



Review

Vulnerable Populations: Comparison of Characteristics of Adolescent Inpatients with Substance Use Disorder and a History of Child Maltreatment to Inpatients without a History of Child Maltreatment: A Retrospective Chart Review

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Abstract: Background: Adolescent inpatients with substance use disorder (SUD) and a history of child maltreatment (CM) present a vulnerable population at considerable risk of poor health and social outcomes. The aims of this study were to explore the proportion of adolescent inpatients with SUD and a history of CM and to compare these patients to inpatients with SUD and no history of CM. Methods: In this retrospective chart review, we explored adolescent patients who were consecutively admitted to a regional child and adolescent inpatient unit for psychiatric care and met DSM (5th ed) criteria for SUD. A standardized form was created and used to extract clinical information and psychosocial histories. Results: From 1 September 2019 to 28 February 2020, 126 adolescents were admitted with SUD, and for 80 (63.3%) patients, a history of CM was recorded in the medical charts. Patients with a history of CM were significantly more likely to be female ($p = 0.02$), have longer lengths of stay ($p = 0.04$), to be readmitted ($p = 0.03$), be diagnosed with trauma/stress-related ($p = 0.04$) and eating disorders ($p = 0.05$), to have a parent with a mental illness ($p = 0.01$), experienced physical ($p < 0.01$) and sexual ($p < 0.01$) assaults and homelessness ($p < 0.01$), and to engage in self-harming behaviors ($p < 0.01$) than inpatients with SUD but no history of CM. Conclusions: Almost two-thirds of adolescent inpatients with an SUD reported a history of CM. Addressing their specific clinical and psychosocial vulnerabilities through comprehensive treatment and discharge plans may reduce readmission and improve quality of life.

Keywords: inpatients; substance use disorder; child maltreatment; length of stay; readmissions



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1. Introduction

Children who experience maltreatment are among the most vulnerable in Canada, and their mental health is a major concern. Our understanding of child maltreatment has evolved with respect to both the age of the child and the scope of the concept of maltreatment. There has been an improved understanding of the need for support to continue into the late adolescent period. Recent developments in Ontario, Canada, have expanded child protection to youth aged 16 and 17 years; youth who have left home due to safety concerns or are homeless may be eligible for support from Children's Aid Societies [1]. Currently, child maltreatment includes physical abuse, emotional abuse, neglect, and sexual abuse, and through Bill 251, Combating Human Trafficking Act 2021, exploitation for child sex trafficking was added [2]. Global attention has also recently been on youth who are being trafficked or exploited which, as noted by The World Health Organization [3], indicated child maltreatment.

“ . . . includes all types of physical and/or emotional ill-treatment, sexual abuse, neglect, negligence, and commercial or other exploitation, which results in actual

or potential harm to the child's health, survival, development, or dignity in the context of a relationship of responsibility, trust, or power."

Our understanding of psychiatric illness has also evolved. The precise etiology of psychiatric disorders is still unclear though much progress has been made in determining the genetic [4,5] contributions. Many of the environmental contributions to psychiatric illness are similar to the risk factors associated with child maltreatment. Multiple risk domains have been shown to be associated with both the onset of psychiatric illness and child maltreatment; however, parent-related risk factors such as parental psychiatric illness (current or history) or substance use and a history of child abuse are especially important [6].

Child maltreatment is a national and global problem with severe long-term consequences and a significant burden of disease. The prevalence of child maltreatment in Canada has been reported as 32% [7], while in a recent clinical sample of children referred to urgent psychiatric care, the prevalence was reported as 30.4% [8]. Child maltreatment has been associated with several types of psychiatric illnesses, substance misuse, suicide ideation and attempts, obesity, poor physical health, poor spousal and family relationships, poor educational and occupational outcomes, criminal behavior, risky sexual behaviors, and sexually transmitted infections [7,9–12]; and adversely affects psychological development [13], functional and structural changes in the brain [14] and can be fatal [15].

Children who experience child maltreatment are at increased risk for hospitalization for trauma or psychiatric illness. Readmissions for patients experiencing maltreatment is common [16,17]. Moreover, a significant proportion of children admitted for intensive treatment for mental illness have child welfare involvement and present with worse functioning than children living with biological parents [18,19]. In particular, there has been recent attention to the vulnerabilities related to substance use disorder in youth involved in child welfare [20–22] and of particular relevance is the prevalence of substance use disorder in adolescent patients accessing urgent psychiatric care [8]. However, adolescents with substance use disorder also present with complex histories similar to those of adolescents who experienced child maltreatment, such as a family history of substance use and mental illness, family dysfunction, and difficulty with interpersonal relationships [23,24], so distinguishing characteristics associated with child maltreatment may prove useful. There are important findings from studies with general samples; however, there is a dearth of research on the characteristics of adolescents with a history of child maltreatment who were admitted to hospital for psychiatric care with substance use disorders.

The purposes for the present study were to explore the proportion of psychiatric adolescent inpatients with substance use disorder who have a history of child maltreatment or child welfare involvement and to compare the clinical and psychosocial characteristics of adolescent inpatients admitted for psychiatric care with a substance use disorder and a history of child maltreatment to adolescent inpatients with substance use disorder but without a history of child maltreatment. Consistent with the exploratory nature of this study, there were no specific hypotheses.

2. Materials and Methods

This chart review has been approved by the Tri-Hospital Research Ethics Board (2020-0695) and the University of Guelph Research Ethics Board (20-01-006) for compliance with federal guidelines for research involving human participants consistent with the Helsinki Declaration.

The medical charts of all patients consecutively admitted to a Child and Adolescent Inpatient (CAIP) psychiatric unit between 1 September 2018 and 29 February 2020 were screened by a clinical social worker and a research assistant, both with a Master's degree in social work. Attending psychiatrists entered clinical diagnoses, including substance use disorder, into the charts based on the Diagnostic and Statistical Manual (5th ed.). Only charts where the psychiatrist entered a substance use disorder (SUD) were included in this analysis. Clinical information and psychosocial histories were abstracted from the charts using a standardized form, including primary diagnosis, history of maltreatment that may or may not have been reported at admission but was disclosed during treatment, length of

stay, and psychosocial histories such as trauma and homelessness. A study identification number was assigned to each patient to anonymize the data.

2.1. Setting

The CAIP unit is situated in southwestern Ontario, Canada, serving a city with a population of about 600,000 and surrounding regions. It is an acute care setting with 13 beds. A multi-disciplinary team provides crisis intervention, stabilization, and treatment.

2.2. Data Analysis

The proportion of patients with a history of child maltreatment or involved in child welfare in the medical records was presented. There were no uniform or standardized formats for recording child maltreatment or child welfare involvement in medical records, thus, any reference to a history of physical, sexual, psychological abuse or neglect, living or having lived with foster families or in group homes, witnessing domestic violence and exploitation, or human trafficking were abstracted. To test differences between patients with and without child welfare involvement, *t*-tests were used for continuous variables, a Chi-square test was used to compare proportions, and Fisher's exact test was used to explore differences in the proportion of patients diagnosed with eating disorders because the proportion was zero for one group (those without a history of child maltreatment) [25]. For the analysis on gender, one youth who identified as transgender was removed. After adjusting for age, gender, length of stay for first admission and number of admissions, logistic regression [25] was used to explore the comparison of the clinical and psychosocial characteristics between adolescent inpatients with SUD and a history of maltreatment to adolescent inpatients with no maltreatment. Note, there were no cases per cell or no inpatients without a history of maltreatment for whom an eating disorder was recorded in the charts; therefore, eating disorder was not included [26].

3. Results

During the study period, of the 126 inpatients diagnosed with an SUD, 80 (63.3%) patients had at least one characteristic of child maltreatment recorded in the medical chart. For 52 (41.3%) patients, psychiatrists recorded a history of child maltreatment, 42 (33%) reported witnessing domestic violence, 25 (20%) were involved with child protection services, including foster care and kinship care, and 20 (16%) reported sex trafficking. This proportion does not include the patients who could not be clearly categorized as having experienced some form of maltreatment, such as patients who reported emotional and physical abuse in romantic relationships, or patients who were assaulted or bullied by peers.

In comparison to patients for whom there was no recording of any aspect of child maltreatment or exploitation ($n = 46$), there were no statistically significant differences in age (15.8; SD 1.1), but a greater proportion of youth who experienced maltreatment identified as female than male, had a greater number of admissions, and longer lengths of stay than youth for whom child maltreatment was not entered into the charts (Table 1). The most common psychiatric diagnosis for all patients was mood disorders. Patients with a history of child maltreatment had a statistically higher proportion of trauma/stress-related and eating disorders, self-harming behaviors, histories of physical and sexual assault, and experiencing homelessness or being precariously housed, than patients without a history of child maltreatment (Table 2). Inpatients with a history of maltreatment were approximately twice as likely to be diagnosed with a trauma disorder (odds ratios [OR]: 2.0; 95% CI: 0.88–4.55), more likely to have a parent with a mental illness/substance use disorder (OR: 1.7; 95% CI: 0.62–4.6), engage in self-harming behaviors (OR: 2.8; 1.09–7.43), experience sexual (OR: 2.9; 95% CI: 0.98–8.5) and physical assaults (OR: 2.65; 95% CI: 1.39–7.53) and homelessness (OR: 3.49; 95% CI: 0.82–14.79) than inpatients with no maltreatment.

Table 1. Characteristics of Patients.

	Maltreatment	No Maltreatment	<i>p</i> Value
Characteristic	(<i>n</i> = 80)	(<i>n</i> = 46)	
Age, m (SD)	15.7(1.1)	15.9(1.1)	0.410
Gender, <i>n</i> (%) ¹			
Female	57 (72)	24 (51)	0.024
Male	21 (27)	23 (49)	
Number of Admissions, m (SD)	2.2 (1.6)	1.6 (1.4)	0.044
Length of 1st stay days, m (SD)	10.6 (7.6)	8.1 (3.1)	0.029

¹ One youth who identified as transgender was removed for this analysis.

Table 2. Clinical and Psychosocial Characteristics.

	Maltreatment	No Maltreatment	<i>p</i> Value	Odds Ratio (95% CI) ¹
Characteristic	(<i>n</i> = 80)	(<i>n</i> = 46)		
Psychiatric Diagnoses, <i>n</i> (%)				
Mood disorder	52 (65.0)	28 (61.0)	0.643	0.934 (0.39–2.23)
Trauma/stress disorder	47 (58.8)	18 (39.1)	0.034	2.001 (0.88–4.55)
Anxiety	39 (48.8)	21 (45.7)	0.737	0.689 (0.84–0.37)
Personality disorder	11 (13.8)	7 (15.2)	0.820	0.172 (0.04–0.75)
Parent–child conflict	10 (12.5)	4 (8.7)	0.513	0.942 (0.19–4.73)
Eating disorder	7 (8.8)	0 (0)	0.047	-
Trauma Histories, <i>n</i> (%)				
Parent with MI/SUD ²	64 (80)	27 (59)	0.011	1.685 (0.62–4.58)
Self-harm behaviors	60 (75)	22 (47.8)	0.002	2.847 (1.09–7.43)
Suicidal behaviors	50 (62.5)	24 (52.2)	0.257	0.674 (0.26–1.77)
Sexual assault	44 (55.0)	10 (21.7)	0.0003	2.882 (0.98–8.45)
Physical assault	43 (53.8)	11 (23.9)	0.001	2.645 (1.39–7.53)
Victim of bullying	38 (47.5)	18 (39.1)	0.362	0.998 (0.40–2.50)
Homeless or precariously housed	22 (31.3)	3 (6.5)	0.001	3.486 (0.82–14.79)
Death of someone close	21 (26.3)	10 (21.7)	0.571	0.887 (0.31–2.55)

¹ CI = Confidence Interval ² MI/SUD = mental illness and or substance use disorder.

4. Discussion

The prevalence of child maltreatment recorded in medical charts in this clinical sample of adolescent inpatients admitted to psychiatry with a substance use disorder was 63.3%. This proportion is in comparison to 32% in a Canadian community sample [7] and 30.4% in

a clinical sample of adolescents referred to urgent psychiatric care [8]. It was also found in the present study that these inpatients with substance use disorder and histories of child maltreatment were more commonly female, had longer lengths of stay, a greater number of readmissions, and a greater proportion were diagnosed with trauma/stress-related and eating disorders than inpatients with substance use disorder but no history of child maltreatment recorded in their medical charts. The higher proportion of female patients is consistent with similar reports [8] and may reflect the notion that male youth may be less likely than female youth to report maltreatment.

The longer lengths of stay and greater number of readmissions for these inpatients with substance use disorder and a history of child maltreatment is a considerable concern. At this regional hospital, there are not enough acute care beds (i.e., 13) in the child and adolescent psychiatric inpatient unit to manage the demands for service. For every day one youth is in the unit, another youth has to wait in the emergency department or community for an opening. Therefore, these findings suggest that these adolescents would benefit from the funding of programs for intensive outpatient or community support quickly available after the first admission to help reduce the length of stay and avoid repeat admissions. However, in a recent report, it was shown that about 28,000 children and youth are waiting months and years to access specialized and community mental health services in Ontario [27]. Moreover, the average wait time for intensive treatment in the community serving the patients in this chart review was reported as 361 days [27]. This situation may be considered dire.

The inpatients with a history of child maltreatment reported significantly higher levels of assaults, both physical and sexual, than patients without a history of child maltreatment. The connection between adverse childhood experiences (ACEs), child maltreatment, and substance use has been well-documented [9,28,29]. Substance use in youth is strongly associated with having experienced physical and sexual abuse and parental substance use [28], with significant negative impacts on emotional well-being and health. The stress of ACEs has been shown to have enduring effects and impair multiple brain structures and functions [28]. Consistent with the body of research (e.g., [6,30,31]), the adolescents in this study were shown to be experiencing many of the risk factors associated with maltreatment and with the development of psychiatric disorders, especially substance use disorders. A history of child maltreatment has been shown to increase the risk for adverse clinical and developmental outcomes such as internalizing and externalizing disorders, post-traumatic stress symptoms, difficulties with attachments and interpersonal relationships [30,31], and a significant increase in the risk of developing a substance use disorder [32]. Both child maltreatment and substance use disorder are linked to borderline personality disorder [30,33] and, while there may be some genetic involvement, the co-occurrence is largely considered to stem from common environmental risk factors [30]. These common risks include parental substance use disorder, parental history of psychiatric illness, low family socioeconomic status, problematic family behaviors, and parental histories of abuse [6,30,33]. It has also been noted that PTSD may mediate this link between child maltreatment and substance use disorder [34]. Maltreatment ranks among the most stressful and adverse experiences children can have; it stems from a pathological relationship with a caregiver or relationship of power, responsibility or trust and increases the probability of psychopathology [32]. Specialized care is needed to promote optimal healing for youth with these complex histories, especially for children who experienced maltreatment.

This body of research suggests prevention of maltreatment, prenatally or within the first few years of development, might prevent or reduce the severity of psychopathology and poor developmental outcomes [32]; however, for the adolescent, a different approach is needed. These findings suggest a focus on noting and addressing child maltreatment and its sequelae in the course of psychiatric care. Health care professionals, including emergency medicine, family medicine, pediatrics, and psychiatry, have a critical role in the care of psychiatric patients involved with child welfare that can influence their patients' development, well-being, and outcomes. Particular foci for youth hospitalized

for psychiatric illness include strong collaboration between health care providers and between health care and child welfare providers and stakeholders from other child-serving systems, screening and assessment for trauma exposure and youth functioning in various domains, reliance on trauma-informed and culturally informed approaches, advocacy for nurturing placements, access to appropriate psychosocial treatment after discharge, and the maintenance of supportive relationships [35,36]. There is sound evidence for specialized interventions, such as trauma-focused cognitive-behavioral therapy for maltreatment, and burgeoning support, especially for youth at risk of substance use disorder for relational interventions [32]. Specialty care is needed to treat the effects of disrupted attachments and the complex psychosocial traumas that often include exploitations, instability, and violence.

In the future, investigators should include the development of tools to identify patients who may benefit from specialized care and determine the effectiveness of specialized care designed to enhance the well-being of this vulnerable population and reduce the use of hospitalization. Additionally, the limitations of this retrospective design can be addressed with prospective research.

Limitations

Findings from chart reviews are limited to the quality and thoroughness of the medical record. Medical records of pediatric patients can be incomplete and contain preliminary formulations about possible disorders since there are many developmental changes that occur during adolescence, and there are no precise diagnostic tools for psychiatric illness. The thoroughness of information is also dependent on the patients revealing accurate accounts. Important details were not accessible, such as ethnicity and socioeconomic status. In this study, there was only one patient for whom it was noted in the medical charts that the patient identified as female on some admissions and male on others though it is important to identify sexual minorities. It should also be noted that formal questionnaires such as the family APGAR or measures of maltreatment or trauma were not used in this psychiatric unit. Fully exploring and reporting gender and family functioning in medical charts may enhance practice. In this retrospective design, the findings are also vulnerable to information and selection biases. The information contained in the charts was also retrieved from two different storage systems: an older system with paper files and a new system with electronic files. Detailed medical records may enhance understanding and continuity of treatment, especially when inpatient care is provided by a diverse team of mental health professionals; however, a concern for confidentiality or privacy [15,35] may affect entries because the medical record could be used in legal proceedings and could be read by many people. Lastly, the results of the logistic regression should be interpreted with caution and in keeping with the exploratory nature of this study that may provide a foundational basis for future research.

5. Conclusions

A significant number (63.3%) of youth admitted to psychiatric care with substance use disorder were shown to have a history of child maltreatment recorded in their medical record. These patients also had a greater reporting of histories of physical and sexual assault, longer lengths of stay, higher rate of readmission, and were more likely to be diagnosed with trauma/stress-related and eating disorders than patients with substance use disorder but no history of child maltreatment indicated in their charts. Enhanced and specialized outpatient and community care may reduce readmissions and lead to better outcomes for these vulnerable youth.

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Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Tri-Hospital Research Ethics Board (2020-0695) and the University of Guelph Research Ethics Board (20-01-006), February 2020.

Informed Consent Statement: The study was a chart review; thus, patient consent was waived.

Data Availability Statement: The data sets were constructed with the permission of each of the source data custodians and with specific ethical approvals. The authors do not have permission to share patient-level data because of the highly confidential nature of the data. Permission to access the data is restricted to researchers named and approved by relevant Human Research Ethics Committees.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study, in the collection, analyses, or interpretation of data, in the writing of the manuscript, or in the decision to publish the results.

References

1. Government of Ontario, Ministry of Children and Youth Services, Child Welfare and Child Protection Services. Available online: https://www.ontario.ca/page/child-welfare-and-child-protection-services?_ga=2.8302194.1520145951.1643150432-1509606330.1643150432 (accessed on 3 January 2022).
2. Ontario Association of Children's Aid Societies. Available online: <http://www.oacas.org/who-we-are/our-history/> (accessed on 3 January 2022).
3. World Health Organization. Child Maltreatment. Available online: <https://www.who.int/news-room/fact-sheets/detail/child-maltreatment> (accessed on 3 January 2022).
4. The Brainstorm Consortium; Anttila, V.; Bulik-Sullivan, B.; Finucane, H.K.; Walters, R.K.; Bras, J.; Duncan, L.; Escott-Price, V.; Falcone, G.J.; Gormley, P.; et al. Analysis of shared heritability in common disorders of the brain. *Science* **2018**, *360*, eaap8757. [CrossRef] [PubMed]
5. Kim, A.R.; Sin, J.E. Genetic and environmental contributions to psychopathological symptoms in adulthood: Clarifying the role of individual and parental risk factors. *Asian J. Psychiatry* **2020**, *53*, 102195. [CrossRef] [PubMed]
6. Mulder, T.M.; Kuiper, K.C.; van der Put, C.E.; Stams, G.-J.J.; Assink, M. Risk factors for child neglect: A meta-analytic review. *Child Abus. Negl.* **2018**, *77*, 198–210. [CrossRef] [PubMed]
7. Afifi, T.O.; MacMillan, H.L.; Boyle, M.; Taillieu, T.; Cheung, K.; Sareen, J. Child abuse and mental disorders in Canada. *Can. Med. Assoc. J.* **2014**, *186*, E324–E332. [CrossRef]
8. Dolp, R.; Roberts, N.; Groll, D. Comparison of characteristics of children and adolescents with and without a history of abuse assessed in an urgent psychiatric clinic. *Paediatr. Child Health* **2019**, *25*, 525–528. [CrossRef]
9. Dube, S.R.; Anda, R.F.; Whitfield, C.L.; Brown, D.W.; Felitti, V.J.; Dong, M.; Giles, W.H. Long-Term Consequences of Childhood Sexual Abuse by Gender of Victim. *Am. J. Prev. Med.* **2005**, *28*, 430–438. [CrossRef]
10. Hailes, H.P.; Yu, R.; Danese, A.; Fazel, S. Long-term outcomes of childhood sexual abuse: An umbrella review. *Lancet Psychiatry* **2019**, *6*, 830–839. [CrossRef]
11. Lang, J.; Kerr, D.M.; Petri-Romão, P.; McKee, T.; Smith, H.; Wilson, N.; Zavrou, M.; Shiels, P.; Minnis, H. The hallmarks of childhood abuse and neglect: A systematic review. *PLoS ONE* **2020**, *15*, e0243639. [CrossRef]
12. Norman, R.E.; Byambaa, M.; De, R.; Butchart, A.; Scott, J.; Vos, T. The Long-Term Health Consequences of Child Physical Abuse, Emotional Abuse, and Neglect: A Systematic Review and Meta-Analysis. *PLoS Med.* **2012**, *9*, e1001349. [CrossRef]
13. Abdulaziz, A.; Odhayani, W.J.; Watson, L. Behavioural consequences of child abuse. *Can. Fam. Physician (CFP)* **2013**, *59*, 831–836.
14. Dannlowski, U.; Stuhrmann, A.; Beutelmann, V.; Zwanzger, P.; Lenzen, T.; Grotegerd, D.; Domschke, K.; Hohoff, C.; Ohrmann, P.; Bauer, J.; et al. Limbic Scars: Long-Term Consequences of Childhood Maltreatment Revealed by Functional and Structural Magnetic Resonance Imaging. *Biol. Psychiatry* **2011**, *71*, 286–293. [CrossRef] [PubMed]
15. Kennedy, J.M.; Lazoritz, S.; Palusci, V.J. Risk Factors for Child Maltreatment Fatalities in a National Pediatric Inpatient Database. *Hosp. Pediatr.* **2020**, *10*, 230–237. [CrossRef] [PubMed]
16. Parreco, J.; Quiroz, H.; Willobee, B.A.; Sussman, M.; Buicko, J.L.; Rattan, R.; Namias, N.; Thorson, C.M.; Sola, J.; Perez, E.A. National Risk Factors for Child Maltreatment after Trauma: Failure to Prevent. *Am. Surg.* **2019**, *85*, 700–707. [CrossRef] [PubMed]
17. Quiroz, H.; Parreco, J.; Easwaran, L.; Willobee, B.; Ferrantella, A.; Rattan, R.; Thorson, C.M.; Sola, J.E.; Perez, E.A. Identifying Populations at Risk for Child Abuse: A Nationwide Analysis. *J. Pediatr. Surg.* **2019**, *55*, 135–139. [CrossRef] [PubMed]
18. Lukkari, S.H.; Hakko, H.H.; Partanen, M.A.; Riala, K.R.; Riipinen, P.K. Characteristics of Adolescent Psychiatric Inpatients in Relation to Their History of Preceding Child Psychiatric Inpatient Care. *J. Nerv. Ment. Dis.* **2019**, *207*, 569–574. [CrossRef]
19. Preyde, M.; Frensch, K.; Cameron, G.; White, S.; Penny, R.; Lazure, K. Long-term Outcomes of Children and Youth accessing Residential or Intensive Home-based Treatment: Three year follow up. *J. Child Fam. Stud.* **2010**, *20*, 660–668. [CrossRef]
20. Kobulsky, J.M. The prevalence of substance use in child welfare and general population eighth graders in the United States. *Subst. Use Misuse* **2019**, *54*, 1618–1626. [CrossRef]

21. Sellers, C.M.; McRoy, R.G.; O'Brien, K.H.M. Substance use and suicidal ideation among child welfare involved adolescents: A longitudinal examination. *Addict. Behav.* **2019**, *93*, 39–45. [[CrossRef](#)]
22. Yampolskaya, S.; Chuang, E.; Walker, C. Trajectories of Substance Use among Child Welfare-Involved Youth: Longitudinal Associations with Child Maltreatment History and Emotional/Behavior Problems. *Subst. Use Misuse* **2019**, *54*, 437–448. [[CrossRef](#)]
23. Gray, K.M.; Squeglia, L.M. Research Review: What have we learned about adolescent substance use? *J. Child Psychol. Psychiatry* **2017**, *59*, 618–627. [[CrossRef](#)]
24. Preyde, M.; Whitworth, K.; DiCroce, M.; Markov, A.; Parekh, S.; Heintzman, J. Clinical, Discharge and Psychosocial Profiles of Adolescents with Substance Use Disorder Accessing Inpatient Psychiatry in Ontario, Canada. *Adolesc. Psychiatry* **2021**, *11*, 63–76. [[CrossRef](#)]
25. Altman, D.G. *Practical Statistics for Medical Research*; CRC Press: Boca Raton, FL, USA, 1990.
26. Kuhn, M.; Johnson, K. *Applied Predictive Modeling*; Springer Science Business Media: New York, NY, USA, 2013; p. 600.
27. Children's Mental Health Ontario. Report on Waitlists and Wait Times for Child and Youth Mental Health Care in Ontario. 2020. Available online: <https://cmho.org/wp-content/uploads/CMHO-Report-WaitTimes-2020.pdf> (accessed on 3 January 2022).
28. Anda, R.F.; Felitti, V.J.; Bremner, J.D.; Walker, J.; Whitfield, C.L.; Perry, B.D.; Dube, S.R.; Giles, W.H. The enduring effects of abuse and related adverse experiences in childhood. *Eur. Arch. Psychiatry Clin. Neurosci.* **2005**, *256*, 174–186. [[CrossRef](#)] [[PubMed](#)]
29. Bryant, D.J.; Coman, E.N.; Damian, A.J. Association of adverse childhood experiences (ACEs) and substance use disorders (SUDs) in a multi-site safety net healthcare setting. *Addict. Behav. Rep.* **2020**, *12*, 100293. [[CrossRef](#)] [[PubMed](#)]
30. Wilson, N.; Robb, E.; Gajwani, R.; Minnis, H. Nature and nurture? A review of the literature on childhood maltreatment and genetic factors in the pathogenesis of borderline personality disorder. *J. Psychiatr. Res.* **2020**, *137*, 131–146. [[CrossRef](#)]
31. Yoon, S.; Cage, J.; Pei, F.; Barnhart, S. Risk and Resilience Factors for Psychobehavioral Symptom Trajectories Among Child Welfare-Involved Youth. *J. Interpers. Violence* **2018**, *36*, NP5281–NP5303. [[CrossRef](#)]
32. Cicchetti, D.; Handley, E.D. Child maltreatment and the development of substance use and disorder. *Neurobiol. Stress* **2019**, *10*, 100144. [[CrossRef](#)]
33. Bornoalova, M.A.; Hicks, B.M.; Iacono, W.G.; McGue, M. Longitudinal twin study of borderline personality disorder traits and substance use in adolescence: Developmental change, reciprocal effects, and genetic and environmental influences. *Pers. Disord. Theory Res. Treat.* **2013**, *4*, 23–32. [[CrossRef](#)]
34. White, H.R.; Widom, C.S. Three Potential Mediators of the Effects of Child Abuse and Neglect on Adulthood Substance Use Among Women. *J. Stud. Alcohol Drugs* **2008**, *69*, 337–347. [[CrossRef](#)]
35. Lee, T.; Fouras, G.; Brown, R. Practice Parameter for the Assessment and Management of Youth Involved With the Child Welfare System. *J. Am. Acad. Child Adolesc. Psychiatry* **2015**, *54*, 502–517. [[CrossRef](#)]
36. Zlotnik, S.; Wilson, L.; Scribano, P.; Wood, J.N.; Noonan, K. Mandates for Collaboration: Health Care and Child Welfare Policy and Practice Reforms Create the Platform for Improved Health for Children in Foster Care. *Curr. Probl. Pediatr. Adolesc. Heal. Care* **2015**, *45*, 316–322. [[CrossRef](#)]