4. Wurcel AG, Merchant A, Clark RP, et al Emerging and Underrecognized Complications of Illicit Drug Use. Clinical practice 2016;6l: 1840-1849.

5. Grigorakos L, Sakagianni D, Tsgou E et al. Outcome of acute heroin overdose requiring intensive care unit admission. J Opioid Manag. 2010 May-Jun;6(3):227-31.

6. Nair EL, Cienkowski KM, and Michaelides E. The impact of sudden hearing loss secondary to heroin overdose on fitting outcomes. American Journal of Audiology 2010(19):86-90.

7. Christopher J. L. Murray ,US Burden of Disease Collaborators. The State of US Health, 1990-2010Burden of Diseases, Injuries, and Risk Factors. JAMA. 2013;310(6):591-606. doi:10.1001/jama.2013.13805

8. Bazoukis G, Spiliopoulou A, Mourouzis Ket al. Non-cardiogenic pulmonary edema , rhabdomyolysisand myocardial injury following heroin inhalation: acase report.

9. Feng G, Luo Q, Guo E et al. Multiple organ dysfunction syndrome, an unusual complication of heroin intoxication: a case report and review of the literature. Int J Clin Exp Pathol 2015;8(9):11826-11830.

10. O'Connor G and McMahon G. Complications of heroin abuse. European Journal of Emergency Medicine 2008, 15:104-106.

11. Karoli R, Fatima J, Singh P et al. Acute myocardial involvement after heroin inhalation. J Pharmacol Phamacother 2012 Jul-Sep; 3(3):282-284.

12. Herron AF and Brennan TK. The ASAM Essentials of Addiction Medicine, 2nd ed Wolters Kluwer 2015.

13. Rice EK, Isbel NM, Becker GJ et al. Heroin overdose and myoglobinuric acute renal failure. Clinical Nephrology 2000;54(6):449-454.

14. Shaw KA, Babu KM, and Hack JB. Methadone, another cause of opioid-associated hearing loss: a case report. Journal of Emergency Medicine 2011;41(6):635-639.

Clinical and behavioral indicators associated with trauma history in children and adolescents enrolled in an emergency department diversion program

by Amanda Ribbers, MS[1], Amber Laurie Lin, MS[2], David Sheridan, MD MCR[2] Rebecca Marshall, MD MPH[1]

1) Division of Child & Adolescent Psychiatry , Oregon Health & Science University, Portland OR
2) Department of Emergency Medicine, Oregon Health & Science University, Portland OR

Corresponding author: Amanda Ribbers
3181 S.W. Sam Jackson Park Rd, Mail Code: DC7P
Portland , OR 97239, ribbers@ohsu.edu
tel 971-346-6237, fax 503-418-5774

Abstract

Objective: Adverse childhood experiences increase the risk of mental health problems and suicidality, as well as increasing emergency department (ED) utilization . However, research on the clinical and behavioral characteristics of traumatized youth is limited. Developing strategies to identify youth with adverse experiences may aid clinicians to provide trauma-informed care, and ensure that youth are connected with appropriate mental health interventions. This paper identified clinical and behavioral indicators common to youth with trauma histories who were enrolled in an emergency department diversion program.

Study Design: Retrospective chart data for 1,016 youth enrolled in an ED diversion program was analyzed. Multivariable logistic regression was used to determine which demographic and functional characteristics were associated with trauma. Binary recursive partitioning was implemented to determine if demographics, functional variables or a combination of both were associated with a history of trauma at baseline.

Results: Patients with a previous suicide attempt were more likely to have experienced trauma (OR 1.6, 95% CI: 1.1-2.2, p=0.03). Recent or acute sexual aggression, moderate or severe problems in living situation, fair or poor health, and inability to pay attention were also associated with increased odds of a history of trauma (p<0.01). Patients with moderate or severe living situation concerns and recent or acute social behavior issues were at highest risk for a trauma history.

Conclusions: There are a few behavioral and clinical indicators that correlate with past trauma and might be used to help identification, treatment , and discharge planning for youth with a history of trauma.

Introduction

There is comprehensive literature suggesting that youth who have experienced adverse childhood events, such as abuse or neglect, are at increased risk for emergency department (ED) visits and suicide attempts. One study found that youth with a trauma history are four times more likely to have repeat ED visits (Tasson et al., 2014); another found that 72% of children ages 0-5 years who presented to an ED for mental health or developmental reasons had experienced some sort of trauma in their life (Humenay Roberts et al., 2014). Those with trauma histories sometimes present with recurring physical symptoms or illnesses , such as asthma, allergies, ear

infections, and gastrointestinal issues (Humenay Roberts et al., 2014). Exposure to trauma has also been linked to an increased risk for suicid ality (Bridge et al., 2006). A meta-analysis conducted by Castellvi et al. (2017) found that early childhood exposure to traumatic events, most notably child sexual abuse and bullying, was strongly associated with suicide attempts in youth and young adults.

Yet, even with increasing attention to trauma-informed care across healthcare systems , many emergency settings do not actively screen youth for trauma or have adequate trauma-informed practices in place (Ko et al., 2008). Screening for and recognizing manifestations of trauma in EDs is an important step in effectively caring for these youth and achieving better health outcomes (Ko et al., 2008; Marsac et al., 2016).

The objective of this study was to examine clinical and behavioral variables associated with a trauma history in youth enrolled in ED diversion programs to help improve treatment.

Methods

Retrospective chart data was obtained from a state-funded ED diversion program's patient database . The program, called Crisis and Transition Services (CATS), provides intensive, community-based stabilization and support for youth who are discharging from EDs or crisis centers after a mental health crisis (Ribbers et al., 2020). The program serves as a bridge from discharge to longer-term outpatient supports. It aims to reduce the number of youths being boarded in the ED or discharging without adequate care in place. Oversight and funding comes from the Oregon Health Authority. Programs are primarily funded using state block grants and during the study period, nine out of Oregon ' s 36 counties had elected to use these state dollars to fund CATS programs. CATS was accessible from nine hospitals and five crisis centers within these nine counties. To be enrolled in CATS, youth needed to present to a qualifying ED or crisis center and be experiencing an acute mental health crisis, generally suicidal or aggressive thoughts or behaviors, or behavioral problems affecting the safety of the child, family or others. Youth in the program are assessed by ED staff and program intake specialists as being able to safely discharge home with the program's intensive suppo rts in place.

Programs in five of the nine counties participated in a state-funded monitoring project, the other four chose to pursue other priorities (see CONSORT flow diagram). The state required these programs to collect comprehensive data on every enrolled youth for the purposes of quality improvement. During 2018 and 2019, the remaining four counties were in the early stages of program implementation and served fewer youth; the limited data set collected from these sites was not included in the current analysis. Data was collected and stored in REDCap, a secure, HIPAA-compliant online database hosted by Oregon Health & Science University (OHSU) (Harris et al., 2009; Harris et al., 2019). The overall project, focused on healthcare program evaluation and quality improvement, was granted a *Not Human*

Research waiver by the Institutional Review Board before data collection began in 2018. The current analysis, as it deviates from the original intent of the outcomes monitoring project, was separately reviewed and approved by the IRB, and a full waiver of the HIPAA Authori zation requirement was granted since retrospective data was used and consent could not practicably be obtained .

Youth ages 5-17 that were enrolled in the program from January 1, 2018 to December 31, 2019 were included for analysis. Descriptive statistics were used to compare baseline demographics (gender identity, age, insurance, foster care, involvement in juvenile justice system), previous ED visit for mental health, previous suicide attempt, current episode acuity, and functional status by history of trauma at intake.
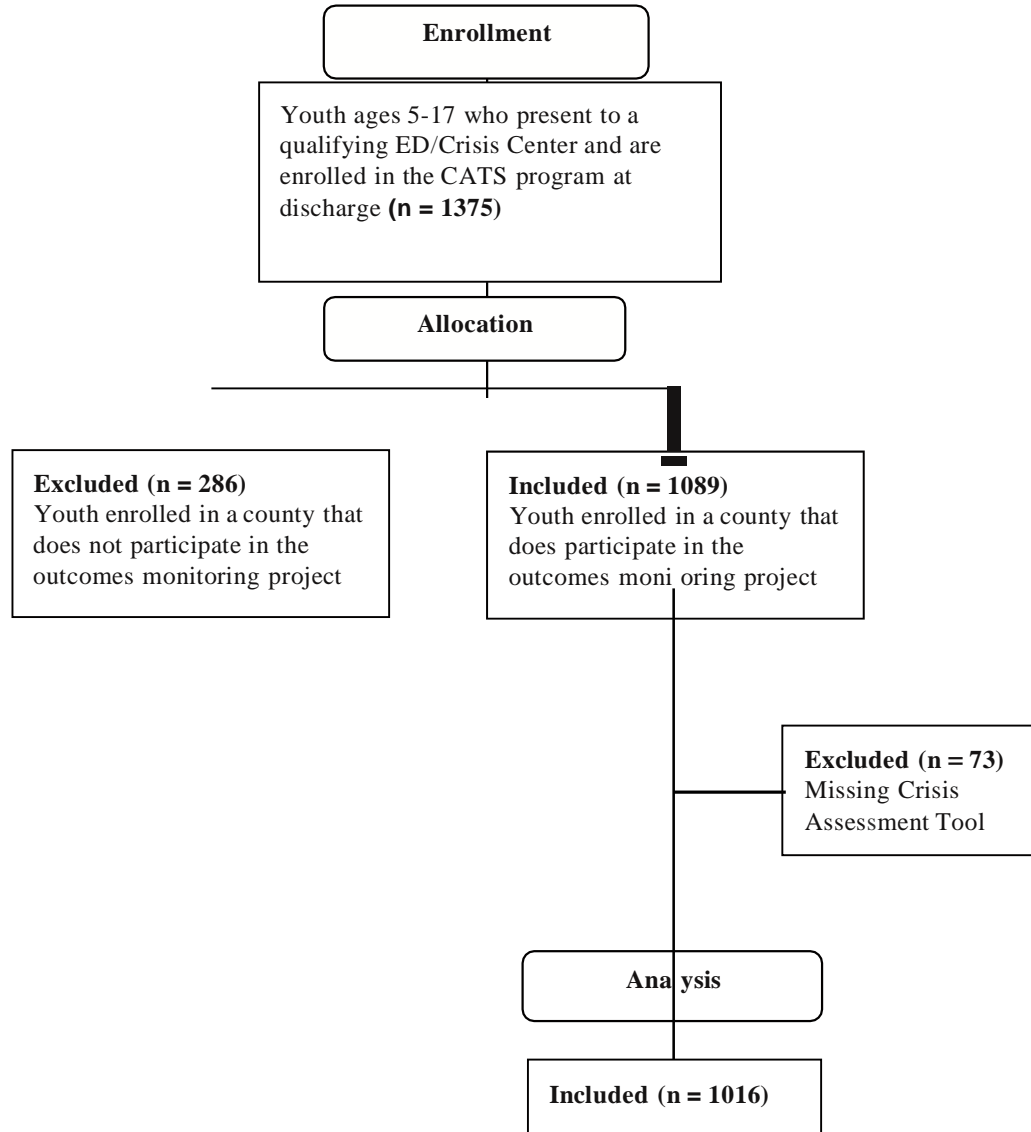
Trauma history was identified by the crisis program's intake specialists, who are certified in Oregon as Qualified Mental Health Associates (QMHA) or Qualified Mental Health Professionals (QMHP) (Oregon Administrative Rules), based on a clinical intake interview with the youth and family. A positive trauma history was defined as a youth ' s current or previous experience with physical, emotional, or sexual abuse. Intake specialists could also include other forms of trauma, such as significant bullying, natural disaster, or grief and loss.

Current episode acuity was determined by the Crisis Assessment Tool, which is filled out by the **QMHP/QMHA** at intake. The tool is designed to serve "as both a decision support tool and as documentation of the identified needs of the child served" (Buddin Praed Foun dation, 2002). The intake specialist rates the youth ' s needs on 38 items across 6 domains: Risk Behaviors , Behavioral/Emotional Symptoms, Life Domain Functioning, Juvenile Justice, Child Protection , Caregiver Needs and Strengths (see Table 1). Participants were excluded if a Crisis Assessment Tool was not completed at baseline . Functional status was determined using the KIDSCREEN-10, an 11-item questionnaire that assesses well-being and quality of life (see Table 1), which is filled out by the youth at intake to the program (Pabst Science Publishers, 2006). For all Crisis Assessment Tool and KIDSCREEN-10 items, preliminary analy sis was performed on ordinal data, but all items were dichotomized to allow for reporting and multivariable analysis. For multivariable analyses, youth with missing KIDSCREEN-10 items were included for analysis by the use of a missing variable indicator.

To compare history of trauma at intake by demographics, two-sample t-tests or ANOVA were used where appropriate for continuous data and chi-square tests or Fisher's exact tests for categorical data. To dichotomized measures of current episode acuity, chi-square tests or Fisher's exacts tests in the case of sparse data were used.

The primary goal of this analysis was to determine which behavioral and clinical characteristics were significantly associated with history of trauma while controlling for other characteristics. To do so, multivariable logistic regression analyses was used to

CONSORT Flow Diagram

```
┌─────────────────────────────┐
│         Enrollment          │
└─────────────────────────────┘

┌─────────────────────────────────────┐
│ Youth ages 5-17 who present to a     │
│ qualifying ED/Crisis Center and are  │
│ enrolled in the CATS program at      │
│ discharge (n = 1375)                 │
└─────────────────────────────────────┘

┌─────────────────────────────┐
│         Allocation          │
└─────────────────────────────┘
```

Excluded (n = 286)	Included (n = 1089)
Youth enrolled in a county that does not participate in the outcomes monitoring project	Youth enrolled in a county that does participate in the outcomes monitoring project

Excluded (n = 73)
Missing Crisis Assessment Tool

```
┌─────────────────────────────┐
│          Analysis           │
└─────────────────────────────┘

┌─────────────────────────────┐
│     Included (n = 1016)     │
└─────────────────────────────┘
```

determine which variables had an adjusted association with outcomes. In order to select a parsimonious model, a modified LASSO (least absolute shrinkage and selection operator) approach was utilized to select an initial list of candidate variables (Efron et al., 2004). Model selection was then performed to only include variables p<0.10 in the final model. Each removed variable was then added to the final model to test for significance, keeping the variable in the model if p<0.10. To control for potential confounders, youth demographics and history (gender, age, insurance, previous ED visit for mental health and previous suicide attempt, and program of enrollment) were always included as covariates in the model. Items which were directly related to experience of trauma (e.g., domestic violence and child abuse/neglect) were not included.

To determine if a different approach would select different variables, a classification and regression tree approach, binary recursive partitioning, was implemented to determine if there were demographics, items or a combination of both that were associated with history of trauma at baseline.

Descriptive statistics and regression analyses were performed in SAS 9.4 (Cary, North Carolina, USA), and binary recursive partitioning was performed in R 3.5.3 (Vienna , Austria) using the party package (Hothom et al., 2006). All statistical tests were two-sided, with a significance level of a =0.05.

Results

There were 1,089 youth enrolled in the program in 2018 and 2019. Seventy-three youth (6.7%) were removed due to a lack of a Crisis Assessment Tool at baseline, for a final sample of 1,016 (see CONSORT flow diagram). In the final sample, all youth had a complete Crisis Assessment Tool but the KIDSCREEN-10 was missing

for n=234 patients (23.0 %). Of the 1016 youth , 594 or 58.5% had a history of trauma, while 422 or 41.5% had no history of trauma .

Results from the multivariable logistic regression analysis of trauma are shown in Table 2. Patients with private insurance had significantly reduced odds of having a history of trauma (OR 0.4, 95% CI: 0.3-0.5, p<0.01, see limitations). Patients with a suicide attempt prior to their current presentation were also more likely to have a history of trauma (OR 1.6, 95% CI: 1.1-2.2, p=0.03). Engaging in recent or acute sexually aggressive behavior, experiencing moderate or severe problems in one's living situation, self-rated fair or poor health , and difficulties paying attention were all associated with increased odds of trauma (p<0.01). There were no adjusted associations between gender identity, age or previous ED visits for mental health with history of trauma.

A classification and regression tree analysis found that patients with moderate or severe living situation concerns and recent or acute social behavior issues were at highest risk for trauma. Of these patients, 93.6% had a history of trauma as compared to 56.8% of all other patients.

Discussion

In our sample of youth with acute mental health issues, trauma is prevalent at a rate of almost 60%. Estimates of the prevalence of trauma in the general pediatric population vary and are difficult to precisely capture; however, this is likely to be a higher rate than that of the general population (Child and Adolescent Health Measurement Initiative, 2018; Saunders & Adams, 2014). The high prevalence in this population suggests that EDs may have a unique opportunity to identify youth with trauma histories.

In addition to identifying high prevalence rates of trauma among this population, our study identified particular clinical and behavioral characteristics that may allow providers to recognize these youth. Youth with a trauma history were more likely to rate themselves as having poorer health and to have previously attempted suicide, which is consistent with studies demonstrating worse health outcome s for those with a history of trauma (Humenay Robert et al., 2014; Bridge et al., 2006; Castellvi et al., 2017, Saunders & Adams, 2014; Felitti et al., 1998; Overstreet & Mathews , 2011) .

Youth with a trauma his tory were also more likely to endorse having significant difficulties paying attention. This is consistent with literature linking attentional deficits with a history of trauma (Saunders & Adams, 2003; Felitti et al., 1998). Additionally, a high number of youth who had recently engaged in sexually aggressive behavior, most in the past year, some in the 24 hours prior to intake, had a trauma history. Sexual abuse and other traumatic experiences, such as exposure to violence, are known risk factors for developing sexually aggressive behavior (Szanto et al., 2012). Traumatized youth were more likely to have severe problems functioning at home . This included difficulty maintaining appropriate behavior at home , causing significant problems for others and

placing the youth at immediate risk of being removed from the home as well as other short- and long-term sequelae. Experiencing these difficulties at home , coupled with problematic social behavior in school or the communi ty, was the strongest indicator of trauma .

Clinicians should be aware that a youth presenting with some combination of symptoms including significant somatic complaints, prior suicide attempts , inattention , sexual aggression, and difficulty maintaining appropriate behavior at school is at higher risk of having a trauma history making it appropriate to consider further screening or discussion. Accurately identifying that these symptoms are trauma-related is critical to providing appropriate pharmacologic and other therapeutic treatment. Staff in many settings may benefit from training to recognize potential trauma symptoms, and to use traum a-based strategies when providing care.

The dataset used in this analysis focused on a group of patients who were enrolled in a crisis program due to specific mental health needs , mostly depression or suicid ality. It is important to note, however , that many children who present to EDs with lower acuity mental health issues or non-mental health complaints are not routinely screened for trauma, missing an opportunity to implement effective, evidence-based intervention s. Increasing awareness about how children with trauma histories may behave can increase the likelihood of identification as well as appropriate management for these at-risk youth.

Limitations

This study may not generalize well: our data came from an ED diversion program available in only nine counties in the state of Oregon. Retrospective patient data was used, and only included youth who were enrolled in the program based on acute mental health needs , therefore it is a non-randomized sample. Further, data was not available for youth who presented to an emergency department or crisis center and were not enrolled in CATS.

As this sample was highly selective based on the acuity of patients' mental health presentations , this study may underestimate or overestimate the true numbers of patients presenting to the ED with a trauma history . There may be a different trauma prevalence among both lower-acuity mental health patients and higher-acuity mental health patients. Trauma history may have been subject to interview bias; in addition, it may have been under-reported or over-reported by youth. Additionally, our analysis found that youth with private insurance were significantly less likely to have experienced trauma; however, it is difficult to draw meaningful conclusions about this result because we were unable to control for socioeconomic status. The research team requests data about annual household income for all enrolled youth, but most caregivers (~75 %) decline to answer. Zip code and other comparable data points are unavailable to be used as estimates for socioeconomic status. Lastly, this is a retrospective study; further research to understand the mental health trajectories of youth with trauma histories, as well as effective treatment options , is needed.

References

- Bridge, **J.** A., Goldstein, T. R., & Brent, **D.** A. (2006). Adolescent suicide and suicidal behavior. *Journal of Child Psychology and Psychiatry,* 47(3-4), 372-392. doi: 10.1111/j.1469-7610.2006.01615.x.

- Buddin Praed Foundation (2002). Crisis Assessment Tool. https://praedfoundation.org/crisis-assessment-tool/.

- Castellvi, P., Miranda-Mendizabal, A., Pares-Badell, 0., Almenara, J., Alonso, l., Blasco, M. J., et al. (2017). Exposure to violence, a risk for suicide in youths and young adults. A meta-analysis of longitudinal studies. *Acta Psychiatrica Scandinavica, 135(3),* 195-211. doi: 10.1111/acps.12679.

- Child and Adolescent Health Measurement Initiative (2018). National Survey of Children's Health. Data Resource Center for Child and Adolescent Health, supported by the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB). Retrieved 07/02/2020 from www.childhealthdata.org.

- Efron, B., Hastie, T. J., Johnstone, l. M., & Tibshirani, R. (2004). Least Angle Regression. *Annals of Statistics, 32,* 407-499.

- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards V., et al. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine, 14(4),* 245-258. doi: 10.1016/S0749-3797(98)00017-8.

- Harris, P.A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., Conde, J. G. (2009). Research electronic data capture (REDCap) -A metadata-driven methodology and workflow process for providing translational research informatics support, *Journal of Biomedical Inf ormatics,42(2),* 377-381. doi: 10.1016/j.jbi.2008.08.010.

- Harris, P. A., Taylor, R., Minor, B. L., Elliott, V., Fernandez, M., O'Neal, L., McLeod, L. Delacqua, G., Delacqua, F., Dude, S. N. (2019). REDCap Consortium, The REDCap consortium: Building an international community of software partners. *Journal of Biomedical Informatics, 95,* 1-10. doi: 10.1016/j.jbi.2019.103208

- Hothom, T., Hornik, K., & Zeileis, A. (2006). Unbiased recursive partitioning: A conditional inference framework. *Journal of Computational and Graphical Statistics, 15(3),* 651-674. doi: 10.l 198/106186006Xl33933.

- Humenay Roberts, Y., Huang, C. Y., Crusto, C. A., & Kaufman, J. S. (2013). Health, ED use , and early identification of young children exposed to trauma. *Journal of Emergency Medicine, 46(5),* 719-724. doi: 10.1016/j.jemermed.2013.11.086.

- Ko, S. J., Ford, J. D., Kassam-Adams, N., Berkowitz, S. J., Wilson, C., Wong, M., et al. (2008) . Creating trauma-informed systems: Child welfare, education, first responders, health care, juvenile justice. *Professional Psychology Research and Practice, 39(4),* 396-404. doi: 10.1037/0735-7028.39.4.396.

- Marsac, **M.** L., Kassam-Adams, N., Hildenbrand, A. K., Nicholls, E., Winston, F. K., Leff, S.S., et al. (2016). Implementing a Trauma-Informed Approach in Pediatric Health Care Networks. *JAMA Pediatrics, 170(1),* 70-77. doi: 10.1001/jamapediatrics.2015.2206.

- Oregon Administrative Rules. 291-124-1030: Qualified Mental Health Associate and Qualified Mental Health Professional Standards. https://oregon.public.law/rules/oar_29 l-124-1030.

- Overstreet, S., & Mathews, T. (2011). Challenges associated with exposure to chronic trauma: Using a public health framework to foster resilient outcomes among youth. *Psychology in the School, 48(7),* 738-754. doi: 10.1002/pits.20584.

- Pabst Science Publishers (2006). KIDSCREEN-10 . https://www.kidscreen.or g/english /ques tionnaires /kid screen- I0-index/.

- Ribbers, A. , Sherid an, D., Jetmalani, A., Magers, J., Laurie Lin, A., & Marshall, R. (2020). The Crisis and Transition Services (CATS) Model: A program to divert youths in mental health crisis from the emergency department. *Psychiatric Services,* 71(11). doi: 10.1176/appi.ps.201900597.

- Saunders, B.E., & Adams, Z. W. (2014). Epidemiology of traumatic experiences in childhood. *Child and Adolescent Psychiatric Clinics of North America ,* 23(2), 167-184. doi: 10.1016/j.chc.2013.12.003

- Szanto, L., Lyons, **J.** S., & Kisiel, C. (2012). Childhood trauma experience and the expression of problematic sexual behavior in children and adolescents in state custody. *Residential Treatment for Children and Youth,* 29(3), 231-249. doi: 10.1080/0886571X.2012.702519

- Tassone, K., Jefferis, E., Bhatta, M. P., Bilge-Johnson, S., & Seifert, P. (2014). Risk factors for rehospitalization and inpatient care among pediatric psychiatric intake response center patients. *Child and Adolescent Psychiatry and Mental Health,* 8(1), 27. doi: 10.1186/1753-2000-8-27.

Table 1. Sample Demographics

	Total n = 1016 (100%)	Trauma History n=594 (58.5%)	No Trauma History n =422 (41.5%)	p
Patient Demographics, N(%)				
Gender identity at intake				
Male	388(38.2%)	206(34.7%)	182(43.1%)	<0.01
Female	584(57.5%)	355(59.8%)	229(54.3%)	
Other	44(4.3%)	33(5.6%)	11(2.6%)	
Age, mean (SD)	13.9(2.6)	14.04(2.5)	13.83(2.62)	0.19
Insurance				
Public	480(47.2%)	299(50.3%)	181(42.9%)	<0.01
Private	453(44.6%)	233(39.2%)	220(52.1%)	
Multiple	25(2.5%)	20(3.4%)	5(1.2%)	
Unknown & Uninsured	58(5.7%)	42(7.1%)	16(3.8%)	
Currently or previously in foster care	93(9.2%)	84(14.1%)	9(2.1%)	<0.01
Currently or previously involved in the juvenile justice system	73(7.2%)	53(8.9%)	20(4.7%)	O.Dl
Previous ED for **MH**				
No	623(61.3%)	333(56.1%)	290(68.7%)	<0.01
Yes	305(30.0%)	199(33.5%)	106(25.1%)	
Unknown	88(8.7%)	62(10.4%)	26(6.2%)	
Previous suicide attempt				
No	680(66.9%)	366(61.6%)	314(74.4%)	<0.01
Yes	267(26.3%)	179(30.1%)	88(20.9%)	
Unknown	69(6.8%)	49(8.2%)	20(4.7%)	
Current episode acuity				
Suicidality				
No evidence	422(41.5%)	228(38.4%)	194(46.0%)	0.05
Ideation or plan/intent	426(41.9%)	264(44.4%)	162(38.4%)	
Attempt	168(16.5%)	102(17.2%)	66(15.6%)	
History of Trauma	594(58.5%)	NA	NA	NA
Functional measure (KIDSCREEN-10), mean (SD) [1]	17.8(5.6)	18.65(5.46)	17.24(5.69)	<0.01
Physically fit and well	497(63.6%)	290(61.4%)	207(67.0%)	0.13
Full of energy	502(64.3%)	293(62.1%)	209(67.6%)	0.13
Sad	453(57.9%)	299(63.2%)	154(49.8%)	<0.01
Lonely	359(45.9%)	238(50.3%)	121(39.2%)	<0.01
Time for yourself	629(80.6%)	371(78.8%)	258(83.5%)	0.12
Do the things that you want to do in your free time	604(77.4%)	354(75.2%)	250(80.9%)	0.07
Parent(s) treated you fairly	693(88.8%)	415(88.1%)	278(90.0%)	0.49
Fun with your friends	660(84.6%)	392(83.2%)	268(86.7%)	0.19
Gotten on well at school	465(59.7%)	273(58.1%)	192(62.1%)	0.26
Able to pay attention	541(69.4%)	328(69.8%)	213(68.9%)	0.81
Poor or fair overall health	313(40.2%)	212(45.0%)	101(32.8%)	<0.01
Crisis Assessment Tool [2]				
Risk Behaviors, n(%)				
Suicide Risk	485(47.7%)	309(52.0%)	176(41.7%)	<0.01
Self-Mutilation	257(25.3%)	174(29.3%)	83(19.7%)	<0.01
Other Self Harm	125(12.3%)	79(13.3%)	46(10.9%)	0.25
Danger to Others	133(13.1%)	85(14.3%)	48(11.4%)	0.17

Sexual Aggression	13(1.3%)	12(2.0%)	1(0.2%)	*0.Dl*
Runaway	123(12.1%)	82(13.8%)	41(9.7%)	0.05
Judgment	261(25.7%)	166(27.9%)	95(22.5%)	0.05
Fire Setting	9(0.9%)	4(0.7%)	5(1.2%)	0.50
Social Behavior	179(17.6%)	116(19.5%)	63(14.9%)	0.06
Bullying	119(11.7%)	77(13.0%)	42(10.0%)	0.14
Behavioral/Emotional Symptoms, n(%)				
Psychosis	57(5.6%)	38(6.4%)	19(4.5%)	0.20
Impulse/Hyper	272(26.8%)	176(29.6%)	96(22.7%)	*0.Dl*
Depression	589(58.0%)	370(62.3%)	219(51.9%)	*<0.01*
Anxiety	526(51.8%)	338(56.9%)	188(44.5%)	*<0.01*
Oppositional	185(18.2%)	129(21.7%)	56(13.3%)	*<0.01*
Conduct	139(13.7%)	90(15.2%)	49(11.6%)	0.11
Adjustment to Trauma	295(29.0%)	274(46.1%)	21(5.0%)	*<0.01*
Anger Control	223(21.9%)	147(24.7%)	76(18.0%)	*0.Dl*
Substance Use	145(14.3%)	94(15.8%)	51(12.1%)	0.09
Life Domain Functioning, n(%)				
Living Situation	273(26.9%)	203(34.2%)	70(16.6%)	*<0.01*
Community	112(11.0%)	82(13.8%)	30(7.1%)	*<0.01*
School	366(36.0%)	237(39.9%)	129(30.6%)	*<0.01*
Peer Functioning	269(26.5%)	174(29.3%)	95(22.5%)	0.02
Developmental	100(9.8%)	59(9.9%)	41(9.7%)	0.91
Sleep	277(27.3%)	196(33.0%)	81(19.2%)	*<0.01*
Medication Compliance	63(6.2%)	48(8.1%)	15(3.6%)	*<0.01*
Juvenile Justice, n(%)				
Juvenile Justice Status	51(5.0%)	36(6.1%)	15(3.6%)	0.07
Community Safety	44(4.3%)	31(5.2%)	13(3.1%)	0.10
Delinquency	29(2.9%)	22(3.7%)	7(1.7%)	0.05
Child Protection, n(%)				
Abuse or Neglect	176(17.3%)	165(27.8%)	11(2.6%)	*<0.01*
Domestic Violence	81(8.0%)	75(12.6%)	6(1.4%)	*<0.01*
Caregiver Needs and Strengths, n(%)				
Health	125(12.3%)	89(15.0%)	36(8.5%)	*<0.01*
Supervision	189(18.6%)	136(22.9%)	53(12.6%)	*<0.01*
Involvement with Care	149(14.7%)	107(18.0%)	42(10.0%)	*<0.01*
Social Resources	202(19.9%)	143(24.1%)	59(14.0%)	*<0.01*
Residential Stability	132(13.0%)	106(17.8%)	26(6.2%)	*<0.01*
Access to Child Care	48(4.7%)	39(6.6%)	9(2.1%)	*<0.01*
Family Stress	426(41.9%)	289(48.7%)	137(32.5%)	*<0.01*

[1] KIDSCREEN-10 ratings were dichotomized as always, almost always, or sometimes versus almost never or never; extremely, very, or moderately versus almost never or never.

[2] Crisis Assessment Tool ratings were dichotomized as no evidence and watch/prevent or mild versus recent or moderate and acute, act immediately or severe.

Table 2. Regression Results

Variable	Odds of history of trauma (95% Cl)	*p*
Gender Identity at intake		
Female	referent	
Male	0.8(0.6-1.0)	0.08
Other	1.6(0.7-3.3)	
Age, mean (SD)	1.0(0.9-1.0)	0.57
Insurance		
Public	referent	<0.01
Private	0.4(0.3-0.5)	
Multiple	1.6(0.5-4.6)	
Unknown/Uninsured	0 .9(0.4-1.7)	
Previous ED visit for mental health		
No	referent	0.23
Yes	1.3(1.0-1.8)	
Unknown	1.1(0.6-1.9)	
Previous Suicide Attempt		
No	referent	0.03
Yes	1.6(1.1-2.2)	
Unknown	1.5(0.8-2.8)	
Current Episode Acuity*		
Able to pay attention, almost never or never [1]	1.7(1.2-2.4)	<0.01
Fair or poor overall health [1]	1.8(1.3-2.6)	<0.01
Sexual aggression, recent or acute [2]	12.3(1.5-104.3)	<0.01
Living situation, moderate or severe problems [2]	2.1(1.5-3.0)	<0.01

* Current episode acuity: only statistically significant results are presented

[1] KIDSCREEN-10

[2] Crisis Assessment Tool

Presentation Abstracts from the 12ᵗʰ Annual National Update on Behavioral Emergencies, December 2021

Hotel Room Suicide: Cuyahoga, Orange, Travis, King, Clark, and Wayne County

Paul Zarkowski, MD
Psychiatry Emergency Service at Harborview Medical Center
Clinical Assistant Professor of Psychiatry, University of Washington

Thu 8aDec 9

Objective: The most important factor for assessing suicide risk is a history of suicide attempts. But not all suicide attempts carry the same prognostic weight. Although studies are available to guide clinicians in assessing relative lethality of methods of suicide , there are far fewer studies to assess the effectiveness of efforts to reduce the probability of rescue. For clinicians working in emergency dep artments , this is most apparent in patients that attempt suicide in hotel rooms. To guide clinicians in assessing relative risk, this study compared the suicide rates of local residents registering in local hotels with the general suicide rate **in** each county. In addition, the suicide rates of hotel guests from outside the county were compared with the national suicide rate. Methods: The number of cases of suicide in hotel rooms and general community were tabulated for Cuyahoga County **(OH)** for calendar years 2010-2017, Orange County (CA), Travis County (TX) both for 2010 to 2012, Clark County (NV) for 2003 to 2005, King County (WA) for 2002 to 2004 and Wayne County **(MI)** for 1997 to March 2005. The percentage of local residents registering in local hotel rooms was estimated from various sources to stratify the suicide risk for travelers and local residents. Results: The suicide rate of local residents registering in local hotels was elevated compared to the general non-hotel population in each county (range of relative risk 14.8-37.8, p<0.0001, Poisson distribution). Hotel guests from outside each county had a reduced rate of suicide compared to the national rate (range of relative risk 0.124-0 .524, p<0.05, Poisson distribution). Drug overdoses accounted for a significantly greater percentage in hotel rooms than in the non-hotel population in 4 of 6 counties (range of risk ratios 1.65-4.51, p<0.05, test of proportions) with the opposite pattern for gunshot wounds (range of risk ratios 0 .27-0.68, p<0.01, test of proportions).Conclusi on: Although local residents register in hotels for various reasons, there appears to be a