2017), UK	The authors carried out an interactive workshop to promote CHCPs' communication skills with CYP who have MH needs	General children's wards 34 generalist CHCPs	The workshop was divided into two sessions: Session 1: Delivered by Redthread, a youth work charity. The session focused on communicating with CYP and engaging with them. Participants' perceptions were challenged by using visual exercises and asking them what they saw to highlight the differences in perceptions and the need to be aware of personal biases. Session 2: Delivered by an expert in child and adolescent MH who works in the CAMHS. Communication with CYP with MH needs, with the focus on self-harm and EDs, was explored. Participants were introduced to the PATHOS screening instruments for overdose. This enabled the participants to build on the communication skills developed during session 1. Participants were asked to complete an evaluation of the workshop. All completed the evaluation and reported that the workshop provided them with tools and strategies to try in practice. Their confidence increased because of the workshop, and they had more positive attitudes toward CYP. In terms of long-term benefits, six weeks after the workshop, five CHCPs provided a reflexion report. There was evidence of improved communication skills and participants felt more confident when communicating with CYP.

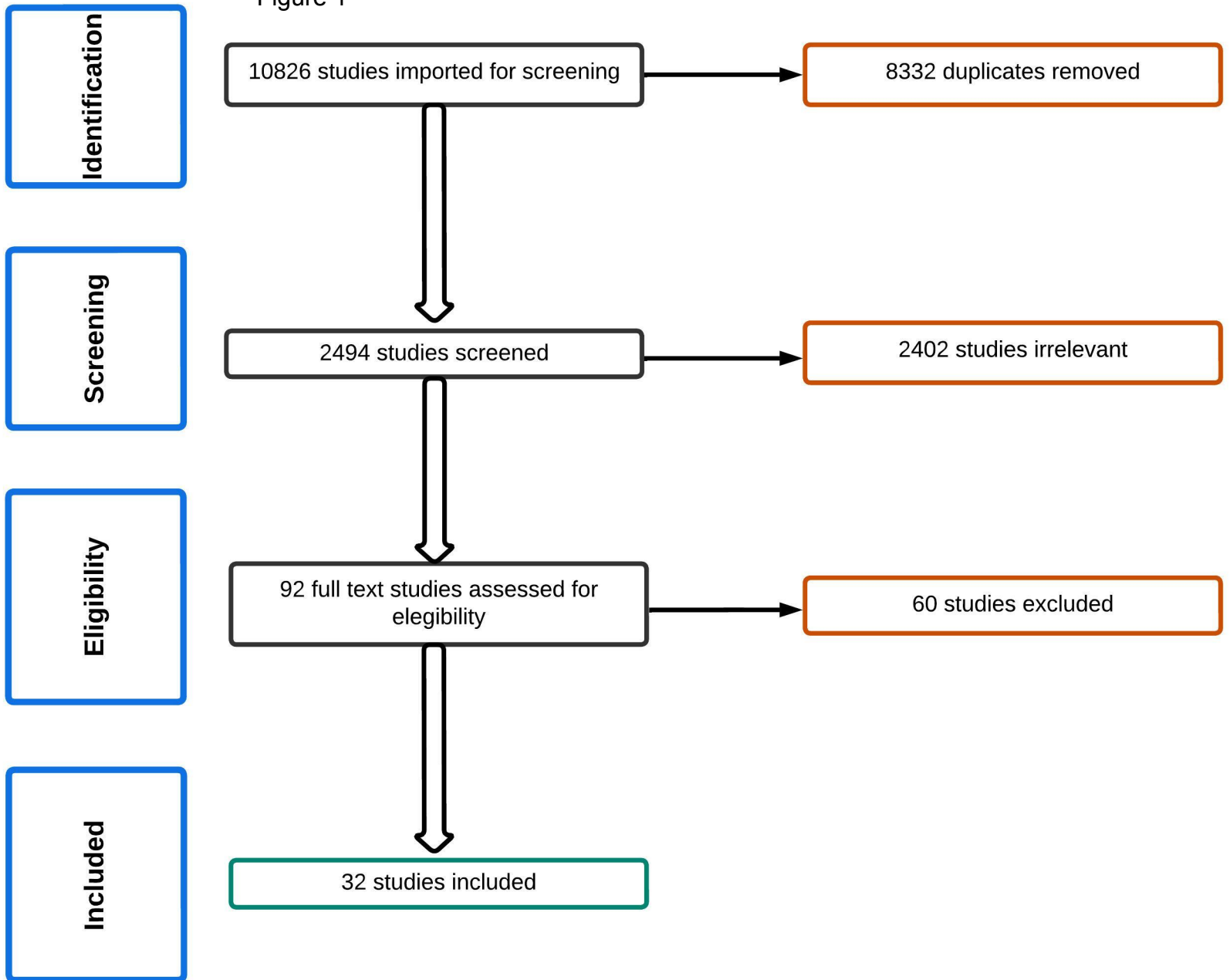
CYP: Children and young people; MH: Mental Health; CAMHS: Child and Adolescent Mental Health Service; CHCPs: children's healthcare professionals; EDs: eating disorders.

Table 4 Continued

Study	Design	Setting/sample	Results
Street et al (2016), UK	Development of a joint working model with CAMHS using short, structured, supported feeding admissions to supplement outpatient treatment in high risk or 'stuck' cases	Acute general paediatric wards 31 patients admitted ages 10-17 years	Local paediatric wards successfully managed most young people in the community avoiding lengthy, expensive, specialist CAMHS-ED admissions (tier 4). Local ward admissions are easier to manage and the change in ward admissions has created a more positive attitude among staff towards CYP. Key to success has been communication and joint working between professionals, and the removal of the artificial divide between physical and MH, and medical and CAMHS teams.
Watson (2006), UK	Cross-sectional – questionnaire Based on the findings reported in Table 2 (see Watson 2006), a project was initiated to improve nursing liaison with CAMHS nurses providing support and advice to general children's nurses.	General wards - Birmingham Children's Hospital National Health Service (NHS) Trust 90 nurses	Once the liaison service was initiated, the biggest component quickly became teaching and education. A one-day study event that soon extended to a two-day programme enabled paediatric nursing colleagues to become better informed on the holistic aspects of MH care. The most significant outcome of the programme was increased awareness of MH issues and the informal discussions generated within paediatric environments. This culminated in the formation of a MH interest group by children's nurses in the trust. Informal feedback indicated that nurses were liberated by being able to contact their CAMHS colleagues for telephone advice and guidance; they were able to question their current or traditional practices. Armed with evidence-based material, nurses were more confident in challenging approaches and attitudes of paediatricians and other disciplines as they established new working practices and methods for care delivery.

CYP: Children and young people; MH: Mental Health; CAMHS: Child and Adolescent Mental Health Service; CAMHS-ED: Child and Adolescent Mental Health Service Eating Disorders inpatient unit.

Figure 1



Systematic review

A list of fields that can be edited in an update can be found [here](#)

1. * Review title.

Give the title of the review in English

A rapid review of current literature on admissions to paediatric wards with a primary mental health diagnosis

2. Original language title.

For reviews in languages other than English, give the title in the original language. This will be displayed with the English language title.

3. * Anticipated or actual start date.

Give the date the systematic review started or is expected to start.

08/08/2022

4. * Anticipated completion date.

Give the date by which the review is expected to be completed.

30/04/2023

5. * Stages of review at time of this submission.

This field uses answers to initial screening questions. It cannot be edited until after registration.

Tick the boxes to show which review tasks have been started and which have been completed.

Update this field each time any amendments are made to a published record.

The review has not yet started: No

Review stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	Yes
Data extraction	Yes	Yes
Risk of bias (quality) assessment	Yes	Yes
Data analysis	Yes	Yes

Provide any other relevant information about the stage of the review here.

The completed manuscript was submitted to 'Archives of Disease in Childhood (BMJ)' on the 8th of November 2023. The title of the manuscript is: 'Admissions to paediatric medical wards with a primary mental health diagnosis: a systematic review of the literature'.

Moreover, for quantitative studies, the Appraisal tool for Cross-Sectional Studies (AXIS) was used to assess quality.

The completed manuscript was submitted to 'Archives of Disease in Childhood (BMJ)' on the 8th of November 2023. The title of the manuscript is: 'Admissions to paediatric medical wards with a primary mental health diagnosis: a systematic review of the literature'.

Moreover, for quantitative studies, the Appraisal tool for Cross-Sectional Studies (AXIS) was used to assess quality.

6. * Named contact.

The named contact is the guarantor for the accuracy of the information in the register record. This may be any member of the review team.

Adriana del Pilar Vazquez Vazquez

Email salutation (e.g. "Dr Smith" or "Joanne") for correspondence:

Dr Vazquez Vazquez

7. * Named contact email.

Give the electronic email address of the named contact.

adriana.vazquez.15@ucl.ac.uk

8. Named contact address

PROSPERO

International prospective register of systematic reviews

Give the full institutional/organisational postal address for the named contact.

UCL Great Ormond Street Institute of Child Health, 30 Guilford St, London WC1N 1EH

9. Named contact phone number.

Give the telephone number for the named contact, including international dialling code.

10. * Organisational affiliation of the review.

Full title of the organisational affiliations for this review and website address if available. This field may be completed as 'None' if the review is not affiliated to any organisation.

Population, Policy and Practice Research Programme, UCL Great Ormond Street Institute of Child Health, London, UK

Organisation web address:

<https://www.ucl.ac.uk/child-health/great-ormond-street-institute-child-health-0>

11. * Review team members and their organisational affiliations.

Give the personal details and the organisational affiliations of each member of the review team. Affiliation refers to groups or organisations to which review team members belong. **NOTE: email and country now MUST be entered for each person, unless you are amending a published record.**

Dr Adriana del Pilar Vazquez Vazquez. Population, Policy and Practice Research Programme, UCL Great Ormond Street Institute of Child Health, London, UK

Miss Abigail Smith. Population, Policy and Practice Research Programme, UCL Great Ormond Street Institute of Child Health, London, UK

Professor Faith Gibson. University of Surrey, Guildford, UK

Professor Helen Roberts. Population, Policy and Practice Research Programme, UCL Great Ormond Street Institute of Child Health, London, UK

Dr Gabrielle Mathews. CYP Transformation Team, NHS England and NHS Improvement London, London, UK

Dr Joseph Ward. Population, Policy and Practice Research Programme, UCL Great Ormond Street Institute of Child Health, London, UK

Professor Russell Viner. Population, Policy and Practice Research Programme, UCL Great Ormond Street Institute of Child Health, London, UK

Dr Dasha Nicholls. Imperial College London, Faculty of Medicine, Department of Brain Sciences, London, UK

Dr Francesca Cornaglia. Queen Mary University of London, London, UK

Dr Damian Roland. University Hospitals of Leicester NHS Trust, Leicester, UK

Miss Kirsty Phillips. Population, Policy and Practice Research Programme, UCL Great Ormond Street Institute of Child Health, London, UK

Dr Lee Hudson. Population, Policy and Practice Research Programme, UCL Great Ormond Street Institute of Child Health, London, UK

12. * Funding sources/sponsors.

Details of the individuals, organizations, groups, companies or other legal entities who have funded or sponsored the review.

The review is being undertaken as part of a wider project (MAPS: Mental Health Admissions to Paediatric Wards Study) that has been funded by the National Institute for Health and Care Research.

Grant number(s)

State the funder, grant or award number and the date of award

NIHR135036

13. * Conflicts of interest.

List actual or perceived conflicts of interest (financial or academic).

None

14. * Collaborators.

Give the name and affiliation of any individuals or organisations who are working on the review but who are not listed as review team members. **NOTE: email and country must be completed for each person, unless you are amending a published record.**

15. * Review question.

State the review question(s) clearly and precisely. It may be appropriate to break very broad questions down into a series of related more specific questions. Questions may be framed or refined using PI(E)COS or similar where relevant.

1. What is the trend in numbers of admissions/temporal changes in numbers of admissions of children admitted to paediatric wards or adult wards because of a primary mental health diagnosis?

2. What are the risk factors for adverse care/adverse outcomes for children, young people and families during admissions to paediatric wards (or adult general wards) because of a primary mental health diagnosis?

3. What are the reported experiences of children, young people and their families during admissions to paediatric wards (or adult general wards) because of a primary mental health diagnosis?

4. What are the reported experiences of clinical staff on paediatric wards (or adult general wards) during the admissions of children and young people admitted because of a primary mental health diagnosis?

5. Is there evidence of interventions or quality improvement projects aimed at improving the care of children, young people and families during admissions to paediatric wards (or adult wards) because of a primary mental health diagnosis?

16. * Searches.

State the sources that will be searched (e.g. Medline). Give the search dates, and any restrictions (e.g. language or publication date). Do NOT enter the full search strategy (it may be provided as a link or attachment below.)

We will search across four databases (PubMed, Embase, PsycINFO and Web of Science) and an additional search of Google Scholar to identify unpublished data or additional studies from 1990 onwards. We will include studies published in all languages.

17. URL to search strategy.

Upload a file with your search strategy, or an example of a search strategy for a specific database, (including the keywords) in pdf or word format. In doing so you are consenting to the file being made publicly accessible. Or provide a URL or link to the strategy. Do NOT provide links to your search **results**.

https://www.crd.york.ac.uk/PROSPEROFILES/350655_STRATEGY_20220801.pdf

Alternatively, upload your search strategy to CRD in pdf format. Please note that by doing so you are consenting to the file being made publicly accessible.

Do not make this file publicly available until the review is complete

18. * Condition or domain being studied.

Give a short description of the disease, condition or healthcare domain being studied in your systematic review.

This rapid review is essential to synthesise the evidence available about the trends in admissions for primary mental health reasons to acute paediatric wards or adult general wards, the reasons for admissions, the contributing factors to the admissions, the clinical needs of children and young people when admitted, and the views/experiences of children and young people, families and health professionals to understand the context of care.

19. * Participants/population.

Specify the participants or populations being studied in the review. The preferred format includes details of both inclusion and exclusion criteria.

Inclusion: studies with participants less than or equal to 18 years old admitted to any paediatric ward or adult general wards. Exclusion: studies with participants who are over 18 years old and/or admitted to specialist mental health wards.

20. * Intervention(s), exposure(s).

Give full and clear descriptions or definitions of the interventions or the exposures to be reviewed. The preferred format includes details of both inclusion and exclusion criteria.

Admission to an acute paediatric ward or adult general wards because of a primary mental health diagnosis.

21. * Comparison(s)/control.

Where relevant, give details of the alternatives against which the intervention/exposure will be compared (e.g. another intervention or a non-exposed control group). The preferred format includes details of both inclusion and exclusion criteria.

Our team will compare different types/reasons for admission to an acute paediatric ward or adult general wards because of a primary mental health diagnosis.

22. * Types of study to be included.

Give details of the study designs (e.g. RCT) that are eligible for inclusion in the review. The preferred format includes both inclusion and exclusion criteria. If there are no restrictions on the types of study, this should be stated.

Inclusions: Systematic reviews on any of the five review questions; Quantitative studies: Observational studies in the case of the epidemiology of numbers of admissions, quality improvement studies, randomized and non-randomized controlled trials; Qualitative studies addressing review questions 2-5; Reports by professional bodies published on any of the above five review questions containing unique data.

Exclusion: Non-systematic reviews (however a snowballing approach will be taken using reference lists); Studies which only study emergency department attendances (thus in included studies children and young people must have had to be admitted to a paediatric ward); Studies where it is not possible to disaggregate data for children and young people from adults.

23. Context.

Give summary details of the setting or other relevant characteristics, which help define the inclusion or exclusion criteria.

No restrictions based on the geographical location of the articles considered

24. * Main outcome(s).

Give the pre-specified main (most important) outcomes of the review, including details of how the outcome is defined and measured and when these measurement are made, if these are part of the review inclusion criteria.

1. Establishing the trends in admissions and characteristics of the admissions (sociodemographic factors, diagnoses and reasons admitted).

2. Establishing the factors that influence decisions to admit children and young people to paediatric wards for primary mental health problems.

3. Establishing the views/experiences of children and young people, families and health care professionals during admissions.

Measures of effect

Please specify the effect measure(s) for you main outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

25. * Additional outcome(s).

List the pre-specified additional outcomes of the review, with a similar level of detail to that required for main outcomes. Where there are no additional outcomes please state 'None' or 'Not applicable' as appropriate to the review

None

Measures of effect

Please specify the effect measure(s) for you additional outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

26. * Data extraction (selection and coding).

Describe how studies will be selected for inclusion. State what data will be extracted or obtained. State how this will be done and recorded.

Titles and abstracts of all papers retrieved will be screened by two reviewers, who independently will identify studies that met all inclusion criteria and none of the exclusion criteria. Disagreements that cannot be resolved via consensus will be reviewed independently by another author who had not participated in the screening. All full-text studies meeting initial criteria will be reviewed by two reviewers for final inclusion in the rapid review.

Two reviewers will extract data from included studies using a data collection form. We will collect data on the following variables: author, country of study, start and end dates, type of study, study design, healthcare setting, sample size, population and results (related to the five review questions).

The results of the search will be imported into Covidence, an online software tool for systematic reviews.

Duplicate records will be removed using Covidence.

27. * Risk of bias (quality) assessment.

State which characteristics of the studies will be assessed and/or any formal risk of bias/quality assessment tools that will be used.

The final step in the data handling process is quality control of the included studies using a combination of different quality assessment tools. For qualitative studies, the CASP (Critical Appraisal Skills Programme) checklists will be used and for observational studies, the Newcastle-Ottawa scale will be used to assess the risk of bias. For interventions: for non-randomized studies the ROBINS-1 will be used, for randomized, controlled studies Cochrane's risk tool (RoB) will be used.

28. Strategy for data synthesis.

Describe the methods you plan to use to synthesise data. This **must not be generic text** but should be **specific to your review** and describe how the proposed approach will be applied to your data. If meta-analysis is planned, describe the models to be used, methods to explore statistical heterogeneity, and software package to be used.

According to the experience of the research team, it is anticipated that there will not be sufficient studies for quantitative synthesis.

Therefore, data will be summarized in tables in a tabular and narrative format.

We propose the following structure:

1. Summary of included systematic reviews, and of any quantitative studies that cover the epidemiology of numbers of admissions, and randomized and non-randomized controlled trials.
2. Summary of qualitative interventions that aimed to improve the care of children, young people and families during admissions to paediatric wards (or adult wards) because of a primary mental health diagnosis.
3. Summary of the common views, experiences, feelings, and perceptions of children, young people and their families during admissions to paediatric wards (or adult general wards) because of a primary mental health diagnosis.
4. Summary of the common views, experiences, feelings, and perceptions of clinical staff on paediatric wards (or adult general wards) during the admissions of children and young people admitted because of a primary mental health diagnosis.

5. Summary of any tools commonly used for deciding admission to an acute paediatric ward or adult general ward because of a primary mental health diagnosis.

6. Summary of the quality of the systematic reviews and possible sources of bias.

7. Summary of any knowledge gap which has been identified.

29. * Analysis of subgroups or subsets.

State any planned investigation of 'subgroups'. Be clear and specific about which type of study or participant will be included in each group or covariate investigated. State the planned analytic approach.

None planned.

30. * Type and method of review.

Select the type of review, review method and health area from the lists below.

Type of review

Cost effectiveness

No

Diagnostic

No

Epidemiologic

No

Individual patient data (IPD) meta-analysis

No

Intervention

No

Living systematic review

No

Meta-analysis

No

Methodology

No

Narrative synthesis

Yes

Network meta-analysis

No

Pre-clinical

No

Prevention

No

Prognostic

No

Prospective meta-analysis (PMA)

No

Review of reviews

No

Service delivery

No

Synthesis of qualitative studies

No

Systematic review

Yes

Other

No

Health area of the review

Alcohol/substance misuse/abuse

No

Blood and immune system

No

Cancer

No

Cardiovascular

No

Care of the elderly

No

Child health

Yes

Complementary therapies

No

COVID-19

No

Crime and justice

No

Dental

No

Digestive system

No

Ear, nose and throat

No

Education

No

Endocrine and metabolic disorders

No

Eye disorders

No

General interest

No

Genetics

No

Health inequalities/health equity

No

Infections and infestations

No

International development

No

Mental health and behavioural conditions

Yes

Musculoskeletal

No

Neurological

No

Nursing

No

Obstetrics and gynaecology

No

Oral health

No

Palliative care

No

Perioperative care

No

Physiotherapy

No

Pregnancy and childbirth

No

Public health (including social determinants of health)

Yes

Rehabilitation

No

Respiratory disorders

No

Service delivery

No

Skin disorders

No

Social care

No

Surgery

No

Tropical Medicine

No

Urological

No

Wounds, injuries and accidents

No

Violence and abuse

No

31. Language.

Select each language individually to add it to the list below, use the bin icon to remove any added in error.

PROSPERO

International prospective register of systematic reviews

English

There is an English language summary.

32. * Country.

Select the country in which the review is being carried out. For multi-national collaborations select all the countries involved.

England

33. Other registration details.

Name any other organisation where the systematic review title or protocol is registered (e.g. Campbell, or The Joanna Briggs Institute) together with any unique identification number assigned by them. If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here. If none, leave blank.

34. Reference and/or URL for published protocol.

If the protocol for this review is published provide details (authors, title and journal details, preferably in Vancouver format)

Add web link to the published protocol.

Or, upload your published protocol here in pdf format. Note that the upload will be publicly accessible.

No I do not make this file publicly available until the review is complete

Please note that the information required in the PROSPERO registration form must be completed in full even if access to a protocol is given.

35. Dissemination plans.

Do you intend to publish the review on completion?

Yes

Give brief details of plans for communicating review findings.?

36. Keywords.

Give words or phrases that best describe the review. Separate keywords with a semicolon or new line. Keywords help PROSPERO users find your review (keywords do not appear in the public record but are included in searches). Be as specific and precise as possible. Avoid acronyms and abbreviations unless these are in wide use.

37. Details of any existing review of the same topic by the same authors.

If you are registering an update of an existing review give details of the earlier versions and include a full bibliographic reference, if available.

38. ~~Change~~ Current review status.

Update review status when the review is completed and when it is published. New registrations must be ongoing so this field is not editable for initial submission.

Please provide anticipated publication date

Review_Completed_not_published

39. Any additional information.

Provide any other information relevant to the registration of this review.

40. ~~Details~~ of final report/publication(s) or preprints if available.

Leave empty until publication details are available OR you have a link to a preprint (NOTE: this field is not editable for initial submission). List authors, title and journal details preferably in Vancouver format.

Give the link to the published review or preprint.

Appendix 2 Search strategy

From: 'Admissions to paediatric medical wards with a primary mental health diagnosis: a systematic review of the literature'

Search strategy

Search strategies (developed in conjunction with a clinical librarian) were tailored for each database. In summary, searches consisted of search terms combining three overall domains: (admissions) AND (paediatric or children's wards) AND (mental health diagnosis/problem).

Specific search terms were as follows: (admission* OR admitted OR admittance OR hospitalized OR hospitalised OR treated OR inpatient* OR in patient*) and (paediatric ward* OR children* ward* OR pediatric ward*) and (mental health* OR psychiatric or psychological).

PubMed

((("admission"[All Fields] OR ("admit"[All Fields] OR "admits"[All Fields] OR "admitted"[All Fields] OR "admitting"[All Fields]) OR ("admittance"[All Fields] OR "admittances"[All Fields]) OR ("hospital s"[All Fields] OR "hospitalisation"[All Fields] OR "hospitalization"[MeSH Terms] OR "hospitalization"[All Fields] OR "hospitalised"[All Fields] OR "hospitalising"[All Fields] OR "hospitality"[All Fields] OR "hospitalisations"[All Fields] OR "hospitalizations"[All Fields] OR "hospitalize"[All Fields] OR "hospitalized"[All Fields] OR "hospitalizing"[All Fields] OR "hospitals"[MeSH Terms] OR "hospitals"[All Fields] OR "hospital"[All Fields]) OR ("therapy"[MeSH Subheading] OR "therapy"[All Fields] OR "treat"[All Fields] OR "treating"[All Fields] OR "treated"[All Fields] OR "treats"[All Fields])) AND ("paediatric wards"[All Fields] OR "children's wards"[All Fields] OR "pediatric wards"[All Fields]) AND ("children"[All Fields] OR "young"[All Fields] OR "adolescents"[All Fields] OR "children and young people"[All Fields] OR "children and adolescents"[All Fields]) AND ("mental health"[Author] OR "mental health diagnosis"[All Fields] OR "mental health problem"[All Fields] OR "mental health disorders"[All Fields] OR "mental health illness"[All Fields])) AND (1990/1/1:2023/4/24[pdat])).

Web of Science

ALL= ((admission* OR admitted OR admittance OR hospitalized OR treated) AND ("paediatric wards" OR "children's wards" OR "pediatric wards") AND (children* OR young* OR adolescents* OR "children and young people" OR "children and adolescents")) AND (mental health* OR "mental health diagnosis" OR "mental health problem" OR "mental health disorders" OR "mental health illness"). Index data 1990-01-01 to 2023-04-24.

Embase

((admission* or admitted or admittance or hospitalized or hospitalised or treated or inpatient* or in patient*) and (paediatric ward* or children* ward* or pediatric ward*) and (mental health* or psychiatric or psychological)).mp. [mp=title, abstract, heading word, original title, keyword heading word, floating subheading word]. Limit to (full text and latest update and human and cochrane library and no language specified and yr="1990 - 2023").

PsycINFO

((admission* or admitted or admittance or hospitalized or hospitalised or treated or inpatient* or in patient*) and (paediatric ward* or children* ward* or pediatric ward*) and (mental health* or psychiatric or psychological)).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word]. Limit to (full text and apa psycarticles journals and all journals and latest update and human and yr="1990 - 2023" and open access).

Google Scholar

(admissions) AND (paediatric OR pediatric wards) AND (mental health).

Table S1. CASP Qualitative Studies Checklist*

#	Authors	Criteria for qualitative studies										Assessment
		1	2	3	4	5	6	7	8	9	10	
1	Chang et al (2023)	Y	Y	Y	Y	Y	C	Y	Y	Y	Y	High
2	Wu and Chen (2021)	Y	Y	Y	Y	Y	C	Y	Y	Y	Y	High
3	Worsley (2019)	Y	Y	N	Y	Y	N	C	Y	Y	Y	High
4	Hampton et al (2015)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	High
5	Ramjan and Gil (2012)	Y	Y	C	Y	Y	N	Y	C	Y	C	Moderate
6	Happell et al (2009)	Y	Y	Y	Y	Y	C	Y	N	Y	Y	High
7	Watson (2006)	Y	Y	N	N	Y	N	N	C	Y	C	Low
8	Anderson et al (2003)	Y	Y	Y	C	Y	N	C	Y	Y	Y	High
9	King and Turner (2000)	Y	Y	Y	C	Y	N	Y	C	Y	C	Moderate

*CASP criteria for qualitative studies: 1. Was there a clear statement of the aims of the research?; 2. Was a qualitative methodology appropriate?; 3. Was the research design appropriate to address the aims of the research?; 4. Was the recruitment strategy appropriate to the aims of the research?; 5. Was the data collected in a way that addressed the research issue?; 6. Has the relationship between researcher and participants been adequately considered?; 7. Have ethical issues been considered?; 8. Was the data analysis sufficiently rigorous?; 9. Is there a clear statement of the findings?; 10. How valuable is the research? (Y: Yes, N: No, C: Can't tell)

Table S2. AXIS scale for cross-sectional studies*

		Köich et al (2023)	Ibeziako et al (2022)	Duarte and Zelaya (2019)	Plemmons et al (2018)	Wallis (2018)	Galleher et al (2017)	Sanillanes et al (2017)	Claudius et al (2014)	Case et al (2007)	Levine et al (2005)	Smith et al (2014)	Mansbach et al (2003)	Ramritu et al (2002)	Valdivia et al (2001)	Gasquet and Choquet (1994)	
Introduction	Were the aims/objectives of the study clear?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Methods	Was the study design appropriate for the stated aim(s)?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	Was the sample size justified?	N	N	Y	Y	N	N	N	N	Y	Y	N	N	N	N	N	
	Was the target/reference population clearly defined? (Is it clear who the research was about?)	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	Were measures undertaken to address and categorize non-responders?	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
	Were the risk factor and outcome variables measured appropriate to the aims of the study?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Were the risk factor and outcome variables measured correctly using instruments/measurements that had been trialed, piloted or published previously?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Is it clear what was used to determined statistical significance and/or precision estimates? (e.g., p values, CIs)	Y	Y	NA	Y	N	N	Y	N	Y	Y	Y	N	Y	NA	NA	N
	Were the methods (including statistical methods) sufficiently described to enable them to be repeated?	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	N	Y
	Results	Were the basic data adequately described?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Does the response rate raise concerns about non-response bias?		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N	ND	N	N	
If appropriate, was information about no responders described?		N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	
Were the results internally consistent?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Were the results for the analyses described in the methods, presented?		N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Discussion	Were the authors' discussions and conclusions justified by the results?	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	Were the limitations of the study discussed?	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	N	N	N	
Others	Were there any funding sources or conflicts of interest that may affect the authors' interpretation of the results?	NDis	N	NDis	N	NDis	N	N	N	NDis	NDis	NDis	NDis	NDis	NDis	NDis	
	Was ethical approval or consent of participants attained?	NS	Y	Y	Y	NS	Y	Y	Y	NS	Y	Y	Y	Y	NS	NS	

*The tool does not provide a numerical scale for assessing the quality of the study, it has areas to record assessment using “Yes”, “No” or “Don’t Know/comments” answer for each of the 20 questions.

Abbreviations: Y: Yes; N: No; DK: Don’t know; Comments: not described (ND), not disclosed (NDis), not stated (NS), not applicable (NA)