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Assessment and Treatment of Childhood-Onset Conduct Disorder: A Literature Review

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Abstract

Introduction: Conduct disorder (CD) is among the most highly represented diagnostic issues in child psychiatry. Current research suggests that early-onset CD is predictive of a worse prognosis and trajectory than other CD subtypes if not subsequently met with appropriate psychological assessment and symptom management. This paper aims to provide an overview of the literature from 2014 to 2021 in assessment and intervention protocols that target childhood-onset type specific CD, and appraise associated barriers implicated by the findings.

Methods: This review involved a thorough literature search in electronic databases to extract empirical studies directly related to childhood-onset CD. The review was performed on PsycINFO and PubMed using the following search words: "conduct disorder(s)" OR "CD" OR "conduct disordered", AND "child(hood)-onset" OR "elementary-onset" OR "early-onset", AND "assessment" OR "evaluation" OR "examination", AND "intervention" OR "treatment" OR "symptom management".

Results: Based on trends, articles were sorted into three common topics: assessment, treatment, and barriers to psychological services. The studies demonstrated the importance of sensitive and specific assessment tools, neural measures, behavioural markers, and the limited prosocial emotions (LPE) specifier. The results indicated that comorbidities, tailored school- and family-based intervention, parent-child conflict, and the LPE specifier in addition to the age-of-onset subtype is an area of research for clinicians.

Discussion: Research has shown that childhood-onset CD, compared to other age-of-onset subtypes, is associated with individual risk factors such as neurological and cognitive deficits, poor emotion regulation, familial maladaptive parenting styles, and evocative family instability. While research has focused on dispositional risk factors for this heterogenous disorder, it is important to shift the focus to evidence-based clinical assessment and treatment strategies tailored to the poor prognosis of this subtype. Future research should examine current assessment sensitivity and appraise key stakeholders in early identification and treatment.

Conclusion: Early detection and intervention will increase the chances of a positive outcome for all parties, which includes reducing emotional strain and internalizing thoughts of caregivers and teachers and preventing antisocial personality disorder in adulthood. Normative treatment options for childhood-onset CD coincides with individual risk factors, further research will have implications in identifying and providing early care to at-risk children.

Keywords: conduct disorder; childhood-onset; early-intervention

Introduction

Conduct disorder (CD) is an externalizing mental disorder characterized by persistent disruptive behaviour and disinhibition and is among the most highly represented diagnostic issues in child psychiatry [1]. The Diagnostic and Statistical Manual of Mental Disorders fifth edition (DSM-V) specifies between childhood-onset, adolescent-onset, and unspecified-onset subtypes with regards to what age an individual begins to display CD symptoms. The age of onset for CD is critical for determining severity, course, and etiology. Early-onset of CD in childhood is predictive of a worse prognosis and trajectory, such as clinical CD, substance-use disorders, and criminal behaviour seen in adulthood, if it is not subsequently met with appropriate psychological assessment and symptom management.

CD is characterized as a persistent and repetitive pattern of social norm and age-appropriate behaviour violation. Externalizing disorders, such as CD and attention deficit hyperactivity disorder (ADHD), are criterion that are observable to others. Examples of externalizing criterion include aggression, destruction of property, and cruelty to animals. Whereas internalizing disorders, such as major depressive disorder (MDD) and generalized anxiety disorder (GAD), are criterion that are not easily observed

by others. Examples of internalizing criterion include feelings of sadness, negative self-talk, and depression [2]. Core features of this CD include aggression towards other persons/animals, destruction of property, and deceitfulness and/or theft. These core features manifest as fifteen criteria in the DSM-V, which includes bullying/threatening/ intimidating others, lying to obtain goods/favours, running away from home overnight, and physical cruelty to animals. A minimum of three criterion must be present within the last twelve months, and a minimum of one in the last six months, to warrant a clinical CD diagnosis. A subclinical CD diagnosis would suggest the minimum number of criterion has not been present in the last twelve and/or six months. Subclinical CD does not constitute an absence of CD traits [1].

The heterogeneity of CD has implications in etiology, developmental trajectory, treatment options, and prognosis [2]. Although necessary for diagnoses, DSM-V criterion alone does not capture the complexity of highly heterogenous mental disorders such as CD. Heterogeneity suggests variations of clinical presentation, outcome, and response to treatments across people with the same diagnosis. Examples of these manifestations include time of onset, comorbidity, and specifiers. This variability correlates with age of onset, environmental, genetic, social, and psychological risk factors as mentioned in the DSM-V [1]. The underdevelopment of frontal lobes and synaptic connections at this early age range contributes to poor executive functioning, decision making, and emotional regulation [3]. The heterogeneity of CD coincides with the risk of antisocial personality disorder (ASPD) in adulthood [4]. Current research suggests that this risk is more pronounced in childhood-onset CD and comorbid externalizing mental disorders such as CD and ADHD. The combination of trait impulsivity, callous unemotional traits, and sensitivity to reward and punishment furthers the heterogeneity of CD and the risk of ASPD.

While research has focused on dispositional risk factors for this heterogenous disorder (such as being male and having a family history of CD and/or antisocial personality disorder), it is imperative to examine evidence-based clinical assessment and treatment strategies tailored to children who display childhood-onset type CD [4]. Current assessment protocols outlined in the DSM-V highlight the importance of involving multiple informants, such as family, personnel from school, social services, and the client themselves, in the process [5]. This multidimensional method is crucial to paint a clear and complete picture of the clinical presentation. Treatment protocols outlined in the DSM-V suggest psychotherapy, including individual cognitive behavioural therapy and family therapy, as well as ongoing case management [1]. There is a reluctance by clinicians to label young youth with CD traits; however, research shows that early treatment interventions are most optimal for favorable outcomes [2]. Since previous studies have found poor prognoses in response to the childhood-onset age specifier of CD, the aim of this study was to perform a literature review to examine current assessment and treatment strategies of this subtype, and barriers that prevent CD-trait amelioration. Specifically, empirical studies will be explored to give rise to assessment and treatment strategies, stakeholders, and the removal of barriers with potential to improve early detection and intervention. With the insights of this review, new research pathways can be explored to reduce negative outcomes for children with early-onset CD, as well as their caregivers and teachers.

Methods

A title and abstract search was performed on PsycINFO and PubMed to extract empirical studies directly related to the primary inquiry question. The following keywords were used in the search: “conduct disorder(s)” OR “CD” OR “conduct disordered”, AND “child(hood)-onset” OR “elementary-onset” OR “early-onset”, AND “assessment” OR “evaluation” OR “examination”, AND “intervention” OR “treatment” OR “symptom management”. Inclusion criteria consisted of the following: published in English, empirical studies analyzing assessment and/or intervention protocols in children with diagnosed DSM-V childhood-onset CD, articles published after the DSM-V outlined CD age-specifiers (2014 to 2021), and peer-reviewed articles, specific age group from preschool age (2 to 5 years) to elementary school age (6 to 10 years). Exclusion criteria consisted of the following: articles not focusing on the childhood-onset subtype, articles focusing on risk factors/causes of CD, and/or articles lacking a focus on childhood-onset specific assessment and treatment.

After running the search, 10 citations were retrieved from PsycINFO, and 27 citations were retrieved from PubMed. Seven studies were excluded prior to the article screening process due to duplicate records across both databases. The title and abstract was scanned of thirty records to ensure relevance to the primary inquiry question; thus, several studies were excluded. Two records were excluded for having only the abstract available, eight were excluded due to not assessing CD as their main topic of interest, five were excluded due to assessing etiology/risk factors as their main inquiry question, and two were finally excluded due to being single-case reports. A total of ten studies were included in the literature review (see Figure 1).

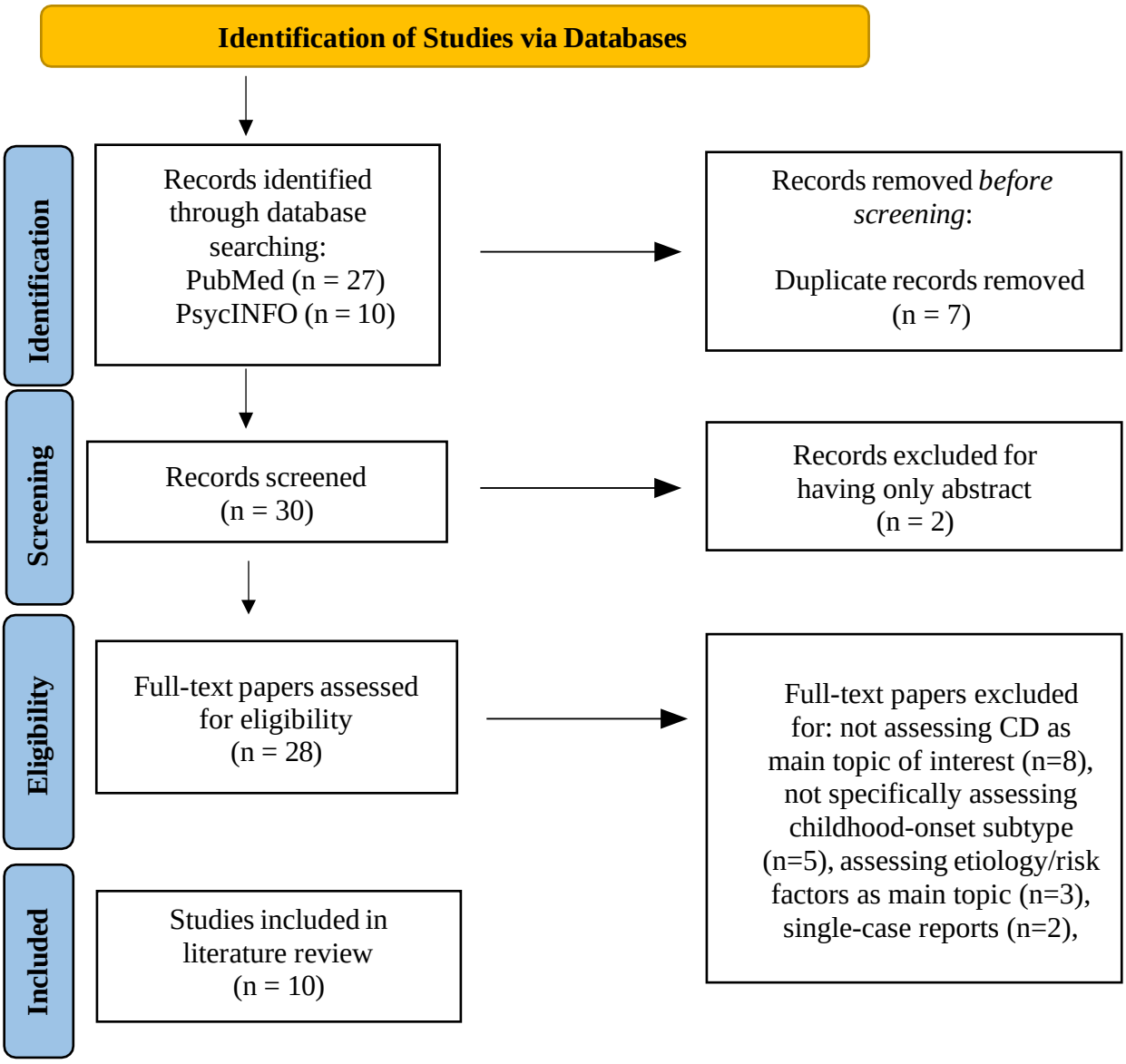

Figure 1. Preferred reporting items for systematic reviews and meta-analyses **(**PRISMA) flow diagram of study selection process used in current literature review [16]. Created with Microsoft Word.

Results

Table 1 charts the extraction data and general study characteristics of the ten included articles. Based on trends of their findings, the articles were sorted into three common topics: assessment, treatment, and barriers to psychological services. Three studies were pooled into assessment, four studies were pooled into treatment, and three studies were pooled into barriers to psychological services.

Topic 1: Assessment of Childhood-Onset CD

Déry et al. [6] explored ways to improve the assessment of childhood-onset CD in their study. A longitudinal study design was used to follow 264 children, with a mean age of 8 years, across four years. The authors appraised the usefulness of the limited prosocial emotions (LPE) specifier of CD and examined whether it aids in identifying children with subclinical CD whose conduct problems are at risk of increasing. The conduct problems of these participants were reassessed at four subsequent annual time points based on the LPE specifier outlined in the DSM-V, CD symptoms assessed using the Diagnostic Interview Schedule for Children-revised version (DISC-R), and a DSM-oriented scale for subclinical conduct problems [6]. Control variables, oppositional defiant disorder (ODD) symptoms and ADHD symptoms, were also evaluated. The findings indicate that 42% of children with subclinical CD, and almost half of children with CD displayed the LPE specifier. The specifier has limited clinical utility in

identifying severe CD or children at highest risk of developing CD among those who are subclinical. However, results also suggest that the specifier may identify children with CD or subclinical CD who are more vulnerable to comorbidities such as ODD and ADHD. This finding, similar to the findings by Bertoletti et al. [7], gives evidence-based assessment strategies to ensure childhood-onset CD traits are captured accurately and efficiently to give a proper early diagnosis.

Hong and colleagues [8] appraised how research can inform primary care clinicians to help identify preschoolers with CD and those who are at risk for persistent CD in childhood in their study. A longitudinal, follow-up study design was used to investigate associations between disruptive behaviors and CD in their sample of 273 children from preschool-age to elementary- age. Similar to the objectives of Déry et al. [6] and Bertoletti et al. [7], Hong and colleagues wanted to address how early assessment strategies can differentiate between children in need of early intervention from those who will grow out of their misbehaviors. Caregivers of preschoolers were interviewed using the Preschool Age Psychiatric Assessment, and at school age the participants were assessed via an age-appropriate diagnostic interview. The results indicated that high-intensity argument/defiant behavior, low- and high-intensity aggression to others, high- intensity destruction of property, high-intensity deceitfulness/stealing, and high-intensity problems with peers were positively associated with preschool CD, and predictors of school-age CD. This study finding provides key behavioral markers for preschool CD and provides as a useful guide to refer young children at risk of developing childhood CD, which coincides with the findings by Bertoletti et al., and Déry et al., which both provided novel suggests to improve psychological assessment and target youth for early-intervention [6,7].

Bertoletti et al. [7] analyzed the correlation between P300 amplitude and DSM-V diagnosed childhood-onset CD. A twin study design was utilized and incorporated 100 twin-pairs with a mean age of nine years. Previous research suggested that the P300 amplitude is a reliable and replicable measure of attentional orienting, and possible marker of neurophysiological processes underlying externalization, such as CD. The participants were seated in a quiet and light-attenuated room to complete the P300 amplitude odd ball task, where they were instructed to keep a running count of the number of targets, they heard to ensure attention. The Child Behavior Checklist, a parent-rated questionnaire that satisfactorily predicts DSM-V diagnoses, was completed by the mothers of the participants to assess their children's behavioral problems. The findings indicate that conduct problems in early childhood are associated with smaller auditory P300 amplitude, and genetic factors govern this association. A deficit of P300 amplitude relates to impaired higher cognitive functioning, which may lead to worse school performances, occupational failure, and increased likelihood of developing antisocial behavior. Confirming reduced P300 amplitude as a valuable marker for conduct problems at such a young age supports the early identification of childhood-onset CD and promote favorable outcomes due to early assessment.

Topic 2: Treatment for Childhood-Onset CD

Treatment for childhood-onset CD is proven difficult due to the client's age and understanding, treatment-interfering CD traits, and the required involvement of family members and teachers [4]. A commonality across the four studies included under the treatment topic emphasizes the involvement of the family to produce favorable outcomes in symptom management. Jayaprakash et al. [9] aimed to analyze the symptom profile and severity of childhood-onset CD in tertiary level care in their study. A descriptive clinical-based outpatient study design was utilized to examine a sample of 60 children in terms of clinical history, observation, and family and schoolteacher evaluation interviews. Their findings indicate that CD symptom severity was significantly higher in childhood-onset CD, and a higher prevalence of comorbidities with hyperkinetic disorder and ADHD, which both influences symptom severity and prognosis. This finding suggests that the treatment plan for diagnosed childhood-onset CD should explore comorbidities that may impact the therapeutic effects. The clinician creating the treatment plan must also recognize symptom severity associated with the childhood-onset subtype and communicate this with the family members to prevent misunderstandings.

Johnson and colleagues [10], similar to Jayaprakash et al. [9], aimed to discover whether the childhood-onset subtype of CD, compared to adolescent-onset subtype, requires a tailored treatment plan to ensure favorable outcomes in their study. A qualitative interview study design was utilized to investigate 43 subjects and compare childhood-onset antisocial youths with adolescent-onset antisocial youths with CD. The authors acknowledged that since childhood- onset subtype of CD often has poorer outcomes, it is likely possible that there are differing traits that need to be addressed during treatment compared to adolescent-onset subtype. The results indicated that childhood-onset CD is correlated with deficits in verbal learning and memory, higher rates of psychosis, childhood maltreatment and more serious violent behavior. This finding suggests that a tailored therapeutic approach to treating these age-specific traits of CD would be crucial to have promising outcomes in symptom management. Similar to Jayaprakash et al. [9], the authors highlighted the importance understanding age-specific traits and incorporating a dual parent-physician therapeutic relationship to have beneficial effects [10].

Research by Stevens et al. [11] and Winther et al. [12] similarly looked at novel approaches to childhood-onset CD treatment that utilize a family-centered intervention program. Winther and colleagues used a qualitative

interview study design, whereas Stevens and colleagues reported on a randomized controlled trial. Winther and colleagues had a large sample of 8,546 youth aged 4-10 years, whereas Stevens and colleagues had a small sample size, with 18 youth and 26 caregivers. Both studies emphasized that school-based early intervention programs, in combination with parent involvement in treatment, is vital for childhood-onset CD symptom management. The findings from Winther et al. indicated that school-based early intervention programs significantly reduce parent- and teacher-reported internalizing and externalizing symptoms that were previously noted in youth [12]. Similarly, the findings from Stevens et al indicated that the family-centered intervention program increased first person, action-oriented, and present tense words that were otherwise absent in youth with CD traits [11]. Youth who were interviewed noted a significant reduction in the use of leisure words. Feedback-informed therapy, involving both parents and teachers, reflects significant benefits in children with childhood-onset CD [11].

Topic 3: Barriers to Psychological Services

While tailored assessment and treatment strategies are critical for favorable outcomes in childhood-onset CD, it is imperative to appraise and disseminate barriers that remain. Significant barriers were discovered across three pieces of literature that prevent equitable access to required assessment and treatment resources. Burt & Klump [13] utilized a twin study design to evaluate whether a gene-environment interaction in parent-child conflict influences antisocial/externalizing behaviors in childhood. Their findings indicated that mean levels of parent-child conflict were higher in boys than girls, and conduct problems were positively associated with conflictive parenting and observer ratings of parenting negativity. This poses a significant barrier to psychological services because cooperation and permission of parents is usually required at childhood-age, and conflicting/negative parents may not be supportive of their child. This finding also signifies a barrier in psychological services for childhood-age boys because parents who have high conflict with their child may not be open to seeking mental health support for them.

Gutman et al. [14] utilized a longitudinal study design to follow 12,798 participants across eight years to measure associations between conduct problems and social factors. Like Burt & Klump, Gutman and colleagues found that boys are negatively impacted by diagnoses of early-onset CD, in which single parenthood was significantly associated with childhood-onset CD in boys. The authors also found that family income in the bottom quintile significantly raised the chances of childhood-onset CD. This poses another significant barrier to psychological services because publicly funded resources have long waitlists that may increase adverse outcomes; however, families with low-income or single parents may not be able to financially handle private assessment and treatment options.

Jambroes et al. [15] appraised the usefulness of the LPE specifier in addition to age-of- onset subtyping in their study. The authors used a qualitative interview study design to assess 145 children in terms of callous-unemotional dimension of the Youth Psychopathy Traits Inventory, internalizing and externalizing behavior, and age-of-onset in terms of DSM-V diagnosed CD. Similar to the findings by Burt & Klump, the authors found that youth with childhood-onset CP and LPE showed significantly more aggression than adolescent-onset CD, which may pose challenges for clinicians, parents, and teachers alike. Youth with aggressive traits may evoke negative emotions in parents and teachers, which may in return pose challenges for them receive the proper mental health support they require. Clinicians not fully equipped to handle the associated aggressive tendencies of childhood-onset CD may abandon their client, which makes it difficult for their self-worth and wellbeing.

Table 1. Data extraction chart and general characteristics of included studies (n = 10)

Author (year) (country)	Participants	Measures	Findings	Topic
Déry et al. (2019) (Canada) [6]	264 children (40.5% girls), mean age: 8 years	Participants divided based on presence of CD and the LPE specifier. CD reassessed at four time points.	The specifier offers limited value in identifying CD early. May help identify subclinical CD.	Assessment
Bertoletti et al. (2014) (Italy) [7]	100 twin pairs (38 monozygotic, 62 dizygotic); mean age: 9 years	Auditory oddball task, Child Behavior Checklist.	Conduct problems scores negatively and significantly correlated with P300 amplitude.	Assessment

Author (year) (country)	Participants	Measures	Findings	Topic
Hong et al. (2015) (USA) [8]	273 children preschool-age mean: 5 years, school-age mean: 8 years	Preschool Age Psychiatric Assessment, age-appropriate diagnostic interviews.	High argument/defiant behavior, low- and high-intensity aggression to others, and peer problems were markers of preschool CD and predictors of school-age CD.	Assessment
Jayaprakash et al. (2014) (South India) [9]	60 children (28% 6-8 years)	Detailed history taking, observation, and evaluation. Comorbidities, family psychopathology, and symptom profile assessed.	Symptom severity significantly higher in childhood-onset CD. High prevalence of comorbidities with hyperkinetic disorder and ADHD.	Treatment
Johnson et al. (2015) (Australia) [10]	43 children (34 males), mean age: 12 years	Childhood-onset antisocial traits compared with adolescent-onset. Neuropsychological function compared with normative control samples.	Childhood-onset group had deficits in verbal learning and memory, higher rates of psychosis, childhood maltreatment, serious violent behavior.	Treatment
Stevens et al. (2017) (Australia) [11]	18 youth and 26 caregivers, mean age: 12 years	Outcome measures listened to. First- and last-treatment session audio files transcribed, linguistic analysis done.	Feedback-informed therapy reflect significant benefits.	Treatment
Winther et al. (2014) (Australia) [12]	8,546 children (ages 4-10)	Strengths and Difficulties Questionnaire.	Significant reductions in parent- and teacher-reported internalizing and externalizing symptoms.	Treatment
Burt & Klump. (2014) (USA) [13]	500 twin pairs (50.2% monozygotic), mean age: 8 years	Achenbach Child Behavior checklist, clinical interview for children and adolescents, interaction analyses.	Mean levels of parent-child conflict higher in boys than girls. Conduct problems positively associated with conflictive parenting parental negativity.	Barrier to psychological services
Gutman et al. (2018) (United Kingdom) [14]	12,798 participants (6458 boys, 6340 girls)	Strengths and Difficulties Questionnaire. Social factors assessed.	Low family income significantly raised chances of childhood-onset CD. Single parenthood significantly associated with early-onset CD in boys.	Barrier to psychological services
Jambroes et al. (2016) (Netherlands) [15]	145 children (51% male), mean age: 10	Diagnostic Interview Schedule for Children-IV, LPE specifier, psychopathic traits questionnaire.	Youth with childhood-onset CP and LPE showed significantly more aggression than adolescent-onset CD.	Barrier to psychological services

Discussion

Childhood-onset CD is associated with more frequent and severe physical aggression, poor peer friendships and relationships with others, and in return, has a more negative disorder trajectory [1]. These persistent disruptive management problems in early childhood, such as defiance, non-compliance, and impulsivity, directly affects not only the youth in question, but also their immediate social network, peers, and family members [8]. Early detection and intervention is important to increase the chances for a positive outcome for all affected, such as reducing the emotional strain on parents and internalizing thoughts of siblings [8, 9]. Externalizing spectrum disorders, such as CD and ADHD, contribute significant costs on youth, families, and society with regards to academic underachievement, criminality, unemployment, and incarceration [7, 9]. Previously, externalizing spectrum disorders have been treated as individual problems; however, high comorbidity and continuity suggests shared etiology between them [7, 9]. While the literature found limited value of the LPE specifier in early CD identification in particular, it does have potential value in identifying subclinical CD in children vulnerable to comorbidities such as ODD or ADHD [6]. It is important to not only possess a

sensitive CD measure, but to also appraise co-occurring disorders that may pose a threat to normative therapeutic models and effects. A dimensional approach, opposed to a categorial approach, may be a more useful approach to assessing and treatment comorbid CD and ADHD. The heterogenous nature of externalizing mental disorders such as CD and ADHD goes hand in hand with a dimensional approach to assessment and treatment [17]. The dimensional model views personality traits on a continuum, whereas the categorical model views each personality disorder as a separate category from each other. A categorical approach to assessment would rely solely on the DSM-V criteria to determine the presence or absence of CD traits, whereas the dimensional approach places the criterion on a continuum of severity and/or frequency.

These findings have important implications for further research and subsequent clinical practice. Most importantly, it highlights the need for a tailored, comprehensive, and individualized approach to assessment and treatment that recognizes the needs of at-risk youth. The age-associated trajectory of childhood-onset CD has been demonstrated to be fundamentally different than adolescent- or undifferentiated-onset CD, where it commonly leads to adverse outcomes. Further research should be done to create a guideline for teachers to recognize early behaviours and traits of CD to refer them to school- based social services for early intervention with their parents. Jayaprakash and colleagues demonstrated the usefulness of a combined history taking, observation, and evaluations from both family and schoolteachers. Research suggests that symptom severity is significantly higher in childhood-onset CD, and a high prevalence of comorbidities with hyperkinetic disorder and ADHD also influences symptom severity [9]. An increased awareness of CD symptoms may assist in early intervention, as symptom severity of the subtype makes it more likely for stakeholders to identify a problem in need of care. Teachers and parents have been shown to be key players to the assessment and treatment of childhood-onset CD. The research found that conduct problems were positively associated with conflictive parenting and observer rating of parenting negativity [13]. The familial involvement in CD treatment poses a challenge for high parent-child conflict which may be mediated by the dual parent-teacher relationship [11, 13]. School-based early intervention programs combined with parental involvement in treatment has been shown to be vital for symptom management [11]. Further research should be conducted to highlight how this dual-relationship can be sustained to foster a positive environment for the child.

There are limitations to this study that must be noted. The database search was contained to PubMed and PsycINFO, rather than expanding the search through multiple search engines. Ten papers were included in this review, which raises some concern. The scope of the current review is limited due to the strict inclusion/exclusion parameters. Null research findings across the ten included papers were not discussed in this review, which raises questions of the results. Further research should expand the database scope, appraise null findings, and reduce inclusion/exclusion criteria to uncover potentially relevant findings.

Conclusions

The literature review found that an individually tailored assessment and treatment strategy for childhood-onset CD is vital to prevent the common negative trajectory the disorder typically leads. Early detection and intervention are important to increase the chances for a positive outcome for all parties involves, such as reducing emotional strain and internalizing thoughts of parents and teachers. Research shows that childhood-onset CD, compared to adolescent-onset CD, is associated with individual risk factors such as neurological and cognitive deficits, and poor emotion regulation, and familial factors such as maladaptive parenting styles and family instability. Normative treatment options for childhood-onset CD coincides with these factors, such as individual interventions targeting impulsivity, and family interventions such as multi-person therapy. The review of literature expanded on these ideas and demonstrated the importance of creating a comprehensive strategy that targets youth from all backgrounds. Further research should be done to explore how a population health approach can accommodate youth of multiple backgrounds. Proper dissemination of findings should also be explored to highlight the need for improved relationship channels between caregivers and teachers.

List of Abbreviations Used

ASPD: antisocial personality disorder
CD: conduct disorder
DSM-V: diagnostic and statistical manual of mental disorders fifth edition
DISC-R: diagnostic interview schedule for children-revised version
GAD: generalized anxiety disorder
MDD: major depressive disorder
PRISMA: preferred reporting items for systematic reviews and meta-analyses
ODD: oppositional defiant disorder
ADHD: attention-deficit/hyperactivity disorder
LPE: limited prosocial emotions

Conflicts of Interest

The author declares that they have no conflict of interest.

Ethics Approval and/or Participant Consent

This review did not require ethical approval and/or participant consent.

Authors' Contributions
BS: made substantial contributions to the design of the study, the collection of data as well as interpretation and analysis of the data, revised the manuscript critically, and gave final approval of the version to be published.

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