



# Predictors of Treatment Engagement Among Suicidal Youth Experiencing Homelessness

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## Abstract

Homeless youth experience high rates of suicidal ideation and attempts, yet limited research has examined predictors of treatment engagement among this population. Suicidal homeless youth (N = 150) between the ages of 18 and 24 years were recruited from a drop-in center in Columbus, Ohio. Participants were randomly assigned to Cognitive Therapy for Suicide Prevention + treatment as usual through a local drop-in center (CTSP + TAU) (N = 75) or TAU alone (N = 75), and treatment attendance among those assigned to CTSP + TAU was examined in this study. As expected, among youth engaged in CTSP + TAU, those with a history of intimate partner violence (IPV) showed decreased odds of treatment attendance. Additionally, youth randomized into CTSP + TAU with higher acquired capability for suicide (ACS) scores and those identifying as Black were more likely to attend treatment sessions. Findings suggest that effective treatment implementation must consider youth's trauma history, demographics and severity of suicidal ideation and behaviors.

Suicide is the leading cause of death among youth experiencing homelessness, and it occurs at a shocking rate, with up to 68% of those youth attempting suicide at least once in their lifetime (National Healthcare for the Homeless, 2018; Whitbeck et al., 2004). As 9.7% of those between ages 18 to 25 years will experience homelessness (Morton et al., 2018), efforts to prevent suicide among this group is a pressing public health concern. However, these marginalized youth are chronically underserved and understudied. Also, homeless youth is a term commonly used to describe homeless adolescents and young adults up to the age of 24 (Edidin, et al., 2012).

Efforts to engage homeless youth in prevention services are extremely limited (Hudson et al., 2010; Quimby et al., 2012), but when they occur, low levels of engagement with psychosocial intervention services are often found (Connolly & Joly, 2012; Hudson et al., 2010). In order to successfully

prevent documented health risks, such as suicide, it is important that engagement strategies are understood so that providers can overcome barriers to intervention delivery. As a first step, this study examines predictors of treatment attendance in a suicide prevention intervention among youth seeking services at a Midwestern drop-in center for youth experiencing homelessness.

A few studies examined predictors of treatment and service engagement for experiencing homelessness (Carmona et al., 2017; Pedersen et al., 2016) demonstrating that with sufficient efforts, psychosocial interventions can effectively engage this target population and improve outcomes of social stability and depression (Slesnick et al., 2008). Session attendance is one of the strongest predictors of success across treatment modalities (Connolly & Joly, 2012; Fisk et al., 2006). Further, studies indicate that experiencing homelessness with a history of suicide attempts, sexual abuse, and increased levels of depressive symptoms were significantly more likely to engage in treatment compared to their peers who do not have those histories (Carmona et al., 2017; Slesnick et al., 2006; Slesnick et al., 2008). Additionally, the age of homeless youth was associated with treatment attendance, such that older youth had significantly higher session attendance with outreach workers (Carmona et al., 2017).

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Researchers have also examined the influence of sex on mental health treatment attendance among youth. Yuan et al. (2019) examined treatment engagement among adolescents who self-harm and found that females were more likely to seek mental health treatment and showed greater compliance and participation in treatment. While no literature has examined sex differences in suicide prevention treatment among homeless youth, females may be more inclined to attend suicide prevention treatment, if prior research trends regarding mental health treatment engagement hold.

Other research has examined the impact of race on suicide-related engagement in treatment among adolescents and young adults. Goldston et al. (2008) found that stigma was related to both suicidality and to help-seeking behaviors among racial minorities. Further, many who identify as a racial minority cite a lack of trust in mental health services and prior negative experiences with mental health providers, resulting in a preference for informal support services (Goldston et al., 2008). In addition to the stigma of admitting to suicidal behavior and to seeking treatment among racial minority youth, these youth may experience trauma due to racial discrimination that compounds throughout their lifetime (Jernigan & Daniel, 2011), leaving a lasting, negative impact on physical and mental health. Experiences of racial discrimination are associated with anxious and depressive symptoms (for review, see Carter, 2007), that may lead to or exacerbate suicidal thoughts and behaviors. While no studies to date have examined the impact of race on treatment engagement for youth experiencing suicidal ideation, it is likely that race impacts treatment engagement and retention among these vulnerable.

While no study to date has examined factors that predict treatment attendance among homeless youth experiencing suicidal ideation, and scant literature has examined treatment attendance among homeless youth in general, there is some literature examining the impact of trauma-related factors, such as intimate partner violence (IPV) and child custody loss, on treatment engagement for women generally. IPV is common among youth experiencing homelessness and may have important effects on engagement. For example, women with a recent history of IPV are less likely to begin treatment, but for those who do begin treatment, women with recent IPV show no differences in treatment engagement (Iverson et al., 2011). Alternatively, research has shown that over half of women with a history of IPV will drop out of mental health treatment (Myers et al., 2015). In medical settings, women who experience IPV, or have had recent threats from a partner, have higher rates of missed appointments (Schafer et al., 2012). It is clear that traumatic experiences such as IPV can trigger a trauma response, interfere with treatment engagement and attendance, and have a lasting negative impact on mental health outcomes. The present study explores the impact of history of IPV on

treatment attendance among homeless youth, filling a gap in the literature.

The current study examined predictors of treatment attendance among youth experiencing homelessness with suicidal ideation. Data from a larger randomized clinical trial testing Cognitive Therapy for Suicide Prevention among homeless youth were used (Slesnick et al., 2019). As youth experiencing homelessness with a history of suicide attempts are more likely to engage in treatment than their non-suicidal peers (Slesnick et al., 2008), it was hypothesized that youth with a higher acquired capability for suicide would show greater treatment attendance in the current study. Additionally, it was hypothesized that those with a history of IPV would show lower treatment attendance compared to their peers without a history IPV. Given that prior studies reported that age, sex, and previous mental health symptoms predict treatment engagement (Carmona et al., 2017; Slesnick et al., 2008; Yuan et al., 2019), the current study examined these characteristics as covariates. Understanding factors that predict treatment attendance is likely to have significant implications for future research and clinical practice. Treatment engagement and attendance is key to effective intervention (Connolly & Joly, 2012; Fisk et al., 2006), and the information gained from this study can inform strategies to increase participant engagement and retention.

## Method

### Participants

Participants included homeless youth with suicidal ideation ( $N = 150$ ) who participated in a randomized clinical trial testing Cognitive Therapy for Suicide Prevention (CTSP; Wenzel et al., 2009). For the current study, only participants randomized to receive CTSP were included in analyses testing predictors of treatment engagement ( $N = 75$ ). All participants were between the ages of 18 and 24 years, did not require hospitalization, were determined to be capable of providing informed consent via the Structured Clinical Interview for DSM-5 Disorders psychiatric screening (First et al., 2015), and scored 16 or higher on the Scale for Suicidal Ideation—Worst Point (SSI-W; Beck et al., 1999). The SSI-W cutoff score of 16 was chosen because it was shown to have the best balance of sensitivity and specificity for identifying patients who completed suicide after intake assessment in a prior study (Sensitivity = 0.8, Specificity = 0.78) and a score of 16 or higher was associated with 14-times higher odds of completing suicide (Beck et al., 1999).

The majority of participants in the current sample were African American (40.0%) or White, non-Hispanic (38.7%). All participants were experiencing homelessness, and the mean length of current homelessness at baseline was 130.01

( $SD = 214.53$ ) days at baseline. Participants had a mean score of 23.15 on the SSI-W at baseline, with a mean of 3.81 lifetime suicide attempts. Treatment groups (CTSP + TAU and TAU) did not differ significantly by age, race, sex, employment, school enrollment, SSI-W score at baseline, or number of lifetime suicide attempts. Additional demographic information can be found in Table 1.

## Procedure

The Ohio State University Institutional Review Board approved all study procedures. Participants were recruited and screened for the larger study at a drop-in center for homeless youth by a research assistant. Participants who were ineligible were given a care package and continued to receive services at the drop-in center. Those at imminent risk for suicide were taken to a local hospital for a crisis assessment and/or psychiatric evaluation. Eligible youth screening at risk for suicide were consented, completed a baseline assessment, and were randomly assigned using a computerized randomization program to either treatment as usual (TAU;  $N = 75$ ) or CTSP + TAU ( $N = 75$ ). Independently licensed therapists were hired from the drop-in center to provide all therapeutic interventions, and therapists recorded the number of sessions completed by each participant. An intent-to-treat design was used, and all participants were tracked for follow-up assessments, which occurred at 3-, 6- and 9-months post-baseline.

## Treatment Conditions

### Treatment as Usual (TAU)

The drop-in center provides youth services to meet their basic needs, such as food, toiletries, laundry, and shower facilities, and recreational activities including television, books, games, and social interactions. Further, youth have access to two on-site therapists and can obtain referrals for other community-based resources that the drop-in center cannot provide.

### Cognitive Therapy for Suicide Prevention (CTSP) + TAU

CTSP, a manualized intervention developed by Wenzel et al. (2009), was added on to TAU and focused exclusively on suicide prevention. This intervention involves creating a crisis plan, assessing suicidal thought and behaviors, and assisting clients in cognitive restructuring and behavior change aimed to decrease risk factors associated with suicide. Study participants were able to receive up to 10 CTSP sessions and

9 booster sessions in addition to any TAU sessions. More detailed information regarding the treatment conditions can be found elsewhere (Slesnick et al., 2019).

## Group Differences in Treatment Attendance

Overall, participants assigned to CTSP + TAU attended an average of 5.85 sessions ( $SD = 7.68$ ), whereas those assigned to TAU attended an average of 3.32 sessions ( $SD = 4.63$ ), and this difference was statistically significant ( $t(150) = -2.46, p = 0.015$ ). To determine differences in treatment engagement among those assigned to TAU and CTSP + TAU, a chi-square test was completed. Results show that treatment engagement was significantly different between groups ( $\chi^2(1) = 6.97, p = 0.008$ ), such that those assigned to CTSP + TAU were significantly more likely to attend one or more sessions. Given the significant differences in treatment attendance between groups, as well as the focused nature of CTSP + TAU sessions focusing specifically on suicide prevention, predictors of treatment attendance were examined only among participants assigned to CTSP + TAU ( $N = 75$ ).

## Measures

Suicidality was measured at baseline using the Acquired Capability for Suicide Scale (ACS; Van Orden et al., 2008). The ACS is a 20-item questionnaire that assesses fearlessness about lethal self-injury in clinical and non-clinical samples and has shown adequate reliability and validity (Cronbach's  $\alpha = 0.67$ ; Bender et al., 2011; Van Orden et al., 2008). In the current study, the Cronbach's  $\alpha$  level was 0.82 for the full sample, and 0.80 for the sub-sample of CTSP participants.

Intimate partner violence (IPV) was measured using five questions adapted from the Behavioral Risk Factor Surveillance Survey (BRFSS), which was created by the Center for Disease Control and Prevention (CDC) as a state-based data collection tool. This measure has been widely used to assess IPV in the United States and has been validated in prior literature (CDC, 1994; Slesnick et al., 2010). Physical, sexual, verbal, and emotional abuse perpetrated by an intimate partner was assessed at baseline, and a cumulative score was calculated by adding the number of types of IPV to create a total IPV score ranging from 0 to 5, with 5 indicating a history of all types of IPV assessed. In the current study, the items assessing IPV showed good reliability (Cronbach's  $\alpha = 0.77$ ).

Treatment attendance was tracked over the six months of treatment. To understand factors that influence the extent of treatment attendance, attendance was coded into three

categories: no attendance, attended 1–2 sessions, and attended 3 or more sessions.

Covariates. Participant age, race, sex, and history of suicide attempts were assessed using a demographic questionnaire at baseline. Sex, race, and history of suicide attempts were coded as binary variables (male/female, African American or Black/other, and Y/N, respectively).

## Analytic Plan

To understand differences in treatment attendance among participants assigned to CTSP + TAU, correlational analyses and nominal regression analyses were completed to test the factors that influence any treatment attendance among the CTSP + TAU group ( $N = 75$ ), as this intervention specifically targets suicidal prevention. In the regression analysis, all predictors and covariates were assessed at baseline, and treatment attendance was assessed at the end of the 6 months of treatment.

## Results

### Correlates of Treatment Attendance for CTSP

Correlational analyses were completed to examine differences in the number of sessions attended by demographic characteristics among participants assigned to CTSP + TAU. Age was significantly negatively correlated with session attendance ( $r(75) = -0.23$ ,  $p = 0.047$ ), such that older participants attended significantly fewer sessions. Additionally, sex was significantly related to session attendance, as males attended significantly fewer sessions ( $r(75) = -0.23$ ,  $p = 0.045$ ). Although race was not significantly correlated with treatment attendance, it was included in the regression analyses given research suggesting that race is related to suicidal behaviors among participants, and there is a lack of research examining race as a predictor of treatment engagement.

### Predicting Treatment Attendance

A nominal regression was performed to ascertain the effects of age, race, sex, whether participants had ever attempted suicide, IPV experience, and ACS scores on treatment attendance. The outcome variable, treatment attendance, had three levels, 0, 1–2, and 3+ sessions. The overall model fit was significant [ $X^2(12, N = 75) = 30.58$ ,  $p = 0.002$ ]. Several significant predictors of treatment attendance were identified, including race, age, IPV experience, and ACS score. Higher age was associated with lower odds of attending 1–2 sessions, relative to not attending any sessions [ $p = 0.04$ ;  $OR = 0.66$ , 95% CI (0.45, 0.98)]. In addition, IPV experience

and ACS score significantly predicted treatment attendance. IPV experience significantly predicted lack of attendance ( $p = 0.006$ ), such that increased experience of IPV was associated with decreased odds of attending three or more sessions [ $OR = 0.48$ , 95% CI (0.28, 0.81)]. Additionally, ACS total score significantly predicted treatment attendance ( $p = 0.002$ ), such that a higher ACS score was related to an increased odds of attending three or more sessions among youth assigned to CTSP + TAU [ $OR = 1.09$ , 95% CI (1.03, 1.15)] than attending no sessions. Finally, Black race significantly predicted treatment with higher odds of attending 1–2 sessions [ $p = 0.03$ ;  $OR = 8.82$ , 95% CI (1.22, 63.80)] as well as higher odds of attending 3 or more sessions [ $p = 0.04$ ;  $OR = 7.20$ , 95% CI (1.14, 45.45)], relative to no sessions. Thus, Black participants had increased odds of attending treatment compared to their non-Black peers. Additional results can be found in Table 2.

## Discussion

In this study, predictors of treatment attendance were examined using data collected from a sample of youth experiencing homelessness and suicidal ideation. To our knowledge, this is the first study to examine predictors of treatment attendance for a targeted suicide prevention intervention among youth experiencing homelessness. Understanding predictors of treatment attendance for youth at risk for suicide is critical for ensuring uptake of evidence-based intervention and preventing future suicide attempts. The current study found that overall attendance at suicide prevention therapy was low in this population. Psychotherapy delivery is challenging in the best of clinics, so finding effective tools remains challenging. Nevertheless, we found that intimate partner violence and older age were related to decreased odds of treatment attendance, and Black race and higher capacity to complete suicide with higher odds of treatment attendance. These findings may be useful for directing future engagement strategies with this group.

As hypothesized, youth with higher levels of acquired capacity to complete suicide showed higher treatment attendance rates than other youth. Building on prior findings that homeless youth with suicidal ideation show greater treatment attendance than their non-suicidal peers (Slesnick et al., 2008), results from the current study indicate that severity of suicidal ideation may also be significant in predicting increased treatment attendance. Similarly, others have found that youth with a history of suicidal related behaviors, including depressive symptoms and self-harm, have higher treatment attendance for specific psychological treatment (see Yuan et al., 2019). It may be that youth with a higher capability of completing suicide feel a more urgent need for help, resulting in increased session attendance,

compared to youth with a lower capacity to complete suicide, who may feel that their suicidal ideation is less pressing or severe. However, whether internal acknowledgement of one's risk for suicide drives session attendance, at least for some youth, needs to be examined in future studies. If this were found to be the case, then therapists who underscore client risk, possibly through feedback on suicide risk scores, could see greater client engagement.

We also hypothesized that youth with a history of IPV would attend fewer sessions, which was found. Our findings support prior literature suggesting that IPV history is linked to decreased session attendance (Myers et al., 2015; Peter et al., 2019; Schafer et al., 2012). It is likely that the experience of trauma and possible shame linked to IPV hinders youth's trust in service providers, or their belief that attending treatment could help improve their well-being. While beyond the scope of this study, additional research is

needed to elucidate the underlying factors linking a history of trauma, such as IPV, and decreased treatment attendance.

Prior research has shown that variables such as age and sex are strong indicators of treatment engagement (Carmona et al., 2017; Slesnick et al., 2008; Yuan et al., 2019). Correlational analyses found significant negative relationships between age, sex and treatment attendance, supporting prior findings that females are more likely to engage in treatment (see Yuan et al., 2019). Our findings indicated that older youth attended fewer sessions than their younger counterparts, in contrast to prior findings (Carmona et al., 2017). Possibly, their sample of older youth has accumulated more negative experiences with the service system, resulting in greater engagement difficulty.

Contrary to research evidence in that youth of color experience increasing rates of suicidal behavior and are less likely to trust or seek mental health treatment (Balis & Postolache, 2008; Goldston et al., 2008), our study found

**Table 1** Demographic characteristics of the current sample (N = 75)

Variables	n (%)	Mean (S.D.)
Treatment attendance		
Attended 0 sessions	17 (22.7%)	
Attended 1–2 sessions	17 (22.7%)	
Attended 3 + sessions	41 (54.7%)	
Age		21.04 (2.08)
Sex		
Female	32 (42.7%)	
Male	43 (57.3%)	
Race/Ethnicity		
American Indian or Alaskan Native	1 (1.3%)	
Asian, Asian-American, or Pacific Islander	0 (0%)	
Black or African American	30 (40.0%)	
Hispanic, Other Latin American	2 (2.7%)	
White, not of Hispanic origin	29 (38.7%)	
Other	13 (17.3%)	
Ever experienced IPV		
No	33 (44.0%)	
Yes	42 (56.0%)	
Ever experienced child abuse		
No	5 (6.7%)	
Yes	70 (93.3%)	
Number of children		
0	56 (74.7%)	
1	13 (17.3%)	
2 and more	6 (8.0%)	
Has any child ever been taken out of custody?		
Yes	13 (68.4%)	
Number of lifetime suicide attempts		3.81 (5.35)
Length of current homelessness		130.01 (214.53)
Score on SSI-W		23.15 (5.03)
ACS score		48.25 (14.00)

**Table 2** Parameter estimates

Session attendance		B	Std. Error	Wald	df	Sig	Exp(B)	95% confidence interval for Exp(B)	
								Lower Bound	Upper Bound
1–2 sessions compared to 0 sessions	Black Race	2.18	1.01	4.65	1	.031	8.82	1.22	63.80
	Male	–.02	.94	.001	1	.981	.98	.15	6.22
	IPV total score	–.50	.29	2.99	1	.084	.61	.34	1.07
	Age	–.41	.20	4.22	1	.040	.66	.45	.98
	Lifetime suicide attempts	–.11	.09	1.67	1	.197	.90	.76	1.06
	ACS total score	.05	.03	2.57	1	.11	1.05	.99	1.11
3+ sessions compared to 0 sessions	Black Race	1.97	.94	4.41	1	.036	7.20	1.14	45.45
	Male	–.93	.86	1.18	1	.278	.40	.07	2.12
	IPV total score	–.74	.27	7.70	1	.006	.48	.28	.81
	Age	–.16	.17	.77	1	.381	.85	.59	1.22
	Lifetime suicide attempts	–.08	.07	1.43	1	.232	.93	.81	1.05
	ACS total score	.09	.03	9.84	1	.002	1.09	1.03	1.15

that Black youth were significantly more likely to attend 3 or more sessions compared to non-Black youth. It may be that the youth in the current study already felt connected to the service providers, as treatment was offered by drop-in center therapists, and as such, youth of color may not have felt as mistrustful as they would of service providers from institutional settings as indicated in prior literature.

Several limitations of the current study should be considered. First, the study is limited by a relatively small sample size ( $N=75$ ). As such, we were not able to include all potential predictors of treatment engagement in our model, but rather we selected predictors for the model that we hypothesized to be important based on the limited evidence among youth experiencing homelessness. In addition, we did not have a diagnostic measure of substance use disorder (SUD) in the sample, which has been demonstrated to be associated with mental health treatment drop-out or engagement in adults (Olfson et al., 2009; Shim et al., 2017), and were therefore unable to include SUD in our model. However, the goal of the present study was not to identify a causal association between our selected predictors and the outcome, but rather to conduct a preliminary and targeted analysis that could be explored in future studies with larger samples. Second, all youth in the study were recruited from a drop-in center for homeless youth. These youth are different than homeless youth who do not utilize drop-in services, as well as youth who are not experiencing homelessness. Moreover, the drop-in center did not restrict access based on insurance status or the ability to pay, making services available to all. However, this is not the case in many clinics. Future work should also explore the extent to which lack of childcare, insurance and transportation are barriers to engagement. Additionally, all study participants scored a 16 or higher on the SSI-W, which indicates a significantly higher odds

of completing suicide (Beck et al., 1999). Results from this study may not generalize to youth with less severe suicidal ideation.

Despite the limitations, the current study is the only study to date to examine predictors of treatment attendance for a suicide prevention intervention among youth experiencing homelessness and suicidal ideation. This study sought to identify predictors of treatment attendance for these youth, many of whom experience co-occurring traumas such as IPV. Findings showed that youth with a greater capacity to complete suicide had greater treatment attendance, and that youth with a history of IPV showed decreased treatment attendance. The current study highlights the importance of contextual factors in predicting treatment attendance among homeless youth. Given that suicide is the leading cause of death among homeless youth and that the vast majority of homeless youth have at least one prior suicide attempt (National Healthcare for the Homeless, 2018; Whitbeck et al., 2004), understanding factors that predict treatment attendance among these vulnerable youth is paramount to preventing death by suicide. Indeed, treatment attendance is essential for effective intervention across various populations and presenting problems (Connolly & Joly, 2012; Fisk et al., 2006). When working with homeless youth experiencing suicidal ideation, service providers should assess the severity of youth's suicidal ideation and capability to commit suicide, as well as youth's history of trauma, to better engage these youth into treatment.

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## Declarations

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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