Substance Use Disorders and Psychiatric Illness Among Transitional Age Youth Experiencing Homelessness

Colin W. Burke, MD,
Massachusetts General Hospital, Boston.

Elizabeth S. Firmin, BA,
Massachusetts General Hospital, Boston.

Sylvia Lanni, BA,
Massachusetts General Hospital, Boston.

Peter Ducharme, MSW,
Bridge Over Troubled Waters, Boston, Massachusetts.

Maura DiSalvo, MPH,
Massachusetts General Hospital, Boston.

Timothy E. Wilens, MD
Massachusetts General Hospital, Boston.

Abstract

Objective: Transitional age youth experiencing homelessness (TAY-EH) bear a high burden of substance use disorders (SUDs) and psychopathology. However, limited data exist on the

co-occurrence and interactions between these diagnoses in this marginalized group. This study sought to identify rates of single and co-occurring SUDs and psychiatric diagnoses among a sample of TAY-EH and to investigate associations between psychopathology and prevalence and severity of SUDs in this group.

Method: TAY-EH accessing a low-threshold social service agency in a large metropolitan area completed psychosocial and diagnostic interviews to assess for SUDs and psychopathology. Analyses examined rates of single and co-occurring disorders and associations between burden of psychopathology and presence and severity of SUDs.

Results: The assessment was completed by 140 TAY-EH; the majority were youth of color (54% Black/African American, 16% Latinx), and 57% identified as male. Rates of single and co-occurring psychiatric disorders and specific SUDs (cannabis use disorder [CUD] and alcohol use disorder [AUD]) were notably high. An increasing number of psychiatric diagnoses was significantly associated with elevated CUD/AUD prevalence and severity. Mood, anxiety, attention-deficit/hyperactivity, and antisocial personality disorders were significantly associated with elevated CUD/AUD prevalence and severity, as was suicidality (all $p < .05$).

Conclusion: This study reveals a complex overlay of SUDs and psychopathology facing TAY-EH, with a significant association between co-occurring psychopathology and severity of CUD/AUD. To the authors' knowledge, this is the first study to examine associations between specific psychopathology and severity of SUDs among TAY-EH. Further research into the mechanistic and temporal links between these conditions is needed to inform tailored treatment interventions.

Transitional age youth (TAY), defined as youth between the ages of 16 and 25 years, experience high rates of homelessness; 4% of youth between 13 and 17 years of age and 10% of youth between 18 and 25 years of age report past-year experience of housing instability.[1] Youth of color, young parents, and LGBTQ+ (lesbian, gay, bisexual, transgender, queer, and others) youth are disproportionately represented among transitional age youth experiencing homelessness (TAY-EH).[1] TAY-EH experience elevated rates of medical and psychosocial morbidity[2–6] and face a 10-fold greater risk of mortality compared with their peers with housing stability, largely due to psychiatric disorders and substance use disorders (SUDs).[7]

While prior research has highlighted the elevated burden of psychiatric illness and substance use among TAY-EH,[8,9] data on co-occurrence of, and dynamic interactions between, psychopathology and SUDs in this population are limited.[10] Specifically, no prior studies have examined the relations between a broad range of psychiatric illness and the presence and severity of SUDs among TAY-EH using *DSM*-based diagnostic tools. The available literature suggests high rates of comorbidity between psychiatric and SUD diagnoses among youth experiencing homelessness[11–16]; however, prior studies focused on younger adolescent populations experiencing homelessness,[11] used nonspecific psychiatric or diagnostic metrics (such as internalizing vs externalizing disorders),[12] focused on a limited subset of psychiatric and SUD diagnoses,[13–16] or focused on the role of psychosocial

factors aside from diagnosed psychopathology.[17,18] The most comprehensive prior study of co-occurring disorders among youth experiencing homelessness[11] examined a younger adolescent population (12–17 years of age, with an average age of 15 years) and found high rates of overlap between SUDs and psychopathology, most notably major depressive disorder (MDD), conduct disorder, oppositional defiant disorder, and obsessive-compulsive disorder. To our knowledge, no prior studies have examined relations between specific psychiatric diagnoses and the presence and severity of substance-specific SUDs among TAY-EH.

In the present study, we sought to build on prior research by reporting results of semistructured psychiatric assessments of a sample of TAY-EH, with a focus on the prevalence, co-occurrence, and associations between SUDs and psychiatric illness. We hypothesized that TAY-EH would have elevated rates of single and co-occurring psychiatric and SUD diagnoses and that a higher burden of psychiatric morbidity would be significantly associated with increased SUD prevalence and severity in this population. Our goal was to elucidate specific patterns of impairment in this population to inform future research and tailored treatment interventions in this marginalized group.

METHOD

Design, Setting, and Participants

This study was based on cross-sectional assessments of TAY-EH presenting for low-threshold services at Bridge Over Troubled Waters, a psychosocial support agency serving TAY-EH in Boston, Massachusetts. Data were collected during the COVID-19 (coronavirus disease 2019) pandemic via secure video visits conducted remotely by trained research staff. Study participants were recruited in person at Bridge Over Troubled Waters by agency staff and used computer equipment located on-site. Interviews were conducted between April 2020 and July 2021. Youth were compensated $10 for their participation. All research methods and materials were reviewed and approved by the Mass General Brigham Institutional Review Board, and a federal Certificate of Confidentiality was secured for this study.

Inclusion Criteria

Youth between 16 and 25 years of age accessing any level of support at Bridge Over Troubled Waters, including basic drop-in services, day programming, behavioral health therapy, emergency shelter, or transitional living services, were eligible for enrollment.

Exclusion Criteria

Limited exclusion criteria included youth experiencing acutely unstable medical and/or psychiatric symptoms that limited engagement in interview, youth unable to communicate in English, and youth with limited capacity to complete rating scales with staff assistance.

Sample Size

Based on a preliminary power analysis using the G*Power program,[19] for a two-tail, linear multiple regression analysis with α of .05 and estimated effect size of 0.15, for up to 20

dependent variables, we determined that a minimum sample size of 90 subjects would yield a power of 0.95.

Variables and Measures

Demographic and Psychosocial Data.—Demographic and psychosocial data were gathered via a structured assessment that included questions on race, ethnicity, sex, gender identity, educational and occupational status, and a range of other information related to childhood development and psychiatric history/treatment.

SUD and Psychiatric Diagnostic Data.—Comprehensive SUD and psychiatric diagnostic data were gathered via the Mini International Neuropsychiatric Interview (MINI)[20] with supplemental ADHD module. Severity of SUDs was reported in MINI results according to *DSM-5* criteria. Data were gathered for all disorders with the exception of eating disorders, which were excluded to reduce overall survey burden for participants. As noted below, given the significant overrepresentation of cannabis use disorder (CUD) and alcohol use disorder (AUD) and low rates of other SUDs in our sample, analyses focused on the presence of CUD and/or AUD to maximize statistical power and clinical applicability of results.

Statistical Methods

Two separate sets of analyses were conducted: a primary analysis stratified by severity of CUD and/or AUD and a post hoc exploratory analysis stratified by race, given a prior study showing associations between race/ethnicity and substance use in youth experiencing homelessness.[18] For both sets of analyses, groups were compared on the number of psychiatric diagnoses using truncated Poisson regression models with an upper limit of 10 (total possible number of psychiatric diagnoses). For the primary analysis stratified by severity of CUD/AUD, groups were compared on rates of co-occurring psychopathology using logistic regression models. For the exploratory analysis stratified by race, groups were compared on rates of co-occurring psychopathology and CUD/AUD using multinomial logistic regression. All analyses were two-tailed and conducted at.05 α significance level using Stata 17.[21]

RESULTS

Participants and Demographic and Psychosocial Results

Descriptive data are presented in Table 1. Data were collected for 147 TAY-EH. All participants completed the psychosocial survey; 7 participants were unable to complete the MINI due to time constraints. The remaining 140 participants completed the entire assessment battery and were included in the final sample. The mean age of participants was 21 years, and a majority (57%) identified as male. Participants were predominantly youth of color, with a majority (54%) identifying as Black or African American. In terms of psychosocial functioning, the majority (59%) had at least a high school graduate level of education, and 37% were currently employed.

Psychopathology, SUDs, and Co-occurrence of Disorders

We initially examined rates of psychiatric and SUD diagnoses for the 140 TAY-EH who completed the MINI (Table 2). In terms of SUD diagnoses, rates of past-year CUD (44%) and AUD (21%) were notably high, with a markedly lower prevalence of other SUDs, including those involving substances typically characterized as hard drugs, including opioids, benzodiazepines, and stimulants (including cocaine and methamphetamine). For psychiatric conditions, lifetime rates of mood disorders (MDD [28%] and bipolar I disorder [21%]), suicidality (36%), and ADHD (24%) were particularly high.

We then examined rates of co-occurring psychopathology and CUD and/or AUD (Table 3). Co-occurring CUD and/or AUD was present in notable majorities of youth with antisocial personality disorders (85%), ADHD (67%), anxiety disorders (66%), suicidality (65%), and mood disorders (64%).

Associations Between Psychopathology and SUD Prevalence and Severity

We next examined associations between psychopathology and the presence and severity of CUD and/or AUD (Figure 1; Table 4). Analyses focused on the presence and severity of CUD and/or AUD due to the significant overrepresentation of these diagnoses and the relatively low numbers of youth meeting criteria for other SUD diagnoses.

We found a significant association between the number of psychiatric diagnoses and the severity of CUD/AUD in our sample. This was evident in the omnibus test and in subsequent pairwise comparisons between youth with mild, moderate, and severe CUD and/or AUD vs no CUD and/or AUD and between youth with severe CUD and/or AUD and mild CUD and/or AUD. Specifically, the mean number of co-occurring psychiatric conditions increased from 1 among youth without CUD and/or AUD to 3 among youth with severe CUD and/or AUD.

Further, omnibus tests revealed significant associations between the presence of specific psychiatric diagnoses, including mood disorders, ADHD, anxiety disorders, antisocial personality disorder, and suicidality, and the severity of CUD and/or AUD. In pairwise analyses, the presence of a mood disorder was significantly associated with each CUD and/or AUD severity level. There was a trend toward increased likelihood of a mood disorder as CUD and/or AUD severity increased; for example, mood disorders were 3 times more likely in youth with mild CUD and/or AUD (compared with no CUD and/or AUD), but more than 4 times more likely in youth with severe CUD and/or AUD. Antisocial personality disorder and suicidality were both significantly associated with moderate (11-fold and 5-fold, respectively) and severe (14-fold and 4-fold, respectively) CUD and/or AUD, but not with mild CUD and/or AUD. Along the same lines, ADHD and anxiety disorders were both significantly associated with severe CUD and/or AUD (approximately 4-fold increase), but not with mild or moderate CUD and/or AUD.

Race and Psychiatric and SUD Burden

We completed a post hoc exploratory analysis to evaluate the role of race in the associations between psychopathology and CUD and/or AUD. No significant differences were seen in

prevalence or co-occurrence of conditions between TAY-EH with differing racial or ethnic identities. Specifically, analyses for subgroups of youth identifying as White, Black/African American, Hispanic/Latino, and other revealed no significant differences in mean number of psychiatric or SUD diagnoses or in rates of co-occurring psychopathology and CUD and/or AUD.

DISCUSSION

The results of this cross-sectional study support our hypotheses, revealing high rates of single and co-occurring psychopathology and CUD and/or AUD and significant associations between burden of psychopathology and prevalence and severity of CUD and/or AUD among a sample of TAY-EH. These findings highlight the complexity and severity of co-occurring disorders among TAY-EH and reinforce the need for targeted treatment interventions in this marginalized group.

Our findings, derived from structured psychiatric interviews, reveal high rates of psychopathology among TAY-EH. When compared with general TAY population survey data,[22] rates of single psychiatric disorders, including MDD, bipolar I disorder, ADHD, anxiety disorders, PTSD, and obsessive-compulsive disorder, were notably elevated among TAY-EH. Rates of psychiatric disorders in this sample were consistent with rates found in recent prior studies of TAY-EH using the MINI to diagnose MDD,[23,24] bipolar disorder,[24] and PTSD.[23] Recent data are lacking to compare rates of rigorously defined anxiety disorders and ADHD in TAY-EH. The rate of antisocial personality disorder in our sample was lower than that reported in a prior study of TAY-EH using the MINI,[24] although still notably elevated above general population sample estimates.[25] The extent to which features of antisocial personality disorder represent intrinsic and functionally impairing psychopathology in this group—as opposed to learned coping behaviors (adaptive or maladaptive) or context-specific responses to homelessness itself—is a question deserving further targeted research.

Similarly, we found rates of SUDs in this sample that were elevated above general TAY population estimates.[26] Most notably, the rate of CUD in this sample (44%) was strikingly elevated compared with general TAY prevalence data (13.5% for youth between 18 and 25 years of age in the 2020 National Survey on Drug Use and Health[26]). The CUD rate in our study was similar to that in a recent study of TAY-EH using chart review of clinical diagnoses.[27] The rate of AUD in this sample was similarly elevated above general TAY prevalence, though to a lesser extent (21% of TAY-EH in this study vs 16% of young adults in the 2020 National Survey on Drug Use and Health[26]). Notably, we found very low rates of hard drug use, including opioid, stimulant, and sedative use disorders, in this sample.

Our findings further reveal high rates of overlap between specific psychiatric and CUD and/or AUD diagnoses and suggest meaningful dynamic interactions between the burden of psychopathology and severity of SUDs among TAY-EH. The majority of youth with mood disorders, ADHD, anxiety disorders, antisocial personality disorder, and suicidality had a co-occurring CUD and/or AUD, and the majority of SUDs within each of these groups were in the moderate-to-severe range. Further, an increasing burden of psychopathology was

significantly associated with increased prevalence and severity of CUD and/or AUD among TAY-EH. We found that youth with moderate or severe CUD and/or AUD had an average number of co-occurring psychiatric conditions 2- to 3-fold higher than youth without CUD and/or AUD. In terms of specific disorders, youth with severe CUD and/or AUD had 4 times greater odds of having a co-occurring mood disorder, anxiety disorder, ADHD, or suicidality and 14 times greater odds of having co-occurring antisocial personality disorder than youth without SUD. These numbers highlight the complexity of overlapping conditions facing TAY-EH, especially youth with high severity CUD and/or AUD.

These results suggest a need for further research into mechanistic linkages and targeted treatment interventions for TAY-EH with co-occurring psychopathology and SUDs. This need is particularly high for TAY-EH with moderate-to-severe CUD and/or AUD. Research in general adolescent and young adult populations reveals frequent co-occurrence of psychiatric illness and SUDs,[28,29] and outcome studies suggest that general youth populations with co-occurring disorders require more integrated and intensive treatment services.[30,31] TAY-EH face additional complicating factors, including racial[32] and sexual minority[33] status disparities, high rates of childhood adversity[34] and early life trauma,[35] and other psychosocial and developmental challenges, all of which further increase rates of negative psychiatric and SUD outcomes.[36–39] However, further study is needed to identify the relative contributions and differential downstream impacts of each of these domains of risk (eg, the relative impact of early childhood adversity, ongoing discrimination and psychosocial stress in the TAY years, the cumulative burden of physiological and psychological stress throughout early development, and the unique categorical stressor of homelessness itself), the dynamic developmental interactions of psychopathology and SUDs (eg, trajectories of onset, mutual reinforcement, and functional deterioration or improvement throughout adolescence and early adulthood), and the specific resilience profiles that protect against risk in multiple domains. Further research is also needed to uncover mechanisms behind the surprising findings of high rates of CUD and AUD and low rates of hard substance use including opioid, stimulant, and sedative use disorders in this group.

In the bigger picture, these findings reinforce a conceptualization of TAY-EH as a unique subpopulation with highly complex psychiatric and psychosocial needs. Homelessness among TAY might equally be seen as a marker of early life adversity, psychosocial stress, and risk for interrelated comorbid SUD and psychiatric illness and as a source of ongoing stress placing these young people at further risk for negative outcomes. At the same time, the ability of TAY-EH to navigate this complicated array of risk and dysfunction suggests deep reserves of inner resources and resilience. The findings of this study highlight the likely limitations of unimodal interventions for TAY-EH focused solely on single domains, such as psychosocial adversity, psychiatric illness, or SUDs, and underscore the need for multimodal interventions accounting for the co-occurrence and interactions among each of these important domains.

This study has a number of methodological limitations. The cross-sectional study design inherently limits interpretation of causality or of temporal mechanistic processes linking psychopathology and SUDs. The study site, a low-threshold social service agency, may have biased selection toward help-seeking youth, introducing the possibility that TAY-EH with

more severe illness who were unable to access low-threshold drop-in services may have been missed. This may also have been a factor in the lower observed rates of use of hard drugs such as opioids, cocaine, and methamphetamine. The geographic location (an urban setting in the northeast United States, where the sale of recreational cannabis is legal to people older than 21 years of age) may limit generalizability to TAY-EH in other geographic areas with varying SUD epidemiology or cannabis laws. The context of the COVID-19 pandemic, with variable levels of societal restrictions and quarantines during data collection, may additionally effect generalizability of data on rates of psychopathology, SUDs, employment, and other factors. The MINI captures diagnoses with variable time lines (eg, "past month" vs "lifetime"), which may skew rates of certain disorders based on recency. The study was not primarily designed or powered to analyze the effect of race as a primary outcome, which may have limited our ability to detect differences based on race in a post hoc exploratory analysis.

Despite these limitations, this study highlights the complex burden of overlapping psychopathology and SUDs facing TAY-EH and particularly the high burden of co-occurring disorders among the sizable proportion of this group with moderate and severe CUD and/or AUD. It also provides a snapshot of the functioning of a highly marginalized group during the COVID-19 pandemic. This study adds to prior literature by offering granular data on prevalence and co-occurrence of specific, rigorously defined psychopathology and SUDs and the associations between psychopathology and both presence and severity of SUDs in this group. Further research on the dynamic interplay between specific psychiatric conditions and the use of alcohol and cannabis in this population may highlight mechanistic underpinnings and potential targets for effective treatment interventions in this group.

Acknowledgments

REFERENCES

1. Morton MH, Dworsky A, Matjasko JL, et al. Prevalence and correlates of youth homelessness in the United States. J Adolesc Health. 2018;62:14–21. 10.1016/j.jadohealth.2017.10.006 [PubMed: 29153445]

2. Rubin DH, Erickson CJ, San Agustin M, Cleary SD, Allen JK, Cohen P. Cognitive and academic functioning of homeless children compared with housed children. Pediatrics. 1996;97:289–294. [PubMed: 8604259]

3. Saperstein AM, Lee S, Ronan EJ, Seeman RS, Medalia A. Cognitive deficit and mental health in homeless transition-age youth. Pediatrics. 2014;134:e138–e145. 10.1542/peds.2013-4302 [PubMed: 24958581]

4. Slesnick N, Zhang J, Yilmazer T. Employment and other income sources among homeless youth. J Prim Prev. 2018;39:247–262. 10.1007/s10935-018-0511-1 [PubMed: 29754166]

5. Chan PY, Kaba F, Lim S, Katyal M, MacDonald R. Identifying demographic and health profiles of young adults with frequent jail incarceration in New York City during 2011–2017. Ann Epidemiol. 2020;46:41–48.e1. 10.1016/j.annepidem.2020.04.006 [PubMed: 32451196]

6. Yates GL, MacKenzie R, Pennbridge J, Cohen E. A risk profile comparison of runaway and non-runaway youth. Am J Public Health. 1988;78:820–821. 10.2105/ajph.78.7.820 [PubMed: 3381958]

7. Auerswald CL, Lin JS, Parriott A. Six-year mortality in a street-recruited cohort of homeless youth in San Francisco, California. PeerJ. 2016;4:e1909. 10.7717/peerj.1909 [PubMed: 27114873]

8. Hodgson KJ, Shelton KH, van den Bree MB, Los FJ. Psychopathology in young people experiencing homelessness: A systematic review. Am J Public Health. 2013;103:e24–e37. 10.2105/AJPH.2013.301318

9. Edidin JP, Ganim Z, Hunter SJ, Karnik NS. The mental and physical health of homeless youth: A literature review. Child Psychiatry Hum Dev. 2012;43:354–375. 10.1007/s10578-011-0270-1 [PubMed: 22120422]

10. Burke CW, Firmin ES, Wilens TE. Systematic review: Rates of psychopathology, substance misuse, and neuropsychological dysfunction among transitional age youth experiencing homelessness. Am J Addict. 2022;31:523–534. 10.1111/ajad.13340 [PubMed: 36036233]

11. Slesnick N, Prestopnik J. Dual and multiple diagnosis among substance using runaway youth. Am J Drug Alcohol Abuse. 2005;31:179–201. 10.1081/ada-200047916 [PubMed: 15768577]

12. Smith T, Hawke L, Chaim G, Henderson J. Housing instability and concurrent substance use and mental health concerns: An examination of Canadian youth. J Can Acad Child Adolesc Psychiatry. 2017;26:214–223. [PubMed: 29056984]

13. Whitbeck LB, Johnson KD, Hoyt DR, Cauce AM. Mental disorder and comorbidity among runaway and homeless adolescents. J Adolesc Health. 2004;35:132–140. 10.1016/j.jadohealth.2003.08.011 [PubMed: 15261642]

14. Whitbeck LB, Hoyt DR, Bao WN. Depressive symptoms and co-occurring depressive symptoms, substance abuse, and conduct problems among runaway and homeless adolescents. Child Dev. 2000;71:721–732. 10.1111/1467-8624.00181 [PubMed: 10953939]

15. Davis JP, Diguiseppi G, De Leon J, et al. Understanding pathways between PTSD, homelessness, and substance use among adolescents. Psychol Addict Behav. 2019;33:467–476. 10.1037/adb0000488 [PubMed: 31343198]

16. Johnson KD, Whitbeck LB, Hoyt DR. Substance abuse disorders among homeless and runaway adolescents. J Drug Issues. 2005;35:799–816. 10.1177/002204260503500407 [PubMed: 21533015]

17. DiGuiseppi GT, Davis JP, Christie NC, Rice E. Polysubstance use among youth experiencing homelessness: The role of trauma, mental health, and social network composition. Drug Alcohol Depend. 2020;216:108228. 10.1016/j.drugalcdep.2020.108228 [PubMed: 32841812]

18. Santa Maria DM, Narendorf SC, Cross MB. Prevalence and correlates of substance use in homeless youth and young adults. J Addict Nurs. 2018;29:23–31. 10.1097/JAN.0000000000000206 [PubMed: 29505458]

19. Faul F, Erdfelder E, Lang A, Buchner A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behav Res Methods. 2007;39:175–191. 10.3758/bf03193146 [PubMed: 17695343]

20. Sheehan DV, Lecrubier Y, Harnett-Sheehan K, et al. The Mini International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview. J Clin Psychiatry. 1998;59(suppl 20):22–33.

21. StataCorp. Stata Statistical Software: Release 17. 2021. College Station, TX: StataCorp LLC.

22. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry. 2005;62:593–602. 10.1001/archpsyc.62.6.593 [PubMed: 15939837]

23. Bender K, Brown SM, Thompson SJ, Ferguson KM, Langenderfer L. Multiple victimizations before and after leaving home associated with PTSD, depression, and substance use disorder among homeless youth. Child Maltreat. 2015;20:115–124. 10.1177/1077559514562859 [PubMed: 25510502]

24. Ferguson KM, Bender K, Thompson SJ. Gender, coping strategies, homelessness stressors, and income generation among homeless young adults in three cities. Soc Sci Med. 2015;135:47–55. 10.1016/j.socscimed.2015.04.028 [PubMed: 25942470]

25. Lenzenweger MF, Lane MC, Loranger AW, Kessler RC. DSM-IV personality disorders in the National Comorbidity Survey Replication. Biol Psychiatry. 2007;62:553–564. 10.1016/j.biopsych.2006.09.019 [PubMed: 17217923]

26. Substance Abuse and Mental Health Services Administration. Key Substance Use and Mental Health Indicators in the United States: Results From the 2020 National Survey on Drug Use and Health (HHS Publication No. PEP21–07-01–003, NSDUH Series H-56). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. 2021. Accessed September 23, 2022. https://www.samhsa.gov/data/

27. Barone C, Yamamoto A, Richardson CG, Zivanovic R, Lin D, Mathias S. Examining patterns of cognitive impairment among homeless and precariously housed urban youth. J Adolesc. 2019;72:64–69. 10.1016/j.adolescence.2019.02.011 [PubMed: 30852324]

28. Hawke LD, Koyama E, Henderson J. Cannabis use, other substance use, and co-occurring mental health concerns among youth presenting for substance use treatment services: Sex and age differences. J Subst Abuse Treat. 2018;91:12–19. 10.1016/j.jsat.2018.05.001 [PubMed: 29910010]

29. Lubman DI, Allen NB, Rogers N, Cementon E, Bonomo Y. The impact of co-occurring mood and anxiety disorders among substance-abusing youth. J Affect Disord. 2007;103:105–112. 10.1016/j.jad.2007.01.011 [PubMed: 17291589]

30. Baker KD, Lubman DI, Cosgrave EM, et al. Impact of co-occurring substance use on 6 month outcomes for young people seeking mental health treatment. Aust N Z J Psychiatry. 2007;41:896–902. 10.1080/00048670701634986 [PubMed: 17924242]

31. Grella CE, Hser YI, Joshi V, Rounds-Bryant J. Drug treatment outcomes for adolescents with comorbid mental and substance use disorders. J Nerv Ment Dis. 2001;189(6):384–392. 10.1097/00005053-200106000-00006 [PubMed: 11434639]

32. Jones MM. Does race matter in addressing homelessness? A review of the literature. World Med Health Policy. 2016;8:139–156. 10.1002/wmh3.189 [PubMed: 29576910]

33. McCann E, Brown M. Homelessness among youth who identify as LGBTQ+: A systematic review. J Clin Nurs. 2019;28:2061–2072. 10.1111/jocn.14818 [PubMed: 30786099]

34. Barnes AJ, Gower AL, Sajady M, Lingras KA. Health and adverse childhood experiences among homeless youth. BMC Pediatr. 2021;21:164. 10.1186/s12887-021-02620-4 [PubMed: 33827511]

35. Davies BR, Allen NB. Trauma and homelessness in youth: Psychopathology and intervention. Clin Psychol Rev. 2017;54:17–28. 10.1016/j.cpr.2017.03.005 [PubMed: 28371649]

36. Vilsaint CL, NeMoyer A, Fillbrunn M, et al. Racial/ethnic differences in 12-month prevalence and persistence of mood, anxiety, and substance use disorders: Variation by nativity and socioeconomic status. Compr Psychiatry. 2019;89:52–60. 10.1016/j.comppsych.2018.12.008 [PubMed: 30594752]

37. Rosner B, Neicun J, Yang JC, Roman-Urrestarazu A. Substance use among sexual minorities in the US—linked to inequalities and unmet need for mental health treatment? Results from the National Survey on Drug Use and Health (NSDUH). J Psychiatr Res. 2021;135:107–118. 10.1016/j.jpsychires.2020.12.023 [PubMed: 33472121]

38. Hughes K, Bellis MA, Hardcastle KA, et al. The effect of multiple adverse childhood experiences on health: A systematic review and meta-analysis. Lancet Public Health. 2017;2:e356–e366. 10.1016/S2468-2667(17)30118-4 [PubMed: 29253477]

39. Fitzpatrick S, Saraiya T, Lopez-Castro T, Ruglass LM, Hien D. The impact of trauma characteristics on post-traumatic stress disorder and substance use disorder outcomes across integrated and substance use treatments. J Subst Abuse Treat. 2020;113:107976. 10.1016/j.jsat.2020.01.012 [PubMed: 32059924]
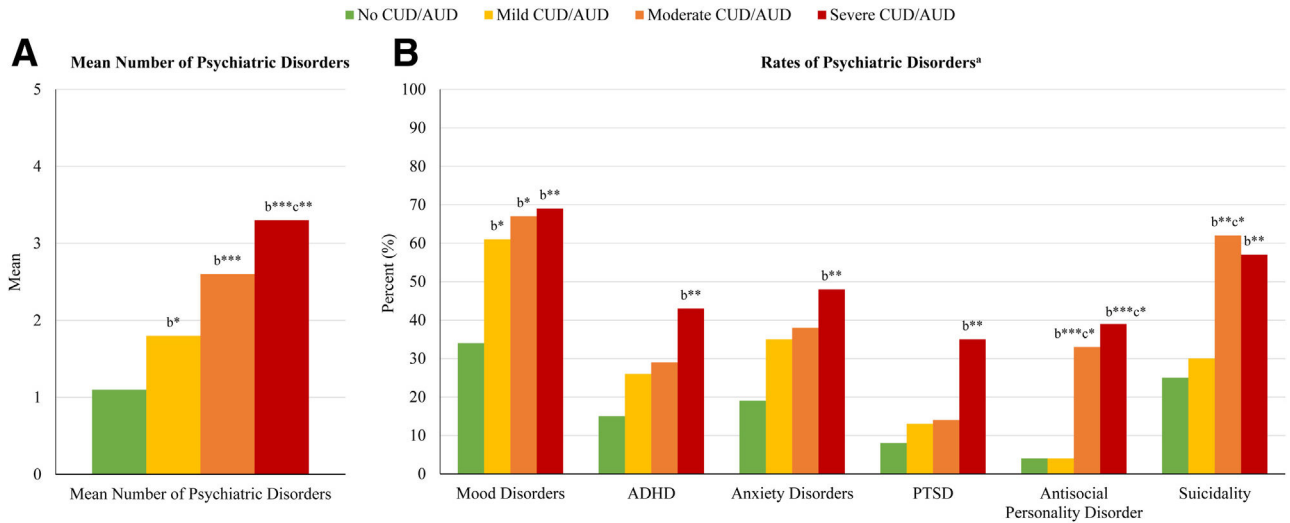
FIGURE 1.

Mean Number and Rate of Psychiatric Disorders by Highest Cannabis Use Disorder and/or Alcohol Use Disorder Severity

Note: ADHD = attention-deficit/hyperactivity disorder; AUD = alcohol use disorder; CUD = cannabis use disorder; PTSD = posttraumatic stress disorder.

[a]Time frames vary for each disorder: Mood disorders = past; ADHD = not specified; anxiety disorders = from past month to lifetime; PTSD = past month; antisocial personality disorder = lifetime; suicidality = lifetime.

[b]vs No CUD/AUD

[c]vs Mild CUD/AUD.

*p < .05; **p < .01; ***p < .001.

TABLE 1

Demographic Characteristics and General Social and Occupational Functioning in Participants

Variable	Value	
	Mean	**(SD)**
Age, y	20.9 ± 2.0	
	n	(%)
Gender identity		
Male	83	(57)
Female	62	(42)
Genderqueer/gender nonconforming	1	(<1)
Nonbinary	1	(<1)
Sex assigned at birth		
Male	83	(57)
Female	63	(43)
Not reported	1	(<1)
Race		
American Indian or Alaska Native	2	(1)
Asian	1	(<1)
Black or African American	79	(54)
Hispanic or Latino	23	(16)
White	17	(12)
More than one	21	(14)
Not reported	4	(3)
Currently enrolled in school	51	(35)
Highest level of education		
Some high school	58	(40)
Graduated high school	52	(35)
Some college or community college	34	(23)
Graduated college	2	(1)
Not reported	1	(<1)
Taken GED/HiSET		
Planning to but have not taken yet	24	(16)
Took and passed	13	(9)
Did not take	11	(8)
Not applicable (graduated high school)	97	(66)
Not reported	2	(1)
Currently employed	54	(37)

Note: Participants were receiving services at Bridge Over Troubled Waters (n = 147). GED = General Educational Development Test; HiSET = High School Equivalency Test.

TABLE 2

Psychiatric and Substance Use Disorders Based on Mini International Neuropsychiatric Interview

	Value	n (%)
Psychiatric disorders		
Major depressive disorder, past	39	(28)
Bipolar I disorder, past	30	(21)
ADHD[a]	33	(24)
Panic disorder, lifetime	11	(8)
Antisocial personality disorder, lifetime	20	(14)
Suicidality, lifetime attempt	51	(36)
Generalized anxiety disorder, past 6 months	16	(11)
Social anxiety disorder, past month	12	(9)
PTSD, past month	20	(14)
OCD, past month	23	(16)
Substance use disorders, past 12 months		
CUD	62	(44)
AUD	29	(21)
Hallucinogens	4	(3)
Stimulants	3	(2)
Cocaine	3	(2)
Sedatives, hypnotics, or anxiolytics	2	(1)
Miscellaneous	2	(1)
Opiates	1	(<1)
Inhalants	1	(<1)
Dissociative drugs	0	(0)

Note: Participants were receiving services at Bridge Over Troubled Waters and completed the Mini-International Neuropsychiatric Interview (n = 140). ADHD = attention-deficit/hyperactivity disorder; AUD = alcohol use disorder; CUD = cannabis use disorder; OCD = obsessive-compulsive disorder; PTSD = posttraumatic stress disorder.

[a]ADHD combined type: n = 21 (15%); ADHD inattentive type: n = 6 (4%); ADHD impulsive type: n = 6 (4%); no time frame specified for ADHD.

TABLE 3

Co-occurring Psychiatric and Substance Use Disorders

	n	AUD (past 12 months), n	%	CUD (past 12 months), n	%	AUD and/or CUD (past 12 months), n	%
Any mood disorder[a]	69	20	29	42	61	44	64
Major depressive disorder	39	11	28	22	56	23	59
Bipolar I disorder	30	9	30	20	67	32	70
ADHD[a]	33	9	27	20	61	22	67
Any anxiety disorder[a]	41	14	34	24	59	27	66
Panic disorder	11	3	27	4	36	5	45
Generalized anxiety disorder	16	7	44	11	69	12	75
Social anxiety disorder	12	2	17	9	75	9	75
Obsessive-compulsive disorder	23	7	30	15	65	17	74
PTSD[a]	20	5	25	14	70	14	70
Antisocial personality disorder[a]	20	11	55	17	85	17	85
Suicidality[a]	51	14	27	31	61	33	65

Note: ADHD = attention-deficit/hyperactivity disorder; AUD = alcohol use disorder; CUD = cannabis use disorder; PTSD = posttraumatic stress disorder.

[a]Time frames vary for each disorder. Mood disorders = past; ADHD = not specified; panic disorder = lifetime; generalized anxiety disorder = past 6 months; Social anxiety disorder = past month; obsessive-compulsive disorder = past month; PTSD = past month; antisocial personality disorder = lifetime; suicidality = lifetime.

TABLE 4

Odds Ratios of Psychiatric Illness by Cannabis Use Disorder and/or Alcohol Use Disorder Severity

	Mild vs No CUD/ AUD, OR	(95% CI)	Moderate vs No CUD/ AUD, OR	(95% CI)	Severe vs No CUD/ AUD, OR	(95% CI)	Moderate vs Mild CUD/ AUD, OR	(95% CI)	Severe vs Mild CUD/ AUD, OR	(95% CI)	Severe vs Moderate CUD/ AUD, OR	(95% CI)
Mood disorders[a]	2.99*	(1.14, 7.85)	3.84*	(1.37, 10.73)	4.39*	(1.60, 12.06)	1.29	(0.37, 4.42)	1.47	(0.43, 4.98)	1.14	(0.32, 4.07)
ADHD[a]	1.99	(0.64, 6.16)	2.25	(0.72, 7.07)	4.34*	(1.53, 12.32)	1.13	(0.30, 4.27)	2.18	(0.63, 7.56)	1.92	(0.55, 6.75)
Anxiety disorders[a]	2.25	(0.80, 6.34)	2.59	(0.90, 7.46)	3.86*	(1.41, 10.55)	1.15	(0.34, 3.95)	1.72	(0.53, 5.62)	1.49	(0.45, 4.96)
PTSD[a]	1.68	(0.38, 7.31)	1.86	(0.42, 8.18)	5.96*	(1.80, 19.72)	1.11	(0.20, 6.22)	3.56	(0.80, 15.72)	3.2	(0.72, 14.25)
Antisocial personality disorder[a]	1.06	(0.02, 13.99)	11.22*	(2.24, 75.53)	14.39*	(3.12, 93.04)	10.46*	(1.15, 517.68)	13.41*	(1.57, 647.28)	1.28	(0.32, 5.32)
Suicidality[a]	1.34	(0.47, 3.76)	4.97*	(1.77, 13.89)	3.97*	(1.49, 10.60)	3.71*	(1.06, 12.97)	2.97	(0.88, 9.98)	0.80	(0.24, 2.67)

Note: ADHD = attention-deficit/hyperactivity disorder; AUD = alcohol use disorder; CUD = cannabis use disorder; OR = odds ratio; PTSD = posttraumatic stress disorder.

[a] Time frames vary for each disorder. Mood disorders = past; ADHD = not specified; anxiety disorders = from past month to lifetime; PTSD = past month; antisocial personality disorder = lifetime; suicidality = lifetime.

* p < .05.