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Systematic Review

Mental Health and Mental Illness in Pediatric Orthopaedic Surgery: A Systematic Review

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ABSTRACT

Mental health disorders are known to correlate with poorer outcomes in orthopaedic surgery, yet research focusing on pediatric orthopaedic patients remains sparse. This study aims to evaluate publication trends on mental health within pediatric orthopaedic surgery over the past two decades. A systematic review was conducted following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Searches in PubMed, Embase, and Web of Science identified articles published between January 1, 2003 and July 17, 2023, focusing on mental health in pediatric orthopaedic patients. Study year, specific Diagnostic and Statistical Manual of Mental Disorders (DSM-5) condition, orthopaedic diagnoses, and patient-reported outcome measures (PROs) were extracted. A total of 2,629 articles were screened, and 69 met the inclusion criteria. Linear regression revealed a significant positive association between year and number of publications ($P < .001$). From 2003 to 2013, an average of 1.55 papers were published per year, increasing to 5.20 per year from 2014 to 2023, peaking at 8 in 2018 and 2021. Attention-deficit/hyperactivity disorder (ADHD) was the most frequently explored DSM-5 diagnosis, present in 40% of studies, with 60% of ADHD studies focusing on traumatic fractures. Adolescent idiopathic scoliosis (AIS) was the most common orthopaedic diagnosis (31%), followed by traumatic fractures (16%). AIS research predominantly (95%) addressed general mental health rather than specific DSM-5 conditions. Overall, the two most utilized PROs were the Scoliosis Research Society (SRS) questionnaire (16%) and the Patient-Reported Outcomes Measurement Information System (PROMIS) (9.1%). ADHD's association with traumatic fractures suggests the need for enhanced postoperative guidance due to challenges with compliance. Continued focus on nuanced mental health concerns—those that may not meet DSM-5 criteria—but still impact recovery could significantly enhance patient care, and PROs like the SRS and PROMIS have proven valuable in detecting subtle but clinically relevant psychosocial markers. Standardizing the use of these tools across pediatric orthopaedic care could lead to more personalized treatment plans and improved long-term outcomes for patients with both orthopaedic and mental health challenges.

Key Concepts:

(1) Over the last two decades, mental health research within pediatric orthopaedic surgery has surged, confirming that clinicians are increasingly recognizing the importance of psychological well-being in young patients.
(2) Attention-deficit/hyperactivity disorder (ADHD) stands out as the most frequently studied specific DSM-V diagnosis. Notably, children with ADHD appear more susceptible to traumatic fractures, hinting at a need for extra vigilance and tailored postoperative guidance.
(3) Adolescent idiopathic scoliosis (AIS) draws the most attention among pediatric orthopaedic conditions; however, most AIS-focused studies address overall mental health rather than drilling into any single disorder—signaling a gap in targeted DSM-5–based research.
(4) Among many PROs used, the scoliosis research society questionnaire and the Patient-Reported Outcomes Measurement Information System emerge as top picks for gauging overall functioning and mental wellness.

Level of Evidence: IV, Systematic Review

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Introduction

Children's mental health concerns have risen significantly over the past decade, exacerbated by the COVID-19 pandemic [1,2]. In 2021, leading pediatric organizations declared a "national mental health emergency" in children and adolescents [3]. Comorbid mental health disorders are relatively common among orthopaedic patients, and these disorders correlate with poor surgical outcomes [4–7].

In 2019, the American Academy of Orthopaedic Surgeons and the Major Extremity Trauma and Rehabilitation Consortium published recommendations for orthopaedic surgeons on specific mental illnesses and psychosocial factors that affect recovery from adult orthopaedic trauma with the goal of screening those at risk and referring them for treatment [8]. They specifically recommended evaluating patients for anxiety, posttraumatic stress disorder (PTSD), depression, premorbid psychiatric conditions, smoking, lower education level, less social support, and resilience issues (ie limited self-efficacy, less effective coping strategies).

A recent review highlighted the dramatic rise in mental health research in orthopaedics, yet only 1% of studies (5 articles) focused on pediatric patients [9]. A high concentration of publications came from a small subset of journals and senior authors, and women were overrepresented as senior authors relative to their representation in the field [9].

This review aims to evaluate trends in publications addressing mental health and mental illness in pediatric orthopaedic surgery. We hypothesized that publication volume has increased significantly.

Materials and methods

Literature review

A systematic literature review was carried out by a medical librarian (CDP) in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and was not registered under international prospective register of systematic reviews(PROSPERO) [10]. We searched PubMed, Embase, and Web of Science on July 17, 2023. The combination of controlled vocabulary and text words used can be viewed in Appendix 1. Searches were conducted without geographical restrictions and were limited to English-language articles published between January 1, 2003 and July 17, 2023.

Study selection and eligibility

Search results were imported into Endnote 20 reference management software (Clarivate, Philadelphia, PA) and then uploaded to Covidence (Veritas Health Innovation, Melbourne, Australia), where they were deduplicated and screened against the eligibility criteria, first based on the title and abstract and then based on full text. Each article was independently assessed by two reviewers (J.N.C. and B.H.), who were blinded to each other's decisions. Conflicts were resolved by reviewers based on consensus.

Studies were included if they met the following criteria: (1) original human research; (2) English language; and (3) primary outcomes were focused on mental health or mental illness in pediatric and young adults with pediatric-onset conditions, up to age 21, or surgeons working with this population. Exclusion criteria included: (1) papers without original data (e.g. comments or editorials), lacking full peer reviewed publication (e.g. conference abstracts), or not on humans; (2) articles in languages other than English; (3) references not focused on mental health or mental illness (including those on opioid use without explicit reference to a substance use disorder), and (4) studies not looking at a pediatric population or at surgeons who specialize in pediatric patients. Any disagreements were resolved through author consensus.

Data extraction

Two reviewers (J.N.C. and B.H.) independently extracted data with Covidence on publication year, journal title, country of origin, study design, orthopaedic, and Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) diagnoses, patient-reported outcomes (PROs) used, average patient age, and sex of senior author.

Statistical analyses

Multivariate linear regression was performed to assess the relationship between the year and number of publications, and this was visualized with a vertical bar graph. Statistical analysis was conducted using STATA software, version 18 (StataCorp, College Station, TX), using pairwise deletion to handle missing values. A *P*-value of 0.05 or less was considered statistically significant.

Results

A total of 2,629 articles were imported into Covidence. After removal of 571 duplicates, we screened the title and abstract of 2,058 studies and excluded 1,932 due to not meeting our inclusion criteria (Fig. 1). Full text was reviewed for the remaining 126 studies. Ultimately, 69 studies underwent data extraction [11–79] (not publicly available, but available upon request). The mean age of the reported patients was 12.17 years (standard deviation [SD] 3.07), with a mean upper age limit of 15.95 years (SD 3.23) and a mean lower limit of 7.75 years (SD 3.69)[80].

Trends in publication characteristics

Linear regression revealed a positive association between year and number of publications ($\beta = 0.32$, 95% confidence interval [CI]: 0.21,0.44, $P < .001$). Between 2003 and 2013, there was an average of 1.55 papers per year, with a peak of 3 publications per year in 2007, and a subsequent average of 3 papers a year between 2010 and 2013 (Fig. 2). However, from 2014 to 2023, the average increased to 5.20 papers per year, reaching a peak of 8 publications in both 2018 and 2021. In 2003, 2004, 2006, and 2009, no publications were recorded. From 2018 to 2023, the number of publications did not fall below 4 per year, whereas for papers older than 2013, the number of publications did not exceed 3 per year.

This review found that 43 unique journals each produced at least 1 paper. The Journal of Pediatric Orthopaedics emerged as the predominant journal, publishing over 20% of the articles. Meanwhile, the Journal of Clinical Orthopaedics and Related Research published 6 papers, accounting for 8.70% of the total. Most other journals contributed only 1–2 articles each. The research was conducted in 18 countries. Almost half of the 69 studies (49.28%) were carried out in the United States (Fig. 3). Turkey and the UK followed with 14.49% and 5.80% of the studies, respectively. Regarding study design, 38 studies (55.07%) were cohort studies, 13 studies (18.84%) were cross-sectional studies, 7 studies (10.14%) were case-control studies, 4 studies (5.80%) were case reports, 4 studies (5.80%) were case series, 2 studies (2.90%) were nonrandomized experimental studies, and 1 study (1.45%) was a meta-analysis with an original analysis.

Study focus

The majority of papers (88.41%) explored how mental health affects patients with particular orthopaedic diagnoses. Meanwhile, 11.59% of the papers discussed the impact of mental health on orthopaedic patients in general, without focusing on any specific diagnosis. These studies referenced a wide range of 23 different orthopaedic diagnoses. Among the 61 papers specific to an orthopaedic diagnosis, the most common diagnosis was adolescent idiopathic scoliosis (AIS) (31.15% of articles), followed by traumatic fractures (16%) and Legg-Calvé-Perthes Disease

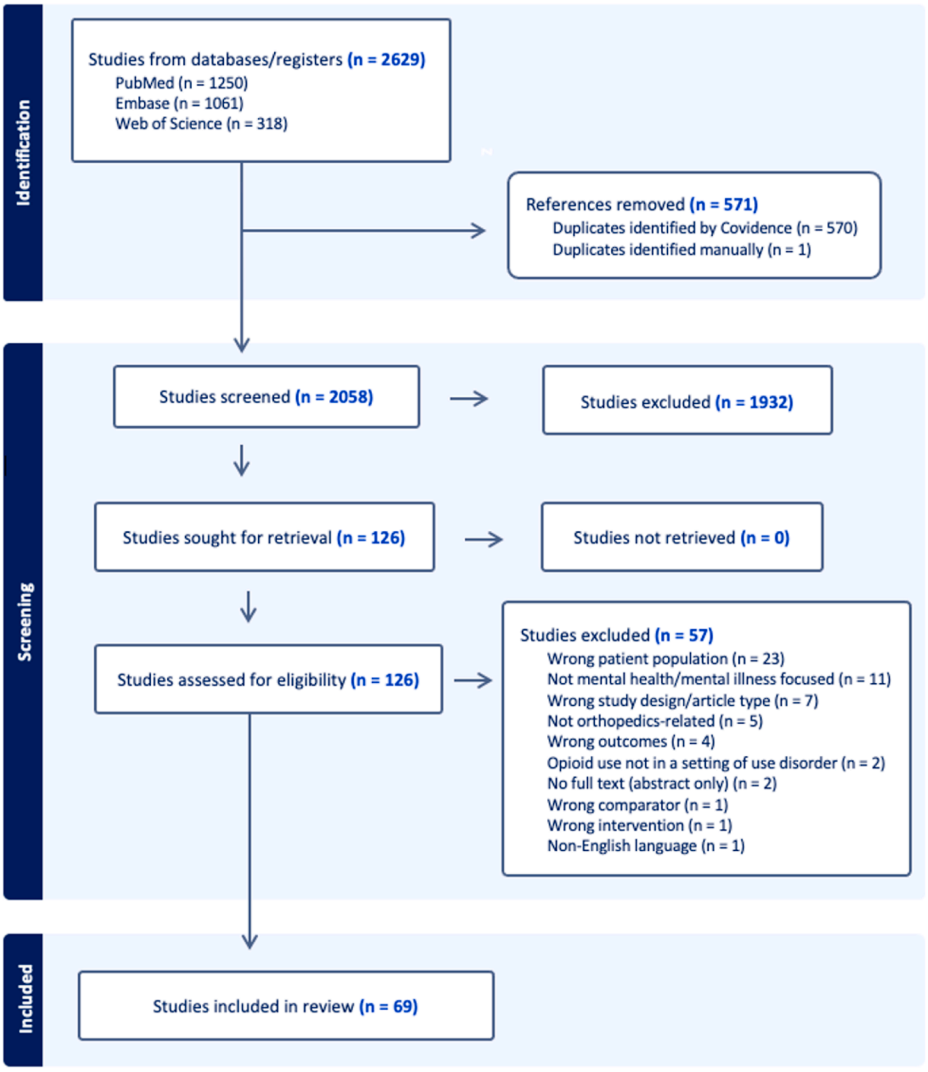

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) diagram.

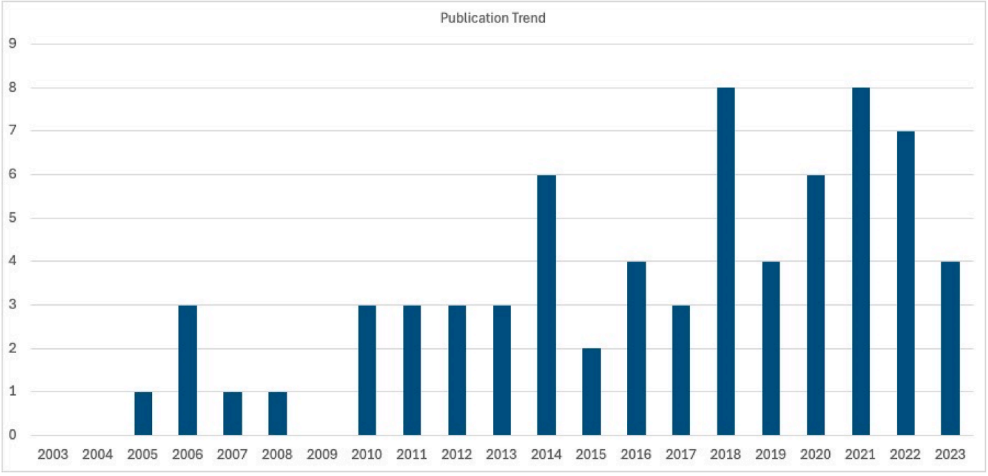

Figure 2. Number of publications as a function of year.

(LCPD) (8.2%). AIS research predominantly (95%) addressed general mental health rather than a specific DSM-5 diagnosis.

Of the 69 papers reviewed, 35 (50.72%) focused on general mental health, 25 (36.23%) were specific to a DSM-5 diagnosis, and the remaining 9 studies (13.04%) addressed unspecified mental illness. Among the DSM-5 specific studies, the most common topic was attention-deficit/hyperactivity disorder (ADHD) (10, 40.00%), with 60% of these studies focusing on traumatic fractures (Fig. 4). The remaining articles pertained to posttraumatic stress disorder (PTSD) (4, 16.00%), autism spectrum disorder (3, 12.00%), and depression (3, 12.00%).

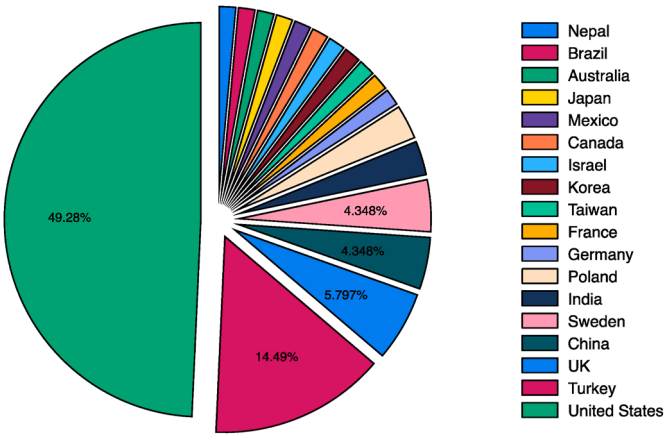

Figure 3. Country of origin of publications.

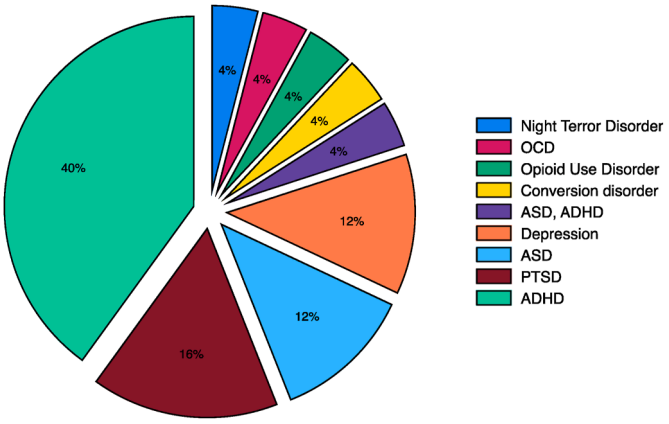

Figure 4. Diagnostic and Statistical Manual of Mental Disorders (DSM-V) diagnoses studied; obsessive-compulsive disorder (OCD); autism spectrum disorder (ASD); attention-deficit/hyperactivity disorder (ADHD); posttraumatic stress disorder (PTSD).

Patient reported outcome measures

Researchers employed a total of 46 different PROs, and 42 of them utilized at least one survey or PRO.

The two most frequently used PROs were the Scoliosis Research Society (SRS) questionnaire, appearing 12 (15.58%) times across different papers, and the Patient-Reported Outcomes Measurement Information System (PROMIS), which was used across 7 (9.09%) of studies (Fig. 5). Within the 7 studies using PROMIS scores, multiple domains were often used. Two studies used 4 domains, two used 5 domains, two used 6 domains, and one study used 7 domains. The most commonly used PROMIS scores were pain interference, peer relationships, anxiety, and depressive symptoms, which were present in 6/7 studies. This was followed by mobility (5 studies), upper extremity function (4 studies), fatigue (3 studies), and anger (1 study). The Child Health Questionnaire (CHQ), Pediatric Outcomes Data Collection Instrument (PODCI), Children's Depression Inventory (CDI), and Pediatric Quality of Life Inventory (PedsQL) were all used in at least 3 different studies.

Discussion

Over the past two decades, mental health research in pediatric orthopaedic surgery has grown, with the number of publications nearly tripling. ADHD emerged as the most commonly studied mental health diagnosis, and traumatic fractures were the most common orthopaedic diagnosis among studies focusing on ADHD. AIS was the most prevalent orthopaedic diagnosis, and most of its research examined general mental health concerns rather than specific DSM-5 diagnoses. SRS and PROMIS were the most common PROs.

Trends in publication characteristics

An increasing number of studies in pediatric orthopaedic surgery address mental health, reflecting a shift toward multidisciplinary care throughout the treatment process. Existing literature on adolescent development and psychosocial factors underscores how critical these elements are as these patients are in a stage of major physical, social, and psychological changes. Thus, injuries in this population can result in negative emotion, fear of reinjury, lack of confidence, and depression [81–83].

The *Journal of Pediatric Orthopaedics* emerged as the most frequent publisher, demonstrating that those within the field are actively prioritizing studies focused on mental health. While the US contributed a substantial proportion of studies, many countries around the world, including Turkey and the U.K., demonstrated interest in the intersection of mental health and pediatric orthopaedics. This increase in research reflects a global awareness that psychosocial aspects of care are essential to improving patient outcomes. The relatively small number of randomized control trials and the lack of systematic reviews indicate the limited quality and quantity research.

Study focus

The most common orthopaedic diagnosis within this literature search was AIS, which is understandable considering the interplay between AIS and mental health. A large, epidemiologic study from 2012 to 2016 showed that mental health disorders had an overall prevalence of 7% in AIS patients, the most common being anxiety [29]. Additionally, 18% of AIS patients meet screening criteria for further assessment of depression, and likewise 59% for social anxiety [84]. Upon comparing to children with AIS to those without AIS, and controlling for demographics, children with AIS were 1.74 times more likely to have psychiatric disorders [29]. Among AIS patients undergoing observation, bracing, or surgery, 32% exhibited clinically significant psychological distress, with no differences across types of treatment [85]. Additionally, a preoperative mental health disorder in AIS patients results in greater pain and more frequent narcotic use after surgery [86].

Among all studies on AIS, 95% attempted to address general mental health concerns instead of a DSM-5 diagnosis. This is likely due to PROs, such as the SRS, not attempting to diagnose a specific disorder, but rather to assess patient satisfaction with respect to the treatment of scoliosis through multiple domains [87]. Considering the link between depression and AIS and the lack of studies addressing specific DSM-5 criteria, this suggests a need for AIS literature to further explore the diagnosis and treatment of these psychological comorbidities [88]. Although not diagnostic, PROs such as the SRS or PROMIS may serve as useful screening tools, and providers should consider referral for formal psychological evaluation and treatment when indicated.

The most common mental health diagnosis within the literature was ADHD, a diagnosis affecting close to 10% of children in the United States [89]. The literature also revealed a relationship between ADHD and traumatic fractures, which is likely due to the fact that children with ADHD are 1.2 times more likely to have a fracture than demographically matched children who do not have ADHD [90]. Upon predicting outcomes for patients who had two or 3 fractures, this risk increased to 1.32 and 1.35, respectively [90]. These injury risks are likely explained by children with ADHD exhibiting impulsive behavior, poor judgment, and seeking instant gratification, in addition to anticipating less severe consequences to their behaviors [91,92]. Pharmacological treatment of ADHD has been associated with a reduced risk of fractures after adjusting for demographics, most likely due to behavioral modification [90]. While the majority of patients with ADHD in the U.S. are pharmacologically treated, 38% do not take medication [89]. In addition to

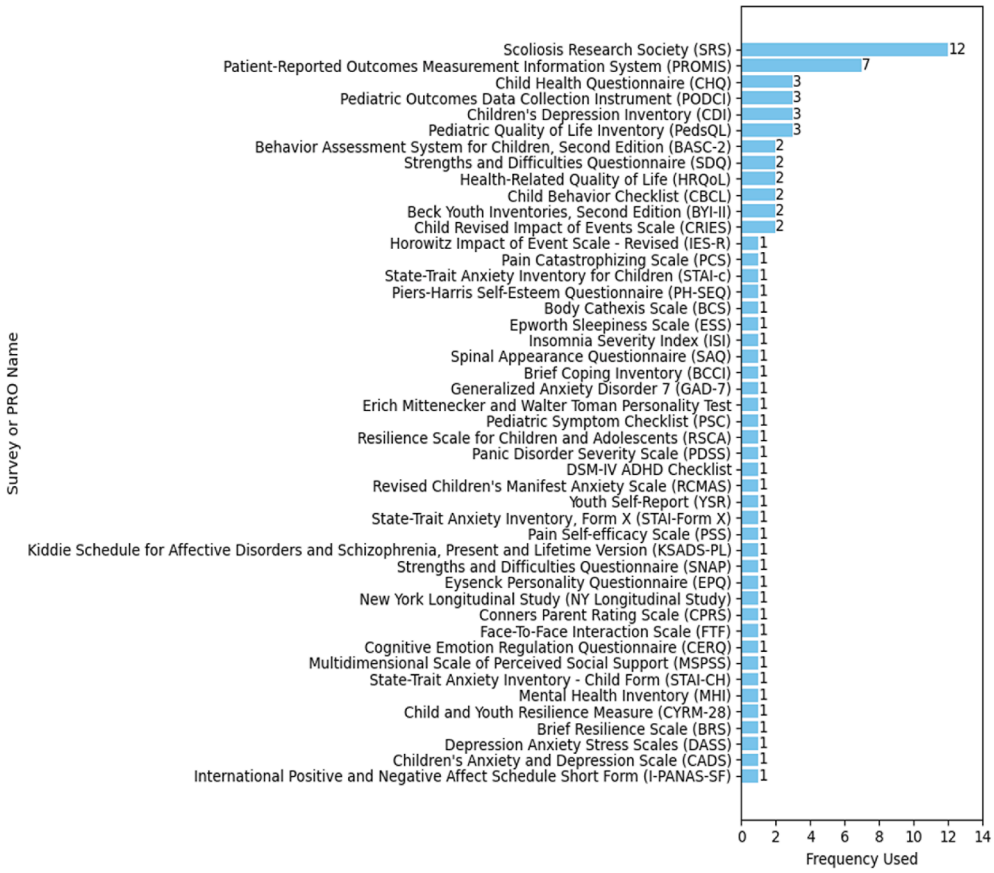

Figure 5. Frequency of patient-reported outcome measures used.

medication, psychological therapies (such as behavioral therapy or cognitive behavioral interventions) may also play an important role, either in combination with or in place of pharmacological treatment [93]. When counseling parents of patients with ADHD, surgeons can inform them of the risks of repeated fractures, as well as the benefits of pharmacological treatment in reducing fracture risk. Surgeons should consider screening for mental health challenges in pediatric patients at preoperative and postoperative visits, especially among those at high risk (e.g. AIS or ADHD).

Patient reported outcomes

Over two-thirds of the mental health literature in pediatric orthopaedics employed a PRO, and the most commonly used PROs were SRS and PROMIS, followed by the CHQ, PODCI, CDI, and PedsQL. AIS was the most common orthopaedic diagnosis, so a high frequency of SRS is unsurprising. The growing emphasis on PROs may be due to traditional radiographic measures not fully capturing aspects of care that patients value as they relate to overall quality of life. In LCPD literature, pre-existing outcomes were compared with those that patients and families valued, revealing a large discrepancy [94]. Ultimately, the input of parent and patient values led to the creation of a set of core outcomes that shaped future clinical monitoring of treatment success in LCPD [94]. Within AIS, there is a lack of conclusive evidence that long-term patient outcomes (function, quality of life, self-image, and pain) are affected by improvements in radiographic outcomes [95]. A prior review of AIS literature deemed SRS to be the most extensively used questionnaire in AIS patients due to its high reliability, internal consistency, and reproducibility [87,96]. While not perfect at its inception, the SRS has been refined over decades to ensure maximal validity [97,98].

PROMIS also stood out in this review and has also been validated in AIS patients [99]. PROMIS was developed using item response theory (IRT), which ensures each individual question is reliable, of value to the whole, and precisely placed along the continuum of the trait being tested [100]. IRT allows flexibility, enhances accuracy, and improves efficiency through the use of computerized adaptive testing, where a computer algorithm customizes question delivery by selecting each subsequent item based on answers to previous items [101]. For these reasons, PROMIS has been able to provide improved coverage, reliability, and validity, and reduced respondent and administrative burden compared to prior PROs [101]. Efforts have been made in the adolescent population to translate SRS scores into PROMIS scores [102]. This may suggest the eventual incorporation of PROMIS as the gold standard PRO, allowing comparison of treatment effectiveness across populations and diseases. Notably, the vast majority of studies in this review employed several PROMIS domains, integrating aspects relevant to physical (pain interference), mental (anxiety, depressive symptoms), and social (peer relationships) health. These findings run contrary to a systematic review of the orthopaedic trauma literature by Houwen et al., which showed that PROMIS scores related to physical health were more frequently used (41.2%) compared to mental (19.6%) and social (9.8%) health PROMIS scores [103].

As mentioned, both the SRS and PROMIS can be used not only for research purposes but also as clinical screening tools. Scores exceeding PROMIS Depression T-scores of 60 or falling below SRS Mental Health domain scores of 3.5 may serve as triggers to flag patients at risk for underlying psychological distress [87,104,105]. When such concerning results are identified, orthopaedic providers should consider referral to psychology or psychiatry for formal evaluation and treatment. Developing clearer guidelines for interpreting these scores in practice would enhance their clinical utility, promote consistency across institutions, and better integrate mental health into orthopaedic care [106–108].

Collaboration with mental health providers, guided by validated screening tools such as the SRS and PROMIS, may therefore facilitate

earlier identification of psychosocial barriers, improve adherence to bracing or treatment plans, and optimize postoperative pain management.

Limitations

Despite PubMed, Embase, and Web of Science being recognized as comprehensive databases for systematic reviews, there are still studies that may not have been identified from our search. Additionally, we did not evaluate the volume of publications as a percentage of total pediatric orthopaedic surgery publications, so it is unknown how these publication trends compare relative to the rest of the field. The scope of this review was limited to a descriptive analysis of existing literature, and evaluating the risk of bias, effect measures, and heterogeneity was beyond the study's objectives. No formal methods were employed to assess reporting biases. Despite not including methods to assess reporting biases, we attempted to minimize the risk of missing results by conducting a comprehensive search of multiple databases. This review focused on trends and publication characteristics rather than specific outcomes. As such, no formal assessment of certainty in the body of evidence was conducted. We acknowledge these as limitations of the study and recommend that future reviews addressing similar topics incorporate such assessments to strengthen the validity of their findings. Considering the scarcity of pediatric orthopaedic literature related to specific DSM-5 diagnoses, future studies would benefit from learning more about the prevalence and prognosis of specific psychiatric conditions in pediatric orthopaedic patients, while comparing outcomes of patients with and without mental health interventions in randomized controlled trials. Current research often uses diverse outcome measures, hindering cross-study comparisons. Future studies would benefit from consensus on validated screening tools and PROs that account for psychological factors, as well as evaluating the cost-effectiveness and feasibility of mental health screening and referral pathways.

Conclusion

The growing body of research on mental health in pediatric orthopaedics highlights an increasing recognition of its role in patient care. While progress has been made, significant gaps remain in the study of specific mental health conditions and in the development of standardized approaches to screening and referral. Future studies should focus on validating cutoff points for commonly used PROs, developing clear clinical guidelines, and fostering multidisciplinary collaboration. Addressing these areas will not only improve outcomes for pediatric patients but also enhance providers' ability to deliver comprehensive, patient-centered care.

Ethics approval and consent

The author(s) declare that no patient consent was necessary as no images or identifying information are included in the article.

Author contributions

J. Nicholas Charla: Writing – original draft, Visualization, Software, Project administration, Investigation, Formal analysis, Data curation. **Breckin Horton:** Writing – review & editing, Methodology, Investigation, Data curation. **Caroline D. Patton:** Writing – review & editing, Project administration, Methodology, Investigation, Data curation, Conceptualization. **Alexander Bhatt:** Writing – original draft, Investigation, Data curation, Conceptualization. **Leila Mehraban Alvandi:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Conceptualization. **Edina Gjonbalaj:** Writing – review & editing, Validation, Supervision, Project administration, Methodology, Investigation, Conceptualization. **Zachariah Samuel:** Writing – review & editing, Investigation, Data curation, Conceptualization. **Eric D. Fornari:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Conceptualization.

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Declaration of competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix 1. Full literature search strategies

Database	**PubMed**
Date	**07/17/2023**
Line #	**Search terms**
1	“Infant” [Mesh] OR "Child” [Mesh] OR "Adolescent” [Mesh] OR "Young Adult” [Mesh] OR “pediatric” [tiab] OR “paediatric” [tiab] OR “infant*” [tiab] OR “baby” [tiab] OR “babies” [tiab] OR “child*” [tiab] OR “adolescent*” [tiab] OR “teenager*” [tiab] OR “young adult*” [tiab]
2	"Orthopedics” [Mesh] OR "Orthopedic Procedures” [Mesh] OR “orthopedic*” [tiab] OR “orthopaedic*” [tiab]
3	#1 AND #2
4	"Mental Health” [MeSH] OR "Mental Disorders” [Mesh] OR “mental health*” [tiab] OR “mental illness*” [tiab] OR “mental disorder*” [tiab] OR “psychological condition*” [tiab] OR “post-traumatic stress disorder” [tiab] OR “PTSD” [tiab] OR “depression” [tiab] OR “depressive disorder” [tiab] OR “anxiety disorder*” [tiab] OR “eating disorder” [tiab] OR “schizophrenia” [tiab] OR “bipolar disorder” [tiab] OR “substance use disorder” [tiab] OR “obsessive compulsive disorder” [tiab] OR “personality disorder” [tiab]
5	#3 AND #4
Filters	English-language only, published between 2003 and 2023
Results	**1,250**
Database	Embase
Date	07/17/2023
Line #	**Search terms**

(*continued on next page*)

(*continued*)

Database	**PubMed**
Date	**07/17/2023**
Line #	**Search terms**
1	"adolescent"/de OR "child"/de OR "toddler"/de OR "infant"/de OR "baby"/de OR "newborn"/de OR "young adult"/de OR "pediatric":ti,ab OR "paediatric":ti,ab OR "infant*":ti,ab OR "baby":ti,ab OR "babies":ti,ab OR "child*":ti,ab OR "adolescent*":ti,ab OR "teenager*":ti,ab OR "young adult*":ti,ab
2	"orthopedics"/de OR "orthopedic surgery"/exp OR "orthopedic*":ti,ab OR "orthopaedic*":ti,ab
3	#1 AND #2
4	"mental health"/de OR "psychological well-being"/de OR "mental disease"/de OR "mental health*":ti,ab OR "mental illness*":ti,ab OR "mental disorder*":ti,ab OR "psychological condition*":ti,ab OR "post-traumatic stress disorder":ti,ab OR "PTSD":ti,ab OR "depression":ti,ab OR "depressive disorder":ti,ab OR "anxiety disorder*":ti,ab OR "eating disorder":ti,ab OR "schizophrenia":ti,ab OR "bipolar disorder":ti,ab OR "substance use disorder":ti,ab OR "obsessive compulsive disorder":ti,ab OR "personality disorder":ti,ab
5	#3 AND #4
6	#5 NOT ("conference abstract"/it OR "conference paper"/it OR "conference review"/it)
Filters	English-language only, published between 2003 and 2023
Results	**1,061**

Database	**Web of Science**
Date	**07/17/2023**
Line #	**Search terms**
1	"Pediatric" OR "paediatric" OR "infant*" OR "baby" OR "babies" OR "child*" OR "adolescent*" OR "teenager*" OR "young adult*"
2	"orthopedic*" OR "orthopaedic*"
3	#1 AND #2
4	"mental health*" OR "mental illness*" OR "mental disorder*" OR "psychological condition*" OR "post-traumatic stress disorder" OR "PTSD" OR "depression" OR "depressive disorder" OR "anxiety disorder*" OR "eating disorder" OR "schizophrenia" OR "bipolar disorder" OR "substance use disorder" OR "obsessive compulsive disorder" OR "personality disorder"
5	#3 AND #4
Filters	English-language only, published between 2003 and 2023
Results	**318**

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