Factors Influencing AOD Counselors' Subjective Ratings of Clients' Prognoses for Post-treatment Abstention

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Abstract

Introduction: Persons discharging from residential or inpatient substance use treatment experience the highest level of vulnerability to relapse in first three months post treatment. To support the ongoing recovery efforts of persons discharging from residential and inpatient substance use treatment, it is important to identify clients' likely prognosis for post treatment abstinence. Subjective evaluations based on AOD counselors' clinical impressions of the clients' prognoses for abstention serve as an important predictor of post treatment outcomes. However, there has been limited study to date of the factors associated with AOD counselors' subjective ratings of their clients' prognosis for post treatment abstention.

Methods: A de-identified dataset of 200 clients admitted to abstinence-based residential SUD treatment between August 1, 2017, and March 1, 2018 was obtained. The sole dependent variable of interest in this study was the clients' prognosis rating for abstention assigned by their primary AOD Counselor when the participants' treatment episode ended.

Results: Based on the likelihood ratio tests, the following variables were found to be significant predictors of AOD counselor ratings for clients' prognoses for post treatment abstention: gender ($p < .028$), past 30 days of use of primary substance used reported at intake ($p < .001$), number of lifetime inpatient psychiatric episodes ($p < .026$), use of alcohol and marijuana in combination ($p < .026$), readiness to change - no severity ($p < .046$), and readiness for change - mild to moderate severity ($p < .025$).

Conclusion: The results highlight the importance of assessment for and stabilization of psychiatric symptoms as well as withdrawal symptoms from high levels of pretreatment methamphetamine use in order to enhance treatment completion rates. Furthermore, the findings demonstrate the importance of assessing pretreatment readiness for change and motivation in order to successfully engage clients and use targeted interventions to enhance readiness to change, thereby improving treatment retention and completion rates.

Keywords: Subjective ratings; Prognoses for abstention; Substance use disorders; Addiction; Methamphetamine; Psychiatric disorders; Post treatment abstention

Introduction

Over 20 million Americans aged 12 and older meet the diagnostic criteria for a substance use disorder (SUD) [1]. While an estimated 7.8% of persons aged 12 and older in the United States possess a need for substance use treatment in 2019, only 1.5% of those individuals received any form of substance use treatment in the past year [1]. Approximately 1 million people received substance use treatment in an inpatient or residential treatment facility in 2019 [1]. In addition to the glaring treatment gap for persons with SUDs, persons discharging from residential or inpatient substance use treatment experience the highest level of vulnerability to relapse in first three months post treatment with relapse prevalence rates ranging from 37 to 75% [2-8]. To support the ongoing recovery efforts of persons discharging from residential and inpatient substance use treatment, it is important to identify clients' likely prognosis for post treatment abstinence.

Given the limited predictive power of objective measures for post treatment abstinence, the subjective evaluations based on AOD counselors' clinical impressions of the clients' prognoses for abstention serve as an important predictor of post treatment outcomes and enhance the predictive power of objective factors [9]. While Schuckit and colleagues [9] established that the subjective ratings of prognoses by treatment staff were predictive of short-term outcomes among male inpatients with primary diagnosis of alcohol use disorder, the study did not examine the factors influencing these subjective ratings, nor did it include persons who use illicit drugs.

To date, only one known study has examined the predictive factors related to AOD counselor's subjective ratings of prognoses for abstention from drugs and alcohol for clients who completed SUD treatment. In the 1997 study by Gutierres and Todd of men and women receiving residential SUD treatment in Phoenix, men were more likely to receive positive prognoses for abstention than their female counterparts. However, a positive history of Adverse Childhood Experiences (ACEs) for abuse experiences was not predictive of positive prognoses for abstention for males or females [10].

This study stands to provide greater insight into the factors related to AOD Counselors' subjective ratings of clients' prognoses subsequent to discharge from residential or inpatient substance use treatment facilities. In addition to the relationships between traumatic experiences, psychiatric illness and treatment, readiness for change, and self-reported history of self-medication for psychiatric disorders

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and prognoses for abstention, respectively, this study is also interested in the role of external coercion from the criminal justice and child welfare systems, housing, age, gender, and race/ethnicity on counselor ratings of prognoses. Additionally, the present study includes persons who use alcohol, stimulants, marijuana, or heroin or other opiates.

Methods and Materials

To address these gaps, this study examined a de-identified dataset provided by a local non-profit agency, which provides publicly funded residential SUD treatment services at the 3.1 and 3.5 ASAM LOC for clients enrolled in or eligible for Medicaid or a county-based no-cost health insurance plan for low-income individuals in a large urban county. This dataset included all of the information recorded in the ASAM Multidimensional Assessment and the treatment disposition, prognosis, and aftercare services listed in the Discharge/Transfer Form. The central research focus for this analysis was to determine the predictors of the clients' assigned prognosis at the end of their residential SUD treatment episodes. This research was approved by the IRB.

Sample

Inclusion criteria: The sample includes all clients admitted into an abstinence-based residential treatment facility located in a large urban county between August 1, 2017, and March 1, 2018. These clients all possessed or were eligible for Medicaid, a county-based no-cost health insurance plan for low-income individuals, or participants in county funded programs for persons who are indigent or involved with the criminal justice or child welfare system; aged 18 and older; and were residents of the large urban county for at least the past 60 days prior to their assessment. Additionally all of the met the criteria for a DSM-5 SUD with a moderate or severe specifier. The sample size includes 200 clients (n = 200).

Exclusion criteria: As this residential SUD treatment facility is not authorized to provide services to minors, no minors were included in the sample. Similarly, no mono-lingual non-English speakers were included in the sample, as the treatment facility operates in English. Clients testing positive for opiates, alcohol, or benzodiazepines at the time of assessment were also excluded from this study, as they were referred to treatment at facilities licensed to provide withdrawal management (WM) services.

Measures

AOD Counselor Prognoses for Abstention: The dependent variable of interest in this study, an ordered categorical variable, was the clients' prognosis rating assigned by their primary AOD Counselor when the participants' treatment episode ended. The AOD Counselors had the option of assigning ratings based on a three-point Likert scale, lower scores representing better prognosis. These ratings were coded as the following three categories: 1 = good, 2 = fair, and 3 = poor.

Pretreatment substance use: Types of Polysubstance Use was constructed through performing Ward's Method of Cluster Analysis. Four distinct classifications of combinations of types of substances used emerged: participants who reported predominantly using methamphetamine (MA) and alcohol, participants who reported predominantly using alcohol and marijuana, participants who reported predominantly using MA and marijuana, and participants who reported predominantly using MA, alcohol, heroin, and marijuana.

Number of days of MA use in past 30 days was a continuous variable constructed for all participants who reported MA as either their primary or secondary DOC and the corresponding number of days they reported using MA out of the past 30 days.

Number of days of primary substance use in past 30 days was a continuous variable constructed for all participants based on the number of days they reported using their primary substance used out of the past 30 days.

Presence of active withdrawal symptoms was a dichotomous variable constructed based on participants' responses to, "Are you currently experiencing withdrawal symptoms?" The variable was coded 1 for participants who responded "yes" and reported withdrawal symptoms. The variable was coded 0 for participants who responded "no" and did not report any active withdrawal symptoms.

Mental health: Number of Lifetime Inpatient Psychiatric Hospitalizations was a continuous variable constructed for all participants based on number of days they reported previous inpatient psychiatric hospitalizations in their lifetime.

Presence and Treatment of Psychiatric Conditions was a categorical variable constructed through performing Ward's Method of Cluster Analysis. Four distinct classifications emerged regarding the presence and treatment of psychiatric conditions: participants who did not report any significant psychiatric symptoms or history of receipt of mental health services; participants who reported psychiatric symptoms, including psychotic symptoms, and had a history of receipt of mental health services; participants who reported psychiatric symptoms, excluding psychotic symptoms, and had a history of receipt of mental health services; and participants who reported psychiatric symptoms but denied a history of mental health services.

Score on Mood Symptoms was constructed by creating a composite score (sum) ranging from 0 to 8 based on the number of mood symptoms out of a list of eight symptoms the participant agreed in the affirmative that they had experienced in the past 30 days. These mood symptoms included "depression/sadness," "loss of pleasure/interest," "hopelessness," "irritability/anger," "impulsivity," "pressured speech," "grandiosity," and "racing thoughts."

Score on Anxiety Symptoms was constructed by creating a composite score (sum) ranging from 0 to 4 based on the number of anxiety symptoms out of a list of four symptoms the participant agreed in the affirmative that they had experienced in the past 30 days. These anxiety symptoms included "anxiety/excessive worry," "obsessive thoughts," "compulsive behaviors," and "flashbacks."

Score on Psychotic Symptoms was constructed by creating a composite score (sum) ranging from 0 to 3 based on the number of psychotic symptoms out of a list of three symptoms the participant agreed in the affirmative that they had experienced in the past 30 days. These psychotic symptoms included "paranoia," "delusions," and "hallucinations."

Score on PTSD Symptoms was constructed by creating a composite score (sum) ranging from 0 to 7 based on the number of PTSD symptoms out of a list of seven symptoms the participant agreed in the affirmative that they had experienced in the past 30 days. These PTSD symptoms included "sleep problems," "anxiety," "problems with memory/concentration," "irritability," "obsessive thoughts," "compulsive behaviors," and "flashbacks."

Trauma: Type of Trauma was categorical variable constructed through performing Ward's Method of Cluster Analysis. Five distinct trauma classifications emerged: limited trauma exposure; experiences

of intimate partner violence and sexual assault as an adult as well as loss/separation from a child (e.g. death, loss of child custody); deaths of family members; multiple instances and types of non-abuse trauma transpiring in adulthood, including death of family, death of close friends, and witnessing violence (watching others get stabbed or shot; discussed in terms of community violence as well as in the course of participating in criminal/gang activity or while incarcerated); experiences of childhood abuse, IPV and sexual assault in adulthood, and loss/separation from a child (e.g. death or loss of child custody).

History of Abuse was a dichotomous variable constructed based on participants' responses to, "Have you ever experienced physical, emotional, or sexual abuse in your lifetime?" The variable was coded 0 = no, for participants who did not report a history of abuse, and 1 = yes, for participants who reported a history of abuse.

History of Other Significant Trauma was a dichotomous variable constructed based on participants' responses to, "Have you ever experienced a traumatic event in your lifetime?" The variable was coded 0 = no, for participants who did not report a history of traumatic events, and 1 = yes, for participants who reported a history of traumatic events.

Self-medication for psychiatric distress: Triggers to Use - Mental Health Symptoms was a dichotomous variable constructed based on participants' responses to, "Are you aware of your triggers to use alcohol or drugs?" One of the triggers listed was "Mental Health." The variable was coded 0 = no, for participants who reported that mental health symptoms were not a trigger for substance, and 1 = yes, for participants who reported that mental health symptoms were a trigger for substance use.

Triggers to Use - Negative Intrapersonal Contexts was a dichotomous variable constructed based on participants' responses to, "Are you aware of your triggers to use alcohol or drugs?" One of the triggers listed in was "Negative Emotions." The variable was coded 0 = no, for participants who reported that negative emotions were not a trigger for substance, and 1 = yes, for participants who reported that negative emotions were a trigger for substance use.

Barriers to Recovery - Mental Health was a dichotomous variable constructed based on participants' responses to, "What are potential barriers to your recovery?" in Dimension 4, Readiness for Change, in the ASAM Multidimensional Assessment Tool. The variable was coded 0 = no, for participants who did not verbalize mental health symptoms as a barrier to their recovery as well as for those participants who could not identify any barriers to recovery. The variable was coded 1 = yes, for participants who explicitly stated that mental health symptoms would be a barrier to their recovery.

Barriers to Recovery - Negative Intrapersonal Contexts was a dichotomous variable constructed based on participants' responses to, "What are potential barriers to your recovery?" The variable was coded 0 = no, for participants who did not verbalize negative emotions as a barrier to their recovery as well as for those participants who could not identify any barriers to recovery. The variable was coded 1 = yes, for participants who explicitly stated that negative emotions would be a barrier to their recovery.

Readiness for change: Dimension 4 Severity Rating was a categorical variable coded as 0 = None-"Willing to engage in treatment," 1 = Mild - "Willing to enter treatment but ambivalent to the need to change," 2 = Moderate - "Reluctant to agree to treatment; low commitment to change substance use; passive engagement in treatment," 3 = Severe

- "Unaware of need to change; unwilling or partially able to follow through with recommendations for treatment," and 4 = Very Severe - "Not willing to change; unwilling/unable to follow through with treatment recommendations." Each participant was assigned one of the aforementioned ratings based on the clinician's perception of one's "Readiness to Change." The variable was later collapsed into 1 = Low - Willingness to participate in treatment (e.g. those participants who had been rated none to Moderate) and 2 = High - Limited to no willingness to participate in treatment (e.g. those participants who had been rated Severe to Very Severe).

History of SUD Treatment was a dichotomous variable constructed based on participants' responses to, "Have you received help for alcohol and/or drugs in the past?" The variable was coded 0 = no, for participants who never previously received any form of SUD treatment, and 1 = yes, for participants who previously received SUD treatment.

Importance of SUD Treatment was a categorical variable constructed based on participants' responses to, "How important is it for you to receive treatment for alcohol and/or drug problems?" The variable was coded 0 = "Not at all important," 1 = "Slightly important," 2 = "Moderately important," 3 = Considerably important," and 4 = "Extremely important." Categories with less than 10% of the sample size (n = 20) were collapsed. As a result, the following categories remained: "No to considerable importance," and "Extreme importance."

Sociodemographic variables: Gender was a dichotomous variable was coded male = 1, female = 2. Since only one transgender woman and no transgender males entered treatment during the course of the study, the transgender female was collapsed into the category "female."

Race/ethnicity was a categorical variable constructed from participants' responses to "How do you identify in terms of race or ethnicity?" The variable was coded as 1 = Caucasian, 2 = Black, 3 = Hispanic, 4 = Asian/Pacific Islander, 5 = Native American, 6 = Multiracial, and 7 = Other. Categories with less than 10% of the sample population were collapsed. As a result, the following four categories remained: 1 = Caucasian, 2 = Black, 3 = Hispanic, and 4 = Other.

Age was a continuous variable calculated by subtracting birth year, month, and day from the intake date to residential SUD treatment.

Living Arrangement was categorical variable coded as 1 = homeless, 2 = independent living, and 3 = other. As none of the participants reported "other," the variable was collapsed into 1 = homeless and 2 = independent living.

Forensic Status was a categorical variable constructed based on participants' responses to "Are you currently involved with social services or the legal system (e.g. child welfare, court mandated, probation, parole)?" The variable was coded as 1 for participants who responded that they were on probation or parole, had been court mandated to SUD treatment, or were participants in an in-custody release program. The variable was coded 0 for participants who denied any type of forensic involvement.

Child Welfare Status was dichotomous variable constructed based on participants' responses to, "Are you currently involved with social services or the legal system (e.g. child welfare, court mandated, probation, parole)?" The variable was coded as 1 for participants who responded that they had an open child welfare case and 0 for participants who denied that they had an open child welfare case.

Analysis: Descriptive information including means, standard deviations and frequencies were generated for all variables in the

dataset (Table 1). Correlations and/or associations were produced for all the variables in the study. Since the majority of the variables in the dataset were categorical, associations were presented (Table 2). For the continuous variables, correlations were provided.

Table 1: Demographic and descriptive characteristics of participants (N = 200).

Characteristics of Participants	Means/SD or Percent (n)
Sociodemographic	
Gender	
Male	60% (120)
Female	40% (80)
Living Arrangement	
Homeless	60.5% (121)
Independent Living	39.5% (79)
Age	
	36.62; SD = 11.20
Child Welfare Status	
Yes	14% (28)
No	86% (172)
Forensic Status	
Yes	45% (90)
No	55% (110)
Race/Ethnicity	
White	29% (58)
Black	28.5% (57)
Hispanic	36% (72)
Other Race	6.5% (13)
Substance Use	
Past 30-Day Use of Primary Substance Used	
	14.6; SD = 11.95
Past 30-Day of MA Use	
	9.51; SD = 12.27
Active Withdrawal Symptoms	
Yes	41.5% (83)
No	58.5% (117)
Combination of Substances Used	
Methamphetamine and Alcohol	28% (56)
Alcohol and Marijuana	25% (50)
Methamphetamine and Marijuana	25.5% (51)
Methamphetamine, Marijuana, Alcohol, and Heroin	21.5% (43)
Psychiatric	
Number of Inpatient Psychiatric Episodes	
	1.04; SD = 3.288
Number of Mood Symptoms	
	3.39; SD = 2.439
Number of Anxiety Symptoms	
	1.57; SD = 1.351
Number of Psychotic Symptoms	
	0.62; SD = 1.031
Number of PTSD Symptoms	
	3.08; SD = 2.182
Presence and Treatment of Psychiatric Conditions	
No Psychiatric Symptoms/ No History of MH Services	35.5% (71)
Psychiatric Symptoms (w/ psychosis) and MH Services	19% (38)
Psychiatric Symptoms (w/o psychosis) and MH Services	30% (60)
Psychiatric Symptoms/No MH Services	15.5% (31)
Trauma History	
History of Abuse	
Yes	46.5% (93)
No	53.5% (107)
History of Significant Trauma	
Yes	77% (154)
No	23% (46)
Type of Trauma	
Limited Exposure to Trauma	53% (106)
Adult Trauma (Abuse)	11.5% (23)
Death of Family Member(s)	17.5% (35)
Adult/Recent (Non-Abuse) Trauma	10.5% (21)
Childhood and Adult Trauma (Abuse)	7.5% (15)
Readiness for Change	
History of SUD Treatment	
Yes	73.5% (147)
No	26.5% (53)
Importance of SUD Treatment	
Low Importance	13.5% (27)
High Importance	86.5% (173)
Dimension 4 Severity Rating	
Dimension 4 Severity Rating - None	15.5% (31)
Dimension 4 Severity Rating - Mild to Moderate	89% (158)
Dimension 4 Severity Rating - Severe to Very Severe	5.5% (11)
Self-Medication for Psychiatric Distress	
Barriers - Negative Emotions	
Yes	16% (32)
No	84% (168)
Barriers - Mental Health Problems	
Yes	10% (20)
No	90% (180)
Triggers to Use - Negative Intrapersonal Contexts	
Yes	81% (162)
No	19% (38)
Triggers - Mental Health Problems	
Yes	56.5% (113)
No	43.5% (87)

Ordinal logistic regression was used to determine the predictors of the clients' assigned prognosis at the end of the treatment episode (Table 3). This study examined the role of substance use, mental health trauma, readiness to change, and self- medication for psychiatric distress to predict clients' assigned prognosis at the end of the treatment episode. The following control variables also were included in the analysis: gender, race/ethnicity, age, living arrangements, forensic status, and child welfare status. SPSS 25 was used to conduct the statistical analyses.

Variable selection approach: The number of variables in this study was considerable, let alone the number of parameter estimates. As a result, user determined hierarchical regression was conducted. Variables significant at $p < .05$ for each conceptual domain were included in the full model.

Results

Descriptive statistics

The final sample of 200 participants consisted of mostly males (60%). The participants reported their race/ethnicity as White (29%), Black (28.5%), Hispanic (36%), and Other (6.5%). Ages ranged from 20 to 83 years, with an average age of 36.6 years. A majority of the participants (60.5%) did not have stable living arrangements and reported being homeless. Almost half of the participants (45%) identified that they were currently involved with the criminal justice system (e.g. probation, parole, and court ordered to treatment, or in-

Table 2: Associations.

	1	2	3	4	5	6	7	8	9	10	11
(1) AOD Counselor Prognosis											
(2) Gender	.107										
(3) Living Arrangement	.151	.075									
(4) Race	.089	.047	.202*								
(5) Age	.532	.438	.467	.559							
(6) History of Abuse	.006	.467*	.241*	.217*	.511						
(7) Number of Inpatient Psychiatric Episodes	.254	.307*	.252	.208	.054	.347*					
(8) Mental Health Symptoms & Treatment	.198*	.148	.209*	.182*	.427	.331*	.303*				
(9) Primary DOC Past 30 Days of Use	.408	.421	.383	.458*	-.041	.317	-.054	.405			
(10) Combination of Substance Use	.146	.056	.112	.222*	.477	.093	.299	.130	.417*		
(11) Readiness for Change	.185*	.046	.120	.072	.537	.101	.180	.193*	.365	.187*	

Table 3: Ordinal logistic regression of counselor prognoses for clients' abstention Pseudo R-Square.

Variable	Odds Ratio	Significance	Lower	Upper
Primary DOC Past 30 Days of Use	.952	**.001**	.925	.979
Age	1.022	.135	.993	1.053
Gender (Reference - Male)	2.30	**.027**	1.099	4.811
Living Arrangement (Reference - Not Homeless)	.627	.151	.331	1.186
History of Abuse	.582	.172	.268	1.266
Number of Inpatient Psychiatric Episodes	.880	**.025**	.787	.984
Methamphetamine and Alcohol	1.525	.37	.606	3.842
Alcohol and Marijuana	2.933	**.026**	1.138	7.569
Methamphetamine and Marijuana	.993	.988	.395	2.494
Methamphetamine, Marijuana, Heroin, and Alcohol (Reference)	0[a]			
Serious Mental Illness with Treatment	2.166	.087	.894	5.249
Limited Psychiatric Symptoms with No History of Treatment	1.837	.128	.839	4.027
Serious Mental Illness without Treatment	.693	.503	.237	2.026
Any Mental Illness with Treatment - Reference				
Readiness for Change - None	2.643	**.045**	1.023	6.835
Readiness for Change - Mild to Moderate	2.221	**.024**	1.112	4.437
Readiness for Change - Severe to Very Severe (Reference)	0[a]			
White	2.620	.15	.705	9.728
Black	.862	.835	.216	3.452
Hispanic	1.030	.963	.285	3.732
Other Race (Reference)	0[a]			
Nagelkerke .299				
[*]Test of Parallel Lines: p > .05; the base category is "Poor."				

custody program participants). However, only 14% of the participants reported that they had an open child welfare case.

Most of the participants identified using MA in combination with other illicit drugs or alcohol (75%). For the 30 days prior to entering treatment, participants reported an average of 14.6 days in which they used their primary substance and an average of 9.5 days in which they used MA, respectively. Less than half of the participants (41.5%) reported that they were experiencing withdrawal symptoms at the time of intake to residential SUD treatment. Most participants (73.5%) had attempted SUD treatment in the past.

At time of intake, participants reported an average of 3.39 mood symptoms (SD = 2.439), 1.57 anxiety symptoms (SD = 1.351), .62 psychotic symptoms (SD = 1.031), and 3.08 PTSD symptoms (SD = 2.182). Participants reported an average of 1.04 (SD = 3.228) acute inpatient psychiatric hospitalization episodes. While 21.5% of participants reported history of few to no psychiatric symptoms, 20.5% reported symptoms of serious mental illness and were not receiving mental health services. The remainder of the participants (n = 98) reported symptoms of serious or any mental illness and had history of mental health services.

Almost half of the participants (46.5%) reported a history of abuse. Furthermore, the vast majority of the participants (77%) reported that they had experienced a significant trauma. In terms of types of traumatic experiences, 11.5% reported experiencing abuse in adulthood, 7.5% reported experiencing both abuse in adulthood and childhood, 17.5% reported the death of family members, 10.5% reported some type of non-abuse trauma in adulthood, and 53% reported limited trauma exposure.

A majority of the participants (56.5%) indicated that mental health issues were a trigger to use alcohol and/or drugs. Similarly, a vast majority of participants (81%) identified negative intrapersonal contexts as a trigger to use alcohol and/or drugs. However, only 10% of participants identified mental health issues as a barrier to their recovery, and only 16% identified negative intrapersonal contexts as a barrier to their recovery (Table 1).

All participants received a rating of "good," "fair," or "pair" related to their prognoses for abstention from their primary AOD Counselor at the termination of their treatment episode. Correspondingly, just under half of the participants (47%) received a rating of "poor" related

to their prognosis for abstention. On the other hand, 39% received a rating of "good" and 14% received a rating of "fair," respectively.

Associations

In relation to the variables in the full model for the ordinal logistic regression for AOD Counselor prognoses for client abstention, the results of Cramer's V association revealed multiple significant positive associations (see Table 2). These significant positive associations included between: AOD Counselor prognosis for client abstention and Mental Health Treatment and Symptoms (V = .198), AOD Counselor prognosis for client abstention and Readiness for Change (V = .185), Gender and History of Abuse (V = .467), Living Arrangement and Race (.202), Living Arrangement and History of Abuse (V = .241), Living Arrangement and Mental Health Symptoms and Treatment (V = .209), Race and History of Abuse (V = .217), Race and Mental Health Symptoms and Treatment (V = .182), Race and Combination of Substances Used (V = .222), History of Abuse and Mental Health Treatment and Symptoms (V = .331), Mental Health Treatment and Symptoms and Readiness for Change (V = .193), Combination of Substances Used and Readiness for Change (V = .187), Number of Lifetime Inpatient Psychiatric Episodes and Gender (η = .307), Number of Lifetime Inpatient Psychiatric Episodes and History of Abuse (η = .347), Number of Lifetime Inpatient Psychiatric Episodes and Mental Health Treatment and Symptoms (.303), Past 30 Days of Use of Primary Substance Used and Gender (η = .458), and Past 30 Days of Use of Primary Substance Used and Combination of Substances Used (η = .417), respectively (Table 2).

Inferential statistics

As a consequence of the relatively large number of predictors, ordinal logistic regression was conducted for each of the six conceptual blocks (e.g. sociodemographic, substance use, mental health, trauma, self-medication for psychiatric distress, and readiness for change variables, respectively). Within each of the blocks, those predictor variables that significantly predicted counselors' prognoses for abstention (good, fair, or poor) at the p < .05 level were entered into the corresponding ordinal logistic regression analysis. From the sociodemographic conceptual block, only living arrangement (p < .009) and age (p < .037) were significant. In terms of the substance use conceptual block, past 30 days of use of primary substance used (p < .004) and combination of substances used - alcohol and marijuana (p < .022) were both significant. From the mental health conceptual block, mental health symptoms and treatment - serious mental illness with treatment (p < .03) was significant. In the readiness for change conceptual block, Dimension 4 Severity rating - None (p < .003) and Dimension 4 Severity rating - Mild to Moderate (p < .006) were significant. However, none of the variables in the traumatic exposure block were significant. Similarly, none of the variables in the self-medication for psychiatric distress block were significant.

A test of the model using all of the aforementioned predictor variables as well as race, gender, number of inpatient psychiatric episodes, and history of abuse was significant (p < .001) with a R2 value of .299 [11] as seen in Table 3 (Table 3).

Significant predictor variables of counselor prognoses included gender (p < .028), past 30 days of use of primary substance used reported at intake (p < .001), number of lifetime inpatient psychiatric episodes (p < .026), use of alcohol and marijuana in combination (p < .026), readiness to change - no severity (p < .046), and readiness for change - mild to moderate severity (p < .025). Being female was

significantly associated with a greater likelihood of being rated "good" or "fair" as compared to being rated "poor" (OR = 2.30).

Participants who reported polysubstance use of alcohol and marijuana in comparison to those participants who reported polysubstance use of heroin, alcohol, methamphetamine, and marijuana were significantly more likely to be rated "good" or "fair" compared to being rated "poor" (OR = 2.933). For past 30 days of use of primary substance used, the odds ratio of .952 reveals that for each additional day the participant used one's primary substance in the past 30 days, one's odds of receiving a rating of "good" or "fair" decreased by 4.8% for each day of use. Consequently, a 10-day increase in primary substance use out of the past 30 days would decrease an individual's chances of receiving a rating of "good" or "fair" by 61.6%.

Participants who received a severity rating of "None - Willing to Engage in Treatment" in comparison to those participants who received a severity rating of "Severe to Very Severe - Unaware of Need for Change or Unwilling to Change" for the Readiness to Change Dimension of the ASAM Assessment were significantly more likely to be rated "good" or "fair" compared to "poor" (OR = 2.634). Similarly, participants who received a severity rating of "Mild to Moderate - Ambivalent to Change or Reluctant to Enter Treatment" in comparison to those participants who received a severity rating of "Severe to Very Severe - Unaware of Need for Change or Unwilling to Change" for the Readiness to Change Dimension of the ASAM Assessment were significantly more likely to be rated "good" or "fair" compared to "poor" (OR = 2.221).

In regards to number of inpatient psychiatric episodes, the odds ratio of .88 indicates that for each additional inpatient psychiatric episode, the individual's odds of receiving a rating of "good" or "fair" decreased by 12%.

Conclusions

Contrary to the findings by Gutierres and Todd [10], women were significantly less likely to receive ratings for prognoses for abstention of "fair" or "poor" than "good" compared to their male counterparts. In this sample, the female participants tended to be more likely to be consumers of mental health services in their lifetime than their male counterparts. Furthermore, male participants were more likely to be involved with the criminal justice system and required to participate in SUD treatment than their female counterparts. On the other hand, female participants were more likely to be involved with the child welfare system and required to participate in SUD treatment as a component of their parental reunification plan than their male counterparts. These differences related to historical utilization of mental health services and external pressure from the criminal justice system as opposed to the child welfare system in this sample may have affected participants' treatment engagement and progress, which in turn affected their AOD Counselors' prognoses for their ongoing abstention from drugs and/or alcohol. However, no other socio-demographic variables were significant predictors of AOD Counselor prognoses for clients' abstention.

Both measures related to substance use were significantly predictive of AOD Counselor prognoses for clients' abstention. For each additional day of use of primary substance used, participants were 4.8% less likely to be rated "good" or "fair." While no other studies have previously addressed past 30 days of use of primary substance used related to AOD Counselor prognoses for clients' abstention, this measure has been found to be significantly predictive of SUD treatment outcomes [12-20]. As higher rates of pretreatment substance use, especially

among persons who use MA, cause greater neurocognitive impairment and psychiatric symptoms such as depression, anxiety, hallucinations, paranoia, irritability, anhedonia, hypersomnia, and aggression [21], it is not surprising that pretreatment substance use in the 30 days preceding residential SUD treatment affects participants' treatment engagement and progress, which in turns affects the prognoses for abstention that they receive from their primary AOD Counselor. Given the importance of pretreatment substance use on clients' treatment engagement and progress in residential SUD treatment settings, the present findings suggest that clients who indicate a high level of pretreatment substance use and positive UA or breathalyzer test at time of assessment for SUD treatment may benefit from receiving 3.2 WM LOC services prior to engaging in a clinically managed residential SUD treatment setting at the 3.1 or 3.5 LOC to enhance their physiological and psychological functioning.

Participants who reported using alcohol and marijuana in combination were significantly more likely to receive ratings of "good" or "fair" as opposed to "poor" compared to participants who used any combination of substances, all of which included MA. Although no previous known studies have examined the effect of pretreatment polysubstance use and AOD Counselor prognoses for clients' abstention, the literature has consistently established that clients who report alcohol as their primary substance used are more likely to complete SUD treatment compared to participants who reported use of any other type of substance [1, 15, 22-31]. These findings further support the negative and highly disruptive effects of pretreatment MA use on SUD treatment engagement and progress as noted in previous research, which is reflected in clients' prognoses for ongoing abstention from drugs and/or alcohol. As prolonged MA causes significant neurocognitive deficits and neurotoxic effects [21] as well as physiological decline [32] and has been linked to high rates of relapse [33], additional clinical trials to explore MAT options for MA users warrant ongoing funding and support.

For each additional episode of acute inpatient psychiatric hospitalization, participants were 12% less likely to receive a rating of "good" or "fair." As previously discussed, repeated need for acute psychiatric hospitalization indicates a high severity of mental illness as well as ongoing difficulty in stabilizing psychiatric symptoms. Based on the findings from the present study, clients with high levels of psychiatric distress and difficulty managing their psychiatric symptoms at time of assessment may struggle to adjust and function in a clinically managed residential setting, such as 3.1 and 3.5 LOCs, which, in turn, influences the AOD Counselors' prognoses for their ongoing abstention from drugs and/or alcohol. Expanding the ASAM LOC Continuum in large urban communities throughout the United States to include 3.7 and 4.0 LOCs would enable clients with co-occurring SUDs and SMIs with high levels of psychiatric distress to receive medically managed and monitored residential care and adequately stabilize their psychiatric symptoms prior to transitioning to a clinically residential SUD treatment setting, such as 3.1 or 3.5 LOCs, which may improve their subsequent treatment engagement and progress and corresponding prognoses for abstention from their AOD Counselors. However, presence and treatment of mental health symptoms was not a significant predictive factor of AOD Counselor prognoses for clients' abstention.

In keeping with the findings by Gutierres and Todd [10], history of abuse was not significantly predictive of AOD Counselor prognoses for clients' abstention. As history of traumatic exposure can significantly influence mental health [34], participants' current level of psychiatric distress and lifetime history related to mental illness and treatment more significantly predict their ability to cope and function in a clinically managed residential SUD treatment facility and serve as a more relevant predictive factor of AOD Counselors' prognoses for abstention than participants' history of abuse alone without information related to their current psychological well-being and functioning. As a recent SAMHSA [1] publication addresses the role of trauma as a social determinant of SMI, this finding supports the imperative for early childhood intervention and treatment for children who experience abuse in order to enhance their ability to cope with emotional dysregulation and cognitive impacts of trauma in order to promote long-term mental health stability and mitigate risk for the onset of SMI.

Participants who received an overall rating of "None" or "Mild to Moderate" for Readiness to Change were significantly more likely to receive ratings for prognoses for abstention of "good" or "fair" as compared to "poor" as opposed to those participants who received an overall rating of "Severe to Very Severe" for Readiness for Change. While no previous studies have examined the role of clients' internal motivation related to AOD Counselor prognoses for abstention, this study reveals the importance of assessing clients' motivational levels for participating in residential SUD treatment, as addressed by the ASAM Multidimensional Assessment in Dimension 4 - Readiness for Change. Participants' level of internal motivation significantly affects participants' treatment engagement and progress during their residential SUD treatment episodes, which informs their AOD Counselors' prognoses for their continued abstention from drugs and/or alcohol. Participants determined to have "Severe" or "Very Severe" ratings based on ASAM Multidimensional Assessment criteria for Dimension 4 should be targeted for increased levels of contact and individual counseling sessions with AOD Counselors and clinicians through motivational interviewing, which has been found to be an effective evidence-based treatment for SUDs [35].

The results should be interpreted in light of several considerations. The dataset included clients from one large urban county, so the results cannot be generalized to all persons participating in residential or inpatient substance use treatment programs. Additionally, the participants in this sample overwhelmingly reported MA as their primary substance used. Furthermore, persons with stimulant use disorders may have been overrepresented at this facility as WM services were not available at this treatment facility. As the other residential SUD treatment facilities operated by this non-profit agency had onsite WM units, these facilities may have been more likely to admit higher percentage of patients with severe opioid; sedative, hypnotic, and anxiolytic; and alcohol use disorders, respectively, to residential SUD treatment after they successfully completed WM episode. Finally, there may have been biases in the self-reported information related to pretreatment substance use, psychiatric history, and trauma history included in the ASAM Multidimensional Assessment Tool due to social desirability and recall.

To date, only one other study has examined factors influencing AOD Counselor prognoses for clients' abstention. Therefore, this study's findings significantly add to the literature and illuminate how AOD Counselors perceive their clients' treatment engagement and progress and their likelihood for long term abstinence from drugs and/or alcohol. In turn, the results may be useful in informing interventions to enhance treatment engagement as well as outreach efforts for clients with poor prognoses with abstention. Finally, this study highlights the importance of expanding stabilizing withdrawal symptoms from

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Page 8 of 8

MA through 3.2 WM LOC treatment episodes as well as symptoms of severe psychiatric distress through medically managed 3.7 and 4.0 LOC prior to admitting clients to clinically managed inpatient or residential substance use treatment facilities.

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