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Trauma, substance use, and mental health symptoms in transitional age youth experiencing homelessness

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Youth Experiencing Homelessness

ABSTRACT

Objective: This descriptive study examined the prevalence and correlates of trauma, substance use, and mental health symptoms in homeless transitional age youth (TAY) in San Francisco.

Design & Sample: One hundred homeless TAY were recruited from a community-based organization to complete a survey on trauma, mental health symptoms, and substance use.

Measurements: We used these measures: National Institute on Drug Abuse (NIDA)-Modified Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) for frequency and risk level of substance use; the 10-item Adverse Childhood Experiences (ACEs) for prevalence of trauma; the Post-traumatic Stress Disorder Checklist-5 (PCL-5) for Post-Traumatic Stress Disorder (PTSD) symptoms, Center for Epidemiologic Studies Depression Scale (CESD) for depression symptoms, and Generalized Anxiety Disorder 7-item (GAD-7) for anxiety symptoms.

Results: Almost all (n=98) participants experienced at least one ACE during childhood, and 77% experienced four or more. Most participants (80%) reached the diagnostic threshold for PTSD, 74% for depression, and 51% for moderate anxiety. Symptoms of PTSD, anxiety, and depression were all significantly correlated with use of opioids and stimulants.

Conclusion: Trauma, and co-occurring substance use and mental health problems are prevalent among homeless TAY. Individual- and community-level interventions are needed to address and improve the health of this population.

Keywords: adolescent health, homeless persons, HIV/AIDS, substance abuse, trauma, vulnerable populations

Background

The 1.6 to 3.5 million homeless youth in the United States may be staying in shelters or temporary housing (e.g. couch surfing), or living on the street (Morton et al., 2018; Transitional age youth (TAY) – those between the ages of 18-24 years – who are experiencing homelessness are challenging to quantify due to the transiency of homelessness and the lack of consistent definitions of homelessness within the scientific literature (Edidin, Ganim, Hunter, & Karnik, 2012). In San Francisco, approximately one in five homeless individuals is a TAY (Applied Survey Research, 2019). Young people who experience homelessness have tumultuous lives and must continuously prioritize basic needs within a context of limited resources (Edidin et al., 2012; Harris, Rice, Rhoades, Winetrobe, & Wenzel, 2017). Thirty-four percent of homeless youth in San Francisco reported trading drugs to help meet basic needs such as shelter (Applied Survey Research, 2019). Instability and risky behaviors inevitably place youth in situations that may cause physical or emotional harm, including exposure to social and structural violence such as racial discrimination, sexism, homophobia or living in a community where violence occurs frequently (Edidin et al., 2012; Heerde, Scholes-Balog, & Hemphill, 2015).

Housing instability and the accompanying exposure to external stressors and violence have an impact on mental health and patterns of substance use. Several studies indicate the presence of psychiatric disorder in more than 48.4% of homeless youth (Hodgson, Shelton, M. van den Bree, & Los, 2013). Homeless youth also experience higher rates of poor mental health symptoms and higher consumption of alcohol and drugs compared to their housed peers (Medlow, Klineberg, & Steinbeck, 2014; Edidin et al., 2012). These youth may use substances as a coping mechanism for mental health symptoms (Narendorf, et al., 2017) and for the daily challenges experienced while homeless (Heerde & Hemphill, 2014); Stress and trauma are

common risk factors for substance use (Santa Maria, Narendorf, & Cross, 2018). TAY are also at a greater risk of experiencing violence, physical injuries, and psychological consequences over peers who are housed (Edidin et al., 2012). Past histories of abuse, transphobia, dangerous living situations, limited financial and emotional resources, engagement in substance use and high-risk sexual activity, and irregular patterns of sleep and eating all contribute to poor mental health and substance use in youth (Edidin et al., 2012).

Evidence of the impact of trauma and substance use on health outcomes, specifically with TAY who are experiencing homelessness, is growing. This paper investigates relationships between past traumatic experiences and current substance use and mental health symptoms.

Research Question

The purpose of this study was to describe trauma, mental health symptoms, and substance use in TAY who are experiencing homelessness or at risk of becoming homeless. Among homeless TAY, we examined (1) the prevalence of traumatic experiences and mental health symptoms, (2) risk-levels of substance use by type, and (3) the relationships among substance use, trauma, and mental health symptoms.

METHODS

Design and Sample

We conducted a cross-sectional study of 100 homeless TAY in San Francisco, California, in close collaboration with a local community-based organization (CBO) that serves this population. Each year, the CBO delivers housing, employment, and education services for 2,500-3,000 youth aged 12-24 years who are experiencing homelessness or at risk of becoming homeless. Clients include individuals who are actively living on the street, in temporary housing

or shelters, living in single-room occupancy (SRO) housing, living with friends, in foster care, or otherwise unstably housed. The organization offers a broad range of programs, which includes referral centers, education and employment training programs, temporary emergency shelter, residential programs, medical care, behavioral health, and case management services.

Recruitment occurred at multiple service sites of the CBO, including drop in-centers, medical clinics, agency community meetings, CBO events, transitional housing sites, and at the CBO's housing site that exclusively serves clients with an HIV diagnosis. Study flyers were posted at CBO sites, announcements were made at site meetings, and CBO staff members referred clients to approach research staff for inclusion in the study. TAY clients who were interested in participating contacted study personnel onsite or via a secure Google Voice telephone number to schedule an appointment with one of the trained research assistants. At the meeting, potential participants were screened for eligibility. Individuals were eligible if they were between 18 and 24 years old and were recipients of services provided by the CBO. Eligible individuals then proceeded through an informed consent process.

Following the informed consent process, the research assistant conducted a one-on-one survey interview with the participant, reading each question aloud and marking responses in a Computer-Assisted Survey Information Collection (CASIC) system via an iPad tablet. The CBO specifically recommended that the research assistants, rather than the clients, navigate the CASIC system due to client differences in reading and concentration levels that could affect their ability to complete the questionnaire by themselves. Each interview was conducted in a private room and lasted 45-120 minutes. Participants were given a thirty-dollar drugstore gift-card upon completion of the interview.

Data were collected between May 2017 and April 2018. The University of California, San Francisco (UCSF) Institutional Review Board approved the study and all related study documents, materials, and recruitment materials.

Measures

Characteristics: Participants self-reported their age, race/ethnicity, gender identity, housing status, sexual orientation, incarceration history, and HIV status. For statistical analyses, race was categorized into Multiracial, Black, White, and Other.

Trauma: Exposure to traumatic events prior to the age of 18 was measured with the Adverse Childhood Experiences (ACEs) instrument (Centers for Disease Control and Prevention, 2014; Felitti et al., 1998), which has been used extensively including among young adults (Pinto, Correia, Maia, 2014; Centers for Disease Control and Prevention, 2014). The number of reported ACEs was dichotomized into less than 4, or 4 or greater. Scores of 4 or greater indicate a greater level of household dysfunction, abuse, and neglect and have been shown to be associated with morbidity and poor school performance in TAY (Björkenstam et al., 2016; Felitti et al., 1998).

Mental Health: PTSD symptoms were measured with the PTSD Checklist for DSM-5 (PCL-5) (Weathers, Litz, Herman, Huska, & Keane, 1993), which has demonstrated internal consistency, reliability, and validity (Blevins, Weathers, Davis, Witte & Domino, 2015). The PCL-5 can be used for screening and for monitoring change in symptom intensity. A total score was calculated (0-80), with a score of 33 or above indicating potential PTSD and the need for a more thorough psychiatric evaluation (Weathers et al., 1993). The CES-D (Radloff, 1977) was used to determine symptoms of depression. The CESD has shown good reliability and validity for assessment of depression in various populations including adolescents (Han & Jia, 2012;

Cheng, Cohen, Goodman, 2014). A total score was calculated (0-60), with a score of 16 or above indicating risk for clinical depression (American Psychological Association, 2018). Anxiety symptoms were assessed using the GAD-7 which has been shown to have strong validity and reliability including among adolescents (Rutter, Brown, 2017; Mossman, et al., 2017). A total score of 10 or above on a scale of 0-21 indicates at least moderate anxiety (Spitzer, Kroenke, Williams, & Löwe, 2006).

Substance Use and Risk: To evaluate substance use, participants first answered the NIDA Quick Screen V1.0 (National Institute on Drug Abuse, 2018), which identifies participants who have reported alcohol binge drinking in the past year (five or more drinks in a day for men; four or more drinks a day for women), and report past year use of tobacco products, illicit drugs, or prescription drugs for non-medical reasons. Responses were dichotomized (yes/no).

Participants who reported use of illegal drugs or prescription drugs for non-medical reasons in the past year then completed the NIDA-Modified ASSIST V2.0 (National Institute on Drug Abuse, 2018). The original ASSIST was developed by the World Health Organization (WHO) and has demonstrated strong reliability and validity (WHO ASSIST Working Group, 2002). In the NIDA-Modified ASSIST, participants are asked about past three-month's use of cannabis, cocaine, prescription stimulants, methamphetamine, inhalants, sedatives, hallucinogens, street opioids, and prescription opioids. If a substance used was not listed, participants could specify it in the "other substances" option (in this sample, responses included "Belladonna," "Hawaiian plant", "native ritualistic sacraments," mushrooms, and various psychedelics). For each substance reported, a Single Substance Involvement Score (SSIS) was calculated. A mean SSIS between 0-3 indicates low-risk of harmful consequences for the user; a score of 4-27 indicates moderate-risk; a score greater than 27 indicates high-risk. Moderate-risk

level scores indicate that the participant may be misusing substances but may not currently meet diagnostic criteria for a substance use disorder.

Analytic Strategy

We ran frequencies and mean scores to characterize the sample, trauma exposure, mental health symptoms, and substance use. To determine associations between trauma, mental health symptoms and substance use, we conducted bivariate correlations, and report on those correlations coefficients that were moderate or strong ($r < -0.3$; $r > 0.3$). All analyses were conducted using Statistical Package for the Social Sciences (SPSS).

RESULTS

Study participants (N=100) ranged from 18-24 years of age; the majority were male (67%), and 52% identified as lesbian, gay, bisexual, transgender, or queer (LGBTQ) (Table 1). More than two-thirds (77%) were persons of color. At the time of the survey, 23% of participants were living with HIV, 50% were experiencing literal homelessness, and almost one-third (29%) had been previously incarcerated for more than three days. Over three-quarters of participants (76.8%) reported 4 or more ACEs, 80% reached the diagnostic threshold for PTSD, 74% for depression, and 51% for at least moderate anxiety. Participants also reported substantial amounts of substance use. On the NIDA Quick Screen, 69% of participants reported binge drinking, 78% tobacco use, 29% prescription drugs for non-medical reasons, and 51% illegal drugs in the past year.

Of the 55 participants who reported use of illegal drugs or of prescription drugs for non-medical reasons on the NIDA Quick Screen, 54 then responded to the NIDA-Modified ASSIST, and SSIS were calculated (Table 2). Mean SSIS scores were in the moderate-risk range for every

substance except prescription stimulants, which was low-risk. The mean SSIS was 20.6 (SD 16.0) for street opiates, 19.0 (SD 11.2) for methamphetamines, and 9.5 (SD 11.0) for cocaine.

Exposure to abuse, neglect, or household dysfunction during childhood (ACEs) showed a moderate or strong correlation only with “other substances,” but this correlation was not statistically significant ($r=0.691$, $p=0.058$). All other substances had low and non-significant correlations with ACEs. PTSD symptoms (PCL-5) were moderately correlated with stimulants ($r=0.583$, $p=0.002$), prescription opioids ($r=0.562$, $p=0.004$), and street opioids ($r=0.527$, $p=0.030$). PTSD symptoms were also associated with sedatives and inhalants, but these correlations were not statistically significant. Anxiety symptoms (GAD-7) were moderately associated with prescription opioids ($r=0.590$, $p=0.002$), sedatives ($r=0.482$, $p=0.015$), and stimulants ($r=0.404$, $p=0.045$), however associations with street opioids and inhalants were not significant. Symptoms of depression (CESD) were moderately associated with prescription opioids ($r=0.580$, $p=0.003$) and stimulants ($r=0.457$, $p=0.022$), however moderate associations with inhalants, street opioids, and other substances were not significant.

DISCUSSION

We explored correlations between trauma and mental health symptoms (ACEs, PTSD symptoms, depression symptoms, and anxiety symptoms), and SSIS substance use scores (Table 3). Our study indicated high rates of ACEs, substance use, and current mental health symptoms among homeless TAY in San Francisco. Although substance use was not significantly correlated with trauma, it was significantly correlated with mental health symptoms, suggesting that a person’s response to trauma, and their lack of resources to process the trauma, may lead to unhealthy coping through substance use. This population may have even fewer resources than their housed counterparts to cope in healthy ways. These findings are consistent with existing

scientific literature (Bender, Brown, Thompson, Ferguson, & Langenderfer, 2015; Bishop, Benz, & Palm Reed, 2017).

TAY experiencing homelessness in this study reported a mean of 5.9 adverse childhood experiences before the age of 18, and over three-quarters of participants reported more than 4 ACEs. This finding parallels other research on childhood trauma exposure among these youth (Bender, Thompson, & Ferguson, 2014; Bender et al., 2015; Garcia, Gupta, Greeson, Thompson, & DeNard, 2017; Kowalski, 2018). Participants also reported high rates of mental health symptoms, with many reaching diagnostic thresholds for PTSD, depression, and/or anxiety, again similar to existing research (Bender et al., 2015). Most participants lived in and around San Francisco's Tenderloin neighborhood, an area with high rates of poverty and violence, which may have contributed to their experiences of trauma and mental health symptoms. Although we measured experiences of trauma prior to the age of 18 years, and all participants were over the age of 18, living in an area with high rates of poverty and violence puts individuals at additional risk for trauma. This serves as a barrier to accessing care for the sequelae of traumas experienced previously. Homeless TAY frequently have difficulty accessing services such as shelter, medical care, mental health services, and employment due to stigma, a lack of knowledge about available resources, and a lack of services targeted to young individuals (Applied Survey Research, 2019).

Rates of substance use among our participants were high, and while much of their use fell within the range of moderate-risk of harm, adolescence and young-adulthood are times of life during which the risk of developing substance misuse problems and disorders is high, making even moderate-risk use worrisome (U.S. Department of HHS and Office of the Surgeon General, 2016). At the same time, youth misuse of substances may increase their risk for experiencing trauma, violence, and injury, and for contracting communicable diseases such as HIV and

Hepatitis C (U.S. Department of HHS and Office of the Surgeon General, 2016). TAY whose substance use behavior falls within moderate-risk levels of harm are a population in high need of monitoring and interventions to minimize substance use as well as co-occurring issues.

Our findings also indicated that substance use was significantly correlated with current PTSD symptoms. An integrative review examining literature on the relationship between early life stress, childhood trauma and abuse, substance use, and addiction found strong evidence that interpersonal childhood trauma is associated with an increased vulnerability to substance use disorders (Moustafa et al., 2018). Reasons for this may be due to the permanent changes to the brain's stress circuitry formed by early life stressors (Enoch, 2011). This may help explain at the individual-level why our findings show a significant relationship between trauma symptoms and substance use.

Interestingly, in our sample we did not identify correlations between ACEs and most types of substance use, although this has been observed in other literature. A community study recruiting youth ages 18-25 years found specific scores and types of ACEs to be significantly associated with substance use (Shin et al., 2018). Participants who have high or multiple exposures to ACEs were at higher risk for alcohol related problems, current substance use, and mental health symptoms when compared to participants who have none to low ACEs (Shin et al., 2018). The lack of correlation in the current study may be due to the high number of ACEs reported by our participants, on average. While there was little correlation between ACEs and substance use, there was a significant correlation between the longer-term consequences of trauma – PTSD, depression, anxiety – and substance use.

Limitations

We conducted a cross-sectional study, which limits our ability to conclude whether exposure to trauma or experiencing mental health symptoms directly influences participant use of substances. We also recruited participants using convenience sampling, which increases the risk for selection bias. In examining potential selection bias, we found that our participant demographics largely mirrored the 2019 homeless youth point-in-time count, with the exception of gender; in our study, 67% of participants identified as male, but only 48% identified as male in the point-in-time count (Applied Survey Research, 2019). This could affect generalizability to the larger homeless TAY population in San Francisco. Additionally, since the study was conducted in San Francisco, these results may not be generalizable to other locations.

One limitation of data collection instruments such as the NIDA-Modified ASSIST is their validation for use in adult populations rather than transitional-aged participants, which may affect reliability. Participants were asked intimate questions about their childhood trauma, mental health symptoms, and current and past use of substances which may have resulted in an underreporting of trauma, mental health symptoms, and substance use due to social desirability bias.

The CBO suggested that data collection be completed through face-to-face interviews, and this may have resulted in social desirability bias. Future research with this population should consider data collection methods that allow for both confidentiality and participation of individuals with lower reading skills.

Our study did not categorize ACEs into types of trauma nor did we separate ACEs scores into low (0-3) moderate (4-6) and high (7-10) categories due to our sample size. Our findings could be influenced by our methodology and sample size, potentially resulting in a type II error. Another limitation in determining links between childhood trauma and substance use is the

proximity in time between adolescence and young adulthood. It is difficult to determine which adverse experiences began and ended prior to the age of 18 years and which have not. This is one possible reason why we did not find any significance between ACEs and substance use when studies among older populations have found such a relationship (Larkin et al., 2017). Due to the length of the survey, we did not measure all potential sources of trauma (e.g. foster care system, sex work, intimate-partner violence, structural violence). Thus, we are unable to assess whether recent trauma or specific types of trauma are more correlated with substance use than generalized adverse experiences in childhood.

Conclusions

Young people experiencing or at risk for homelessness face significant exposure to co-occurring trauma, mental health symptoms, and substance use, which exacerbate each other and can put these individuals at significant risk of additional morbidity (e.g., HIV, Hepatitis C) and even mortality. This is a public health issue that requires innovative multi-sector approaches. Collaborations between community-based organizations and public health institutions can begin to address the barriers to improving health and well-being for homeless TAY. At a policy and structural level, interventions could include, for example, the development of stable youth-oriented housing options, and the development of stable government and private funding streams to support youth-serving organizations. At the individual level, public health nurses and clinical nurse specialists can provide practical services such as screening and referral to resources, and provision of substance use counseling. Screenings can be conducted using validated instruments such as those used in this study. In addition, brief versions of many of these instruments exist, including the GAD-2 for anxiety (Seo, J., Park, S., 2015; The National Institute for Health and Care Excellence, 2011), the PHQ-2 for depression (Arroll et al., 2010; Richardson et al., 2010),

the PC-PTSD-5 for PTSD symptoms (Prins et al., 2016). These brief screens, along with the ACEs instrument and the NIDA Quick Screen, can relatively quickly identify TAY who need more in-depth screening and services.

In communities without robust mental health services, responding to positive screens may be more difficult than in more resourced areas. However, public health nurses, as well as members of their team, could participate in online webinar trainings focused around providing trauma informed care, substance use, and mental health services for this population. Bringing in consultants to train on the aforementioned topics could prove valuable as well. Additionally, advocating for PHN's to consider training in evidence based practice for substance use treatment, certifications in psychiatric or mental health could provide sustainable and lasting mental health services for clients and staff working with the TAY population (Finnell, Tierney, & Mitchell, 2019). Increasing the use of community health workers, social workers, and substance use counselors could increase linkage of TAY with available social services in the community.

As shown in this work, public health nurses can reach the TAY population in settings beyond traditional community health centers, such as drop-in resource centers for homeless TAY, transitional housing, and emergency shelters. Collaborating with community-based organizations that are trusted within the community, whether they are specifically identified as serving TAY or not, can be an important way to reach this population with screenings, care, and referrals, and such collaboration is critical to understanding the unique needs of the TAY population in a particular location. Other locations to access TAY could include, for example, schools, job centers, or shelters.

Public health nurses can support the systematic collection of data on the scope and characteristics of youth homelessness, mental health, and substance use to help inform

interventions at all levels. Finally, our findings suggest the need to support upstream interventions because much of the trauma, substance use, and first mental health challenges that homeless TAY experience begins even before that person becomes homeless. Understanding the complex relationships between trauma, substance use, and mental health supports the need for collaboration of PHNs working among different populations, such as PHNs working with maternal and child populations. Collaborations such as these can help inform and develop early interventions that may potentially reduce the risk for trauma, substance use, and mental health challenges among TAY.

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Table 1. Characteristics of Transitional Age Youth who are Experiencing Homelessness**(N=100)**

Characteristic	N(%) or Mean (SD)
Mean current age (SD)	22.16 (1.68)
Race, N (%)	
Multiracial	38 (38.0%)
Black	28 (28.0%)
White	22 (22.0%)
Other/Decline to State	12 (12.0%)
Gender	
Male	67 (67.0%)
Female	28 (28.0%)
Other	5 (5.0%)
Sexual Orientation	
LGBTQ	52 (52.0%)
Heterosexual	44 (44.0%)
Housing	
In own home or apartment	15 (15.0%)
In a relative's home	4 (4.0%)
In a group home	9 (9.0%)
In campus/dormitory housing	4 (4.0%)
Homeless or in a shelter	50 (50.0%)
Other	18 (18.0%)

Ever been incarcerated for more than 3 days (yes)	29 (29.0%)
HIV-positive (yes)	23 (23.0%)
PCL-5 Raw Score	54.7 (21.9)
Score >= 33	79 (79.8%)
ACEs Raw Score	5.9 (5.87)
Score >= 4	76 (76.8%)
CESD Raw Score	25.32 (12.26)
Score >= 16	73 (73.7%)
GAD-7 Raw Score	9.8 (6.28)
Minimal (score 0-4)	23 (23.2%)
Mild (score 5-9)	26 (26.3%)
Moderate (score 10-14)	25 (25.3%)
Severe (score 15+)	25 (25.3%)
NIDA Quick Screen (past year use)	
Alcohol binge drinking	69 (69.7%)
Tobacco	78 (78.8%)
Illicit drugs	51 (51.5%)
Prescription drugs for non-medical reasons	29 (29.3%)
Current Substance Use (30 days)	
Marijuana/Hash	74 (74%)
Cigarettes	70 (70%)
Alcohol	58 (58%)
Other illegal drugs	40 (40%)

Other tobacco	39 (39%)
Binge Drinking	37 (63%)
Electronic vaping	33 (33%)
Injection	15 (15%)
Prescription drugs	14 (14%)

Table 2. Specific Substance Involvement Scores and Risk Levels among Homeless Transitional Age Youth

Substance	# Reporting Past Year Use	# Reporting Past 3- month Use	Mean Single Substance Involvement Score (SD)	Ranges of Reported Scores	Risk Level of Mean Score
Street Opioids	17	12	20.6 (16.0)	0-39	Moderate
Methamphetamines	34	28	19.0 (11.2)	0-35	Moderate
Cannabis	51	46	15.0 (8.9)	0-36	Moderate
Cocaine	43	32	9.5 (11.0)	0-39	Moderate
Sedatives	25	19	8.6 (7.3)	0-23	Moderate
Hallucinogens	38	25	6.8 (7.2)	0-26	Moderate
Prescription Opioids	24	13	5.7 (5.5)	0-18	Moderate
Inhalants	14	7	4.6 (5.0)	0-16	Moderate
Prescription Stimulants	25	19	3.2 (3.5)	0-11	Low

Table 3. Correlations* Between Trauma and Mental Health Symptoms, and SSIS Substance Use Scores in Homeless Transitional Age Youth (N=54)

Comparison	Pearson Correlation (r)	p-value
<i>Trauma (ACEs)</i>		
Other Substances	0.691	0.058
<i>PTSD Symptoms (PCL-5)</i>		
Stimulants	0.583	0.002
Prescription Opioids	0.562	0.004
Street Opioids	0.527	0.030
Sedatives	0.360	0.070
Inhalants	0.333	0.245
<i>Anxiety (GAD-7)</i>		
Prescription Opioids	0.590	0.002
Sedatives	0.482	0.015
Stimulants	0.404	0.045
Inhalants	0.399	0.158
<i>Depression (CESD)</i>		
Prescription Opioids	0.580	0.003
Stimulants	0.457	0.022
Inhalants	0.451	0.106
Street Opioids	0.446	0.073
Other Substances	0.405	0.320

* Because of the number of variables, only comparisons with moderate or strong correlations are reported here.