Published in final edited form as:
Subst Abus. 2008 ; 29(2): 43–52. doi:10.1300/J465v29n02_05.

Treatment Attendance Among Homeless Youth: The Impact of Childhood Abuse and Prior Suicide Attempts

Natasha Slesnick, PhD, **Min Ju Kang, PhD**, and **Erin Aukward, BS**
Department of Human Development and Family Science, The Ohio State University, Columbus, OH.

Abstract

Treatment engagement and retention is a significant challenge for those who serve adolescent substance abusers. Homeless youth are considered especially challenging to engage and maintain in intervention efforts given their lack of residence and range of associated problems. This study examined predictors of treatment attendance and its impact on substance use outcome among a sample of substance abusing homeless youth (n = 133). Stepwise regression results indicated that a history of sexual abuse and suicide attempts were the two strongest predictors of the treatment attendance rate, higher attendance among those with these histories. Youths who attended greater than 6 treatment sessions showed a significant reduction in alcohol use at post-treatment, but attendance rates did not impact other substance use. Identifying predictors of treatment attendance among this subgroup of adolescents is vital given that much research suggests that treatment attendance alone is associated with better short and long term outcomes.

Keywords

Homeless youth; alcohol and drug use; treatment attendance

INTRODUCTION

Even when substance abusing individuals contact a treatment system, early drop-out is a significant problem (1). Many studies document high treatment drop out rates among substance abusing adolescents (3–6). These early drop-out rates are most often associated with a lack of motivation for change (2) and comorbid diagnosis (7–9). However, fewer studies have examined the relationship between reported childhood abuse, history of suicide attempts and treatment attendance, especially among homeless substance abusing youth.

As a subset of substance abusing adolescents, homeless youth face many obstacles to participating in substance abuse treatment. Many fear that their parents or social services will be contacted and avoid services for that reason (10). Other barriers include lack of knowledge and access to clinics, need for identification and insurance, and transportation (10). Parents most often initiate treatment of their adolescent child and are often identified as responsible for their adolescent's attendance given transportation and other issues (11). However homeless, street living youth are disconnected from family and social service systems and are independently responsible for initiating treatment and attending sessions. In addition, many homeless youth have physical and sexual abuse histories as well as prior suicide attempts.

Address correspondence to: Natasha Slesnick, Department of Human Development and Family Science, Ohio State University, 135 Campbell Hall, 1787 Neil Avenue, Columbus, OH 43210 USA (E-mail: E-mail: Slesnick.5@osu.edu).

Identifying the relationship between physical and sexual abuse, history of suicide attempts and treatment attendance among this multi-problem subgroup of adolescents is vital given that much research suggests that treatment attendance alone is associated with better short and long term outcomes (12).

While the number of randomized clinical trials focused on treating adolescent substance abusers has increased significantly in the last 15 years, few trials have focused on youth presenting with the additional problems of homelessness, physical/sexual abuse and suicide. Homeless youth present with more severe substance use problems, suicide attempts and physical and sexual abuse histories than their non-homeless peers (13). Among adolescent suicide attempters, up to half never receive treatment, and those that do show very poor attendance (14). Older and male suicide attempters are significantly more likely than younger and female attempters to drop out of treatment (15) which is a significant concern since suicide rates are higher for males and for older youths (16). In addition, some research suggests that physically and sexually abused youth are more difficult to engage into treatment, and require more effort to maintain in treatment than non-abused youth (17–18). In addition to potentially limiting client outcome, poor treatment attendance can negatively impact a researcher's ability to evaluate and identify effective intervention strategies for multi-problem youth (15).

This study examined the relationship between childhood abuse, history of suicide attempts and treatment attendance among a sample of substance abusing homeless youth (n = 133) between the ages of 14 and 22. Findings have the potential to offer direction to those serving multi-problem homeless youth. Given previous research, we expected that a history of abuse and/or suicide attempts would be related to fewer completed treatment sessions. In addition, we explored the relationship between treatment attendance and substance use outcome among these youth.

METHODS

Participants

All youth (n = 133) were engaged through the only drop-in center for homeless youth in a large Southwestern urban center. In order to be eligible for participation, youth were between the ages of 14–22, had been living in the metropolitan area for at least 3 months, with plans to remain for at least 6 months, met DSM-IV criteria for alcohol or other psychoactive substance use disorder, as assessed by the computerized diagnostic interview schedule for children (CDISC) (19). All youth also met criteria for homelessness as defined by DHHS as "a situation in which a youth has no place of shelter and is in need of services and shelter" (20, p. 300).

The data used in the baseline analyses has a sample size of n = 133. Due to the unstable living status of the sample 75.9% (n = 101) of the youth were tracked and assessed at 6-months. An analysis was conducted to determine if participants who dropped out systematically differed from those who remained in the follow-up assessment. Chi-square tests revealed no significant differences between youth who dropped out and those who remained in the study with respect to demographic variables, including gender and ethnicity. In addition, no significant differences emerged between the drop-outs and the non drop-outs with regard to the variables of interest in the present investigation (e.g., having history of suicide attempt, physical and sexual abuse). Results of t-test revealed no significant mean difference on their baseline measure of substance use, age of first homelessness, and percent days of homelessness. However, a difference for age was found (t (131) = 2.12, p = .036), although the difference between the two groups was only 1 year (M = 19.3 years for those who dropped; M = 18.3 years for those who remained). Thus, age will he considered as a covariate when analyzing the effect of treatment attendance on substance use.

Procedure

Potentially eligible youth were screened for participation in the study and those eligible signed a consent statement, which was approved by the local IRB. The assessment battery was administered immediately following the review and signing of the consent form. Since we were only interested in examining factors associated with treatment attendance in this study, only those participants assigned to the project intervention were examined. Intervention began following completion of the pretreatment assessment battery and randomization. The data collection for this intervention study occurred between November 2001 and June 2005. Research Assistants (RAs), trained by the PI in all the assessment instruments conducted the screening, intake and follow-up assessments. Youth were assessed at 3 and 6-months post-baseline, but the 3-month follow-up was a mid-treatment assessment for some youth, and so data from the 6-month follow-up alone was analyzed in the current study. The baseline and follow-up assessment required approximately 2 hours to complete. Youth received a care package including blankets, toiletries and food items at the completion of the baseline assessment and a $50 gift card at the completion of the follow-up assessment.

Treatment—Clients were offered 16 sessions of the Community Reinforcement Approach (21–22). CRA uses operant conditioning principles, offering reinforcement schedules (e.g., social/relational reinforcement, financial rewards, vocational reinforcements) to assist clients in reaching treatment goals. Therapist training included reading Meyers and Smith (22) and Godley et al.'s (21) Adolescent CRA manual for the treatment of adolescent marijuana abusers, a two-day didactic and role-play seminar, and on-going weekly supervision done in groups with all therapists in attendance. Audiotape recordings of therapy sessions were used for treatment adherence checks, fidelity monitoring, and supervision.

Because many homeless youth have trouble keeping their appointments due to their chaotic and unpredictable life situation, an open door policy was employed so that when a client wished to meet with his or her therapist, he or she would come to the drop-in center and request to meet with the therapist. If the therapist was available, they met at that point. If the therapist was unavailable, the client waited at the drop-in center until the therapist was available, or arranged for a time later that day to meet. Letters and calls to clients were not made when appointments were not kept, since this was not possible.

Treatment sessions—All therapists maintained a log of the number of treatment sessions they completed with their clients. Average number of CRA treatment sessions completed was 7.2 (SD = 5.8, Ranged from 0 to 16). Each participant had a 6 month treatment window to complete all sessions. Among those who attended more than one session, the average number of days between first and last session was 91 days (M = 90.6, SD = 56.4, Ranged from 2 to 180 days, skewness = −.01). Twenty-two youth (16.5%) did not attend any treatment sessions whereas 23 youth (17.3%) attended all 16 sessions. The shape of distribution was considered not skewed (skewness = .35 which is < 1), with highest frequencies on both extremes but mostly distributed evenly in-between the extreme values. Of those youth who attended at least one treatment session, the average number of treatment sessions was 8.6 (SD = 5.3).

Materials

Demographic Measures—A demographic questionnaire designed to characterize and compare participants was administered. This questionnaire queried history of suicide attempts, physical and sexual abuse histories and homeless experiences including age when first homeless.

Substance Use—The Form 90, developed for NIAAA funded Project Match (23), was the primary measure of quantity and frequency of drug and alcohol use. This measure uses a

combination of the timeline follow-back method (24) and grid averaging (25). This tool has shown excellent test-retest reliability for indices of drug use in major categories (26–27) including with runaway substance abusing adolescents (28) with kappas for different drug classes ranging from .74 to .95. Percent days of alcohol and drug use were used as dependent measures in this study. Shaffer's Computerized Diagnostic Interview Schedule for Children (CDISC) (19) is a computerized instrument measuring criteria for DSM IV diagnoses and was administered to youth by the research assistant. Sections on alcohol, marijuana and other substance use were administered to determine formal eligibility for the current study. It has demonstrated excellent inter-rater reliability of 97% with clinicians agreeing with the diagnosis of CDISC (29).

RESULTS

Participants Characteristics at Baseline

Please see Table 1 for a summary of participant characteristics at baseline. In order to examine differences at baseline on substance use by age (14–18 v. 19–22), gender (male v. female), or ethnicity (Anglo v. non-Anglo), separate one-way ANOVAs were conducted for each independent variable. Baseline alcohol and drug use differed by age [F (1, 132) = 7.71, p = .006] and gender [F (1, 132) = 6.35, p = .013], with higher average use among older and male youth. There were no observed baseline differences in substance use by ethnicity [F (1, 132) = .02, p = .90].

Predicting Treatment Attendance Among Homeless Youth

A hierarchical regression analysis was conducted to determine the relative contribution of individual trauma history in explaining the variance in treatment attendance among the homeless youths. Age and gender were entered first to control for potential effects of individual demographic characteristics on attendance. Age of first homelessness was entered next into the hierarchy. Then, the three trauma histories were entered in the following order: suicide attempt, sexual abuse, and physical abuse. Gender, age, and age of first homelessness explained 4% of the variance in treatment attendance but the contribution to the model was not statistically significant. Trauma history, including ever having a suicide attempt accounted for additional 7% of the variance, and sexual abuse accounted for an additional 3% of the variance. History of physical abuse did not make a significant, unique contribution to the model. Only history of a suicide attempt and sexual abuse were significant predictors of treatment attendance. Altogether, the model linearly accounted for 14% of the variance in the number of treatment sessions attended by the homeless youths (adjusted R^2 = .10). Examination of beta weights revealed that a history of sexual abuse and a suicide attempt history were significantly related to treatment attendance in the unexpected direction. Youths who had history of sexual abuse and of attempting suicide were those with higher treatment attendance (See Table 2). The correlation between sexual abuse and physical abuse was moderately high, r = .45 (p = .0001); having had a suicide attempt was also correlated with sexual abuse (r = .26, p = .002), and physical abuse (r = .26, p = .002). Multicollinearity was examined to test whether there was a strong correlation between two or more predictors used in our regression model. Myers (30) suggested that if the largest variance inflation factor (VIF) is greater than 10, then one should worry that the variables may be affected by collinearity and thus may be biasing the regression model. However, in our hierarchical regression model, the largest VIF value was 1.59 (< 10). Therefore, we interpret that the intercorrelation among variables did not significantly affect the model.

As a follow-up test, discriminant function analysis was used to examine the relative contribution of abuse history, prior suicide attempts and other individual characteristics in predicting membership in the high or low treatment attendance group. Each subject was

grouped into two, using the median score of their treatment attendance as the cut-off (Median = 6, Mean = 7.2, *SD* = 5.8, Range: 0–16). Youth who attended equal or less than 6 sessions was assigned as "low" group (*n* = 73, 54.9%) and those who attended more than 6 sessions were assigned as "high" group (*n* = 60, 45.1%). The median score was used as a cut-off score because the median split is a commonly used method as it assigns the number of cases in each group (i.e., high, low) closest to equal (31). However, it can be an arbitrary issue where to assign those who fall "at" the median score. We decided to assign those who are at median (equal to 6 sessions) to low group because considering the aforementioned shape of distribution, it seemed more reasonable to consider 6 and below sessions of attendance as "low" rather than 5 and below sessions of attendance to be "low."

The combination of age, gender, ethnicity, age of first homelessness, ever having suicidal attempt, sexual abuse, and physical abuse correctly classified the high and low treatment attendance group with 65.4% of accuracy; it predicted the group membership with significance [Wilk's $\lambda = .86$, $\chi^2 (7) = 18.57$, $p = .010$]. Canonical discriminant function coefficients indicated that trauma history of at least one suicide attempt and sexual abuse were strongest contributors predicting group membership.

Effect of Treatment Attendance on Substance Use

The effect of treatment attendance on substance use outcome was examined. A Reliability Change Index (RC) (32–33) was used to determine the change pattern on individual substance use between pre-treatment and post-treatment. The value is calculated by subtracting pre-treatment from 6 month post-treatment scores and dividing the result by the standard error of the difference between the test scores ($RC = X_2 - X_1/S_{diff}$). As recommended by Jacobson and colleagues (27) the proposed value of clinical significance, RC less than −1.96 ($p < .05$) is considered a significant reduction (i.e., pre-treatment substance use > post-treatment substance use); RC exceeding 1.96 ($p < .05$) is considered a significant increase at post-treatment. An RC score falling in-between is considered non-significant change. Because of the aforementioned issue of the average age difference between the drop-out and the retention group, age was controlled in the post-treatment analyses. Hence, a series of univariate ANCOVA's were conducted; with each RC score for substance use (i.e., change score between pre- and post-treatment on alcohol, drug, and all substance use) as the dependent variable, treatment attendance high/low (i.e., > 6 vs. ≤ 6) as the fixed factor, and age as a covariate. Findings showed that the change in alcohol use was predicted by high versus low treatment attendance. That is, the covariate, age, was not significantly related to participants' change in alcohol use [$F (1, 97) = .01$, $p = .92$, $r = .03$], but there was significant effect of attending more than 6 treatment sessions on change in alcohol use after controlling for the effect of age [$F (2, 97) = 8.90$, $p = .004$]. Attending more than 6 sessions was related to a significant reduction in alcohol use (mean RC = −6.13, which is < −1.96) and attending 6 and fewer sessions was related to a slight increase in alcohol use (mean RC = 1.97, which is > 1.96). High and low treatment attendance and age did not predict significant change over time for other substance use.

DISCUSSION

Several studies note that a history of physical and/or sexual abuse is associated with greater severity of substance use and a more morbid course of substance use problems. Attention to treatment retention is thus important for intervention efforts seeking to intervene in this potentially negative developmental trajectory. Counter to our expectations, youth with a history of sexual abuse and suicide attempts showed a higher number of treatment sessions attended, though a history of physical abuse was not associated with the number of sessions attended. Possibly, sexual abuse and prior suicide attempts are less easily discussed in peer or social

situations compared to physical abuse given societal taboo, and this might be associated with less resolution of the associated psychological distress. Future research might show that psychological distress associated with sexual abuse and suicide attempts is associated with a greater inclination to connect with trustworthy others in order to resolve associated distress. As Rollo May notes (34), humans are not meant to be alone, and suffering alone may he especially distasteful for these particular youth, many of whom have been abandoned by those they loved and trusted. Similarly, Agosti et al. (35) found that depressed, cocaine abusing females were more likely to remain in treatment compared to those who were non-depressed, and concluded that this was because of greater psychiatric distress.

In an effort to increase engagement among substance abusing adolescents, several studies have examined strategies to increase treatment attendance. For example, Brief Strategic Family Therapy includes a specialized engagement strategy, the Strategic Structural Systems Engagement (SSSE), effectiveness of which has been evaluated and shown in several studies (36–37). Donohue et al. (38) found that among adolescents with a diagnosis of conduct disorder and substance use. including the adolescent and parent in engagement efforts led to greater treatment attendance than an engagement intervention involving only the parent. Enhancing intrinsic motivation for change is the central purpose of motivational interviewing (MI) (39), and a brief motivational intervention can increase treatment attendance among adolescent substance abusers (40–41). The findings of the current study suggest that homeless youth can be engaged and maintained into treatment especially when many barriers to treatment are addressed. This study did not include a specific, manualized and tested engagement strategy. Instead, engagement was addressed by overcoming barriers to treatment including providing the treatment within the youths' area of comfort (the drop-in center), using an open door policy for treatment, and having therapists maintain a nonjudgmental and supportive stance which may have provided one of the first positive experiences with an adult for many youth. However, more work is needed to identify strategies to engage homeless substance abusing youth in treatment, especially for those who avoid all social service contact, including drop-in centers.

Another goal of this study was to examine whether the number of treatment sessions impacted substance use outcome. In this sample, attending greater than six sessions was associated with greater alcohol use reduction compared to those who attended fewer than six treatment sessions while drug use outcomes were similar regardless of the number of sessions attended. While much more research in this area is needed, this finding suggests that alcohol and drug use respond differently to intervention efforts. The implication is that intervention efforts directed towards substance use (combining alcohol and drugs) in general might not be as effective as those that address alcohol use differently from other drug use. Few studies have examined alcohol use outcomes separately from drug use outcomes among adolescents, but those that have provide some indication that alcohol may be more difficult to treat than drug use (42–44).

Several limitations of the current study should be considered when interpreting the findings. First, this was a sample of convenience, and homeless youth in other parts of the country who are recruited at other drop-in centers might respond differently to intervention efforts. Abuse history and prior suicide attempts were self-reported by youth, and current symptoms of post-traumatic stress disorder or other concomitant diagnoses were not examined in this study. While diagnostic status can he a marker of residual negative effects of trauma, many individuals experience child abuse histories without meeting diagnostic criteria for a psychiatric disorder (45). Thus, even though we did not assess diagnostic status, we felt that assessing history of abuse and of suicide attempts would provide meaningful information. However, individuals meeting criteria for post-traumatic stress disorder might show a different pattern of response, and is worthy of future study. In addition, motivation for change was not assessed in this sample. Future research might show that those participants with sexual abuse histories and prior suicide

attempts have greater motivation for change, while those with physical abuse histories have less motivation for change.

Acknowledgments

This work has been supported by NIDA grant (R01 DA13549) and CSAT grant TI12503.

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Subst Abus. Author manuscript; available in PMC 2009 July 18.

TABLE 1

Descriptive statistics[a] of the study variables by abuse and suicide attempt history at baseline

Variable		Sexually abused		Physically abused		Attempt suicide		Total
		Yes (*n*=54)	No (*n*=79)	Yes (*n*=65)	No (*n*=68)	Yes (*n*=58)	No (*n*=75)	(*n*=133)
Age		18.5 (2.1)	18.6 (2.5)	18.3 (2.3)	18.3 (2.4)	18.9 (2.1)^{t}	18.2 (2.5)^{t}	18.5 (2.3)
Gender (#, % Male)		23 (42.6)**	57 (72.2)**	36 (55.4)	44 (64.7)	38 (65.5)	42 (56.0)	80 (60.2)
Ethnicity (#, %)	Anglo	28 (51.9)	39 (49.4)	35 (53.8)	32 (47.1)	32 (55.2)	35 (46.7)	67 (50.4)
	Hispanic	16 (29.6)	26 (32.9)	20 (30.8)	22 (32.4)	17 (29.3)	25 (33.3)	42 (31.6)
	Native Am	3 (5.6)	7 (8.9)	6 (9.2)	4 (5.9)	4 (6.9)	6 (8.0)	10 (7.5)
	African Am	2 (3.7)	5 (6.3)	1 (1.5)	6 (8.8)	0 (0)	7 (9.3)	7 (5.3)
	Other/Mixed	5 (9.3)	2 (2.5)	3 (4.6)	4 (5.9)	5 (8.6)	2 (2.7)	7 (5.3)
Education		9.7 (2.0)	10.1 (1.7)	9.9 (2.0)	10.0 (1.6)	10.0 (1.5)	9.9 (2.0)	9.93 (1.8)
Age of 1st homelessness		14.4 (5.3)	12.6 (7.0)	14.1 (5.7)	12.6 (7.0)	13.9 (5.5)	12.9 (7.1)	13.3 (6.4)
% days homeless		60.2 (36.5)	55.1 (39.4)	58.6 (37.9)	55.9 (38.7)	62.3 (37.9)	53.3 (38.1)	57.2 (38.2)
# of treatment sessions attended		9.2 (5.8)**	5.9 (5.4)**	8.1 (6.0)^{t}	6.4 (5.6)^{t}	8.8 (5.6)**	6.0 (5.7)**	7.2 (5.8)
All substance use (no tobacco)[b]		67.4 (31.9)	66.0 (31.2)	68.8 (31.2)	64.5 (31.6)	73.2 (29.4)*	61.5 (32.1)*	66.6 (31.4)
Alcohol use[b]		20.1 (28.6)	16.3 (1.8)	22.1 (29.4)^{t}	13.9 (24.0)^{t}	20.1 (28.5)	16.1 (25.8)	17.9 (27.0)
Drug use (no tobacco or alcohol)[b]		60.4 (35.4)	61.6 (32.7)	61.0 (34.8)	61.2 (32.8)	68.0 (32.6)*	55.8 (33.7)*	61.1 (33.7)
Ever sexually abused? (#, %)		54 (100)	79 (100)	41 (63.1)***	13 (19.1)***	32 (55.2)**	22 (29.3)**	54 (40.6)
Ever physically abused? (#,%)		41 (75.9)***	24 (30.4)***	65 (100)	68 (100)	37 (63.8)**	28 (37.3)**	65 (48.9)
Ever attempt suicide? (#, %)		32 (59.3)**	26 (32.9)**	37 (56.9)**	21 (30.9)**	58 (100)	75 (100)	58 (43.6)

[a] *Note*. Means and standard deviations unless otherwise specified;

[b] Substance variables are percent days of use in last 90 days.

* $p<.05$,

** $p<.01$,

*** $p<.001$ (Comparison between yes vs. no groups: two-tailed *t*-test for Means, χ^2 test for frequencies).

TABLE 2

Hierarchical regression predicting treatment attendance by age, gender and abuse/suicide history (n = 133)

Variable	R^2	F (df)	Increase in R^2	F Increase (df)	B[a]	β[b]
Step 1						
Gender					2.03^{t}	.17^{t}
Age	.03	1.91 (2, 130)	.03	1.91 (2, 130)	.01	.004
Step 2						
Age of first homelessness	.04	1.92 (3, 129)	.01	1.34 (1, 129)	.12	.13
Step 3						
Ever having attempted suicide	.11	4.05**(4, 128)	.07	10.07**(1, 128)	3.12**	.27**
Step 4						
Ever sexually abused	.14	4.10** (5,127)	.03	4.23* (1, 127)	2.15*	.18*
Step 5						
Ever physically abused	.14	3.39** (6, 126)	.00	0.00 (1, 126)	−.06	−.01

[a] *Note*. B = Unstandardized beta weights;

[b] β = Standardized beta weights.

$^{*}p < .05$,

$^{**}p < .01$.