Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Patterns of Substance Use and Mental Health Treatment among U.S. Adults with Substance Use Disorder

Namkee G. Choi

nchoi@austin.utexas.edu

The University of Texas at Austin School of Social Work

John Moore

Florida State University College of Social Work

Research Article

Keywords: Substance use disorder, mental illness, symptom severity, substance use treatment, mental health services

Posted Date: November 6th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10269778/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background

U.S. adults with substance use disorders (SUD) underutilize substance use treatment (SUT) and are more likely to use mental health treatment (MHT) than SUT. Understanding how SUD severity and mental illness (MI) severity are associated with different treatment configurations may help explain why some individuals receive mental health services without concurrent substance use treatment. We examined clinical and other factors associated with four behavioral health service configurations: no treatment, both SUT and MHT, SUT only, and MHT only.

Methods

Data came from the 2022 and 2023 National Survey on Drug Use and Health (N = 19,555, age 18 + with past-year SUD). Multinomial and binary logistic regression models were fitted to examine associations between treatment use patterns and SUD and MI severity as need factors, while controlling for predisposing, enabling, and other need factors.

Results

The findings show that 59.3% of U.S. adults with SUD did not use SUT or MHT in the past year, 10.7% used both SUT and MHT, 3.7% used SUT only, and 26.4% used MHT only. Severe SUD (RRR = 2.77, 95% CI = 2.13–3.60), compared with mild SUD, and all levels of MI severity (RRR = 7.27, 95% CI = 5.41–9.79 for serious MI) were associated with a higher likelihood of receiving both SUT and MHT. Both moderate and severe SUD, but not MI severity, were associated with receiving SUT only. All levels of MI severity were also associated with a higher likelihood of receiving MHT only (RRR = 7.30, 95% CI = 6.17–8.64 for serious MI). The findings were similar in analyses restricted to users of any treatment or SUT.

Conclusions

Receipt of both SUT and MHT is concentrated among individuals with the highest clinical severity in both SUD and MI. These findings underscore the importance of both treatments and the coordination of SUT and MHT in healthcare service systems

INTRODUCTION

U.S. epidemiologic data showed that the proportion of individuals aged 12 years or older who needed treatment for substance use disorder (SUD) increased from 8.2% in 2013 to 17.1% in 2023; the increase was from 6.6% to 10.2% for alcohol use disorder (AUD) and from 2.6% to 9.6% for drug use disorder (DUD).[1] Despite the increasing proportion of individuals with SUD, only one in seven in 2022–2023

received substance use treatment, indicating a significant treatment gap.[1,2] Previous research has shown that SUD type (e.g., AUD, opioid use disorder, or other) and severity are significant determinants of substance use treatment receipt versus non-receipt.[3–6] Research has also shown that the treatment gap is especially pronounced among marginalized sub-populations, including older, non-White, low-socio-economic status, and non-heterosexual populations.[7,8]

Notably, prior research has consistently shown that mental health service utilization exceeds substance use treatment among individuals with SUD,[9–13] suggesting that many engage with the healthcare system yet do not receive care that directly addresses their substance use needs. Multiple individual- and system-level barriers contribute to lower rates of substance use treatment relative to mental health treatment. At the individual level, lack of readiness to stop using or start treatment, stigma-related concerns, and lack of or limited health insurance and high out-of-pocket costs are significant barriers to seeking substance use treatment.[3,14–16] Stigma concerns are understandable, as stigma in the general public surrounding SUD tends to be higher than that surrounding mental illness (MI).[17] System-level factors include lower availability and integration of substance use treatment services relative to mental health services within general medical and social service settings and limited funding for substance use treatment, as well as workforce shortages within specialty addiction treatment systems.[18–21] Treatment entry pathways also tend to prioritize mental health symptoms over substance-related problems, and substance use treatment often imposes a higher threshold for entry and continuation, such as requiring drug abstinence and criminalizing certain drug use, which may result in incarceration instead of treatment receipt.[22]

Although previous studies have consistently shown that mental health treatment is used more frequently than substance use treatment among individuals with substance use disorders (SUDs), little is known about the factors associated with different behavioral health treatment patterns. Most prior studies have focused on whether treatment was received, rather than examining the type of treatment received, such as mental health treatment only, substance use treatment only, or both. This distinction is particularly important because individuals with SUDs frequently have co-occurring MI,[23–26] and treatment needs may span both substance use and mental health conditions. Understanding how SUD severity and MI severity are associated with different treatment configurations may help explain why some individuals receive mental health services without concurrent substance use treatment, whereas others receive substance use treatment alone or both treatment types. Such knowledge may help identify factors associated with receiving services for both substance use and mental health conditions among individuals with co-occurring behavioral health needs.

Using nationally representative data from the 2022–2023 National Survey on Drug Use and Health (NSDUH) and focusing on adults (ages 18+) with any SUD (AUD and/or DUD), the present study first examined factors associated with receipt of (1) both substance use treatment (SUT) and mental health treatment (MHT), (2) SUT only, and (3) MHT only, relative to no treatment. We then focused on those who received any treatment (SUT and/or MHT) and examined factors associated with receipt of (1) both SUT

and MHT and (2) SUT only, relative to MHT only. Finally, we focused on those who received SUT to examine factors associated with receipt versus non-receipt of MHT.

Andersen's behavioral model of healthcare use[27,28] provided the conceptual framework for the study, in which predisposing, enabling, and need factors influence individuals' health service use. Predisposing factors include biological and demographic characteristics and health beliefs, while enabling factors include resources that facilitate access to care. Need factors refer to the perceived or evaluated severity of physical and/or behavioral health problems and are often the strongest predictors of use of physical health[29] and behavioral health[30,31] services.

After controlling for predisposing and enabling factors, the study's hypotheses were:

H1. Relative to no treatment use: (a) higher SUD and MI severity would be associated with a greater likelihood of receiving both substance use treatment (SUT) and mental health treatment (MHT); (b) Higher SUD severity, but not MI severity, would be associated with a greater likelihood of receiving SUT only; and (c) higher MI severity would be associated with a greater likelihood of receiving MHT only.

H2. Among individuals who received any treatment, higher SUD severity would be associated with receiving any SUT (with or without MHT) rather than receiving MHT alone.

H3. Among individuals who received SUT, greater MI severity would be associated with receiving both SUT and MHT rather than receiving SUT alone.

The findings of this study provide new insight into how SUD and MI severity and predisposing and enabling factors among individuals with SUD are associated with distinct patterns of behavioral health service utilization. These patterns enhance understanding of the facilitators and barriers to integrated treatment delivery and inform strategies to improve access to behavioral healthcare services.

METHOD

Data Source

The NSDUH, funded by the U.S. Substance Abuse and Mental Health Administration, is an annual cross-sectional survey of substance use, mental health, and behavioral health treatment, using a nationally representative sample of the civilian, non-institutionalized population aged 12+. To increase the sample size, we combined the 2022 and 2023 NSDUH data. The 2021 and 2024 data were not included in the present study because substance use treatment and mental health treatment questions underwent considerable revision in the 2022 NSDUH and again in 2024 for SUD and SUT.[32] Thus, the 2022 and 2023 NSDUH estimates for these treatments should not be compared with estimates from 2021 or prior years, or with those in 2024.[33] Due to the ongoing COVID-19 pandemic, data collection in 2022 and 2023 was conducted via both in-person and web-based modes. The overall percentage of interviews completed via the web was 40.7% in 2022 and 36.0% in 2023.[2,34] Given the differences between in-person and multi-

mode data collection procedures, estimates from 2022–2023 data are not comparable with estimates from 2020 or prior years, which were based solely on in-person data collection.[32]

Participants and Procedures

The NSDUH public-use datasets for 2022 and 2023 included responses from 59,069 and 56,705 individuals, respectively. Among 92,233 adult respondents aged 18+ (47,100 in 2022 and 45,133 in 2023), we identified 19,555 respondents (9,869 in 2022 and 9,686 in 2023) with past-year AUD and/or DUD. Weighted estimates indicated that this subgroup represented 18.1% of U.S. adults (~ 46.4 million individuals). No significant difference was observed between 2022 and 2023 past-year SUD prevalence estimates ($F[1, 50] = 0.33$, $p=.566$), supporting the decision to pool the two years. Because NSDUH is designed as a repeated cross-sectional survey using multi-stage area probability sampling, the likelihood of duplicate survey respondents across survey years is minimal. Analysis of these de-identified public-use data was exempt from the authors' institutional review board review.

Measures

Past-year receipt of SUT and MHT: The 2022 and 2023 NSDUH provide a 4-category summary variable for treatment patterns reflecting distinct behavioral health service configurations: (1) receipt of neither treatment (no SUT or MHT); (2) receipt of both SUT and MHT; (3) receipt of SUT but not MHT (SUT only); and (4) receipt of MHT but not SUT (MHT only).

SUT refers to *professional* counseling, medication, or other treatment for alcohol or drug use received in the following settings: inpatient settings (including hospitals or residential rehabilitation facilities for SUD or mental health problems); outpatient settings (including offices of specialty care providers, general medical clinics or doctors' offices, and school health or counseling centers); via telehealth; or in correctional settings (jail or prison). Beginning in 2022, NSDUH excluded the receipt of support services from a support group, a peer support specialist, or a recovery coach; services in an emergency department (ED); and detoxification or withdrawal support services from formal treatment. These were instead categorized as support or recovery services. We reported these services for descriptive purposes only.

MHT refers to *professional* counseling, medication, or other treatment for mental health, emotions, or behavior received in the following settings: inpatient settings (including hospitals or residential rehabilitation facilities for SUD or mental health problems); outpatient settings (including offices of a therapist, psychologist, psychiatrist, or mental health professional, general medical clinics or doctors' office, or school health or counseling centers); via telehealth; or correctional settings. Receipt of peer support specialist or recovery coach services alone and services at ED alone did not automatically qualify respondents as MHT users.

Past-year SUD and SUD severity

In NSDUH, SUDs were derived using standardized algorithms that map respondents' answers to the 11 *DSM-5* diagnostic criteria for each substance. *Any* past-year SUD refers to an AUD or a DUD. The NSDUH summary SUD variable categorizes respondents as having AUD only, DUD only, or both AUD and DUD. Drugs included in the DUD assessments were cannabis/marijuana, cocaine (including crack), heroin, hallucinogens, inhalants, methamphetamine, and any use of prescription pain relievers, tranquilizers or sedatives (e.g., benzodiazepines), and stimulants. For each substance, NSDUH applied *DSM-5* criteria to classify severity as mild (meeting 2–3 criteria), moderate (meeting 4–5 criteria), or severe (meeting 6 + criteria). For SUD measures aggregated across more than one substance (e.g., any SUD, DUD), mild SUD meant that people had only mild SUDs; moderate SUD meant that people had at least one moderate SUD but did not have severe SUDs; and severe SUD meant that people had a severe SUD for at least one substance.[2] We also included nicotine dependence based on the Fagerström Test for Nicotine Dependence[35] as a covariate. Polydrug use (i.e., 2 + drug use) was reported for descriptive purposes only.

Past-year MI severity

In NSDUH, MI refers to any mental, behavioral, or emotional disorder in the past year of sufficient duration to meet *DSM-IV* criteria, excluding developmental and substance use disorders.[2] Based on statistical prediction models developed from clinical interview data for a subset of NSDUH adult respondents aged 18 or older (2008–2012), MI in NSDUH is further classified as mild, moderate, or serious. Serious MI refers to substantial interference with or limitation of one or more major life activities.[2]

Predisposing and enabling factors

Predisposing factors were age group (18–25, 26–34, 35–49, 50+ [50–64 and 65+], with the 35–49 age group as the reference in multivariable models); sex (male vs. female); and race/ethnicity (non-Hispanic white, non-Hispanic Black, Hispanic, or Other [Asian/Pacific Islander, American Indian/Alaska Native, multi-racial]). Enabling factors included education (college degree vs. no college degree); income (< poverty, up to 2X poverty, >2X poverty); any health insurance coverage (yes or no); health status (number [0–10] of chronic medical conditions [asthma, hypertension, diabetes, heart disease, COPD, cirrhosis of the liver, hepatitis, HIV/AIDS, kidney disease, and cancer] diagnosed by a health professional); problem self-perception (whether the respondent had ever perceived an alcohol or drug use problem; yes or no); and parole/probation status. Previous research found that those who perceived a substance use problem were more likely to seek treatment.[3,36] Previous research has also shown that those in parole/probation tend to have a higher rate of substance use treatment receipt, [4,37,38] likely through legal mandate.[39,40]

Analysis

We used Stata/MP 19.5's svy function (College Station, TX) and the subpop command in all analyses to account for NSDUH's multi-stage, stratified sampling design, ensuring that variance estimates incorporate the full sampling design. For this study's 2-year pooled data set, adjusted person-level analysis weights were created by dividing the final person-level analysis weights by the number of years in the pooled data (two in the current study), following NSDUH guidelines for combining sampling weights across multiple survey years. All estimates presented in this study are weighted except for sample sizes. First, we presented descriptive statistics (Pearson's χ^2, *ANOVA, or t* tests) comparing predisposing, enabling, and need factors across four groups of adults with SUD: (1) those with no past-year treatment use; (2) those who used both SUT and MHT; (3) those who used SUT only; and (4) those who used MHT only.

Second, we used a multinomial logistic regression model to test H1a - H1c (correlates of use of both SUT and MHT, SUT only, and MHT only vs. no treatment). For sensitivity analyses, we ran models that adjusted for polydrug use and ED visits for substance-related problems, and tested interaction effects between SUD severity and MI severity. Statistical significance was evaluated using design-based Wald tests.

Third, we used a multinomial logistic regression model to test H2 among treatment users (correlates of both SUT and MHT and of SUT only vs. MHT only). Fourth, we used a binary logistic regression model to test H3 among SUT users (correlates of both SUT and MHT vs. SUT only). We present multinomial logistic regression results as relative risk ratios (RRR) with 95% confidence intervals (CI) and binary logistic regression results as odds ratios (OR) with 95% CI. We used the variance inflation factor (VIF) as a preliminary diagnostic to assess multicollinearity among covariates, applying a cut-off of 2.50[42] from linear regression models. VIF diagnostics indicated that multicollinearity was not a concern. Significance was set at $p<.05$.

RESULTS

Characteristics of Adults with SUD by Their Treatment Use Pattern

Table 1 shows that among U.S. adults with SUD, 59.3% did not use SUT or MHT in the past year, 10.7% used both SUT and MHT, 3.7% used SUT only, and 26.4% used MHT only. In total, 14.4% received SUT, and 37.1% received MHT. Additional analyses indicated that the two treatment measures reflected similar patterns of service delivery. Among SUT users, 74.7% received outpatient treatment, and among outpatient treatment users, 64.5% received services in specialty care settings and 53.4% received services in general medical settings. Among MHT users, 64.9% received outpatient treatment, and among those receiving outpatient treatment, 72.0% received services in specialty care settings and 52.2% received services in general medical settings. Telehealth services (phone or video) were used by 60.5% of SUT users and 40.2% of MHT users.

Table 1
Characteristics of individuals with substance use disorder (SUD) by treatment use patterns

SUD type (%)	**No treatment N = 11,307 (59.3%)**	**Both SUT and MHT (1) N = 2,076 (10.7%)**	**SUT only (2) N = 690 (3.7%)**	**MHT only (3) N = 5,532 (26.4%)**	***P* between (1) & (2)**	***P* between (1) & (3)**	***P* between (2) & (3)**
					.013	**< .001**	**.051**
AUD only	51.4	24.7	33.7	41.5			
DUD only	34.4	48.8	45.4	42.9			
Both AUD and DUD	14.2	26.5	20.9	15.7			
Poly (2+) drug use (%)	4.8	26.9	26.6	7.8	.892	< .001	< .001
SUD severity (%)					.028	< .001	< .001
Mild	60.2	30.3	28.0	58.4			
Moderate	22.8	18.1	27.7	23.8			
Severe	17.0	51.6	44.3	17.8			
Past-year mental illness (%)					< .001	< .001	< .001
None	69.7	24.8	54.4	32.4			
Mild	14.7	19.0	21.9	20.1			
Moderate	8.4	20.0	15.4	21.0			
Severe	7.2	36.2	8.3	26.5			
Nicotine dependence (%)	14.0	31.7	31.2	12.3	.884	< .001	< .001
Age group (%)					.138	.003	.006
18–25	18.9	17.1	15.5	22.8			
26–34	23.3	21.2	17.8	23.5			

AUD = Alcohol use disorder; DUD = Drug use disorder

SUT = Substance use treatment; MHT = Mental health treatment

SUD type (%)	No treatment N = 11,307 (59.3%)	Both SUT and MHT (1) N = 2,076 (10.7%)	SUT only (2) N = 690 (3.7%)	MHT only (3) N = 5,532 (26.4%)	*P* between (1) & (2)	*P* between (1) & (3)	*P* between (2) & (3)
					.013	**< .001**	**.051**
35–49	26.2	31.0	38.0	27.5			
50–64	20.6	24.4	19.4	18.1			
65+	10.0	6.3	9.3	8.1			
Female (%)	34.1	48.7	29.8	59.0	< .001	< .001	< .001
Race/ethnicity (%)					.028	.458	< .001
Non-Hispanic White	58.0	68.8	60.0	71.8			
Non-Hispanic Black	15.1	8.8	13.1	8.5			
Hispanic	18.8	14.8	21.4	13.9			
Asian/Pacific Islander	4.6	3.7	1.9	2.3			
American Indian/Alaska Native	0.8	0.7	1.4	0.5			
Multi-racial	2.7	3.1	2.2	3.0			
College degree (%)	27.9	17.5	12.9	39.4	.100	< .001	< .001
Income (%)					.123	< .001	< .001
Below poverty	16.8	26.5	33.0	16.4			
Up to 2x poverty	19.2	26.8	25.9	18.4			
More than 2x poverty	63.9	46.7	41.1	65.1			

AUD = Alcohol use disorder; DUD = Drug use disorder

SUT = Substance use treatment; MHT = Mental health treatment

SUD type (%)	No treatment N = 11,307 (59.3%)	Both SUT and MHT (1) N = 2,076 (10.7%)	SUT only (2) N = 690 (3.7%)	MHT only (3) N = 5,532 (26.4%)	*P* between (1) & (2)	*P* between (1) & (3)	*P* between (2) & (3)
					.013	**< .001**	**.051**
Any health insurance coverage (%)	85.9	92.5	88.5	93.6	.052	.306	.003
Problem self-perception (%)	25.3	64.0	50.2	33.6	< .001	< .001	< .001
Parole or probation state (%)	2.7	13.2	10.7	1.9	.352	< .001	< .001
No. of chronic medical conditions, M (SE)	0.52 (0.02)	0.80 (0.04)	0.64 (0.06)	0.73 (0.03)	.037	.251	.143
Emergency department visit for substance use (%)	0.7	17.0	16.0	0.8	.744	< .001	< .001
Support group for SUD (%)	1.8	34.3	24.7	2.2	.006	< .001	< .001
Detoxification for SUD (%)	< 0.1	16.4	12.0	0.3	.186	< .001	< .001
AUD = Alcohol use disorder; DUD = Drug use disorder							
SUT = Substance use treatment; MHT = Mental health treatment							

Note: *P*-values were calculated using Pearson's χ2 for categorical variables and t-tests for continuous variables. P-values (not shown in the table) based on Pearson's χ2 for categorical variables and ANOVA for continuous variables indicated that differences among the four groups were significant at the .001 or <.001 level across all variables.

Among all treatment users, 75.3% (both SUT and MHT) to 58.6% (MHT only) had DUD, with or without AUD. Nearly 27% of both groups of SUT users were polydrug users, and nearly a third of both groups also had nicotine dependence. SUD severity also differed by treatment pattern, with those who received any

SUT having significantly higher rates of severe disorder (51.6% among users of both SUT and MHT and 44.3% among users of SUT only), compared to non-users of treatment (17.0%) and users of MHT only (17.8%). Additional analysis showed that the rate of polydrug use was significantly higher among those with severe SUD (23.2% vs. 3.0% and 8.9% among those with mild and moderate SUD, respectively; $F[1.95, 97.58] = 277.90$, $p < .001$).

The prevalence and severity of comorbid MI were highest among users of both SUT and MHT (36.2% with serious MI), followed by users of MHT only (26.5% with serious MI). These two groups also had higher proportions of females (48.7% for both treatments and 59% for MHT only) and non-Hispanic white people (68.8% and 71.8%). Users of MHT and non-users of any treatment had higher proportions of college graduates and higher incomes than users of any SUT. Users of both SUT and MHT had the highest proportion (64.0%) of those with self-perceived substance use problems, followed by users of SUT only, MHT only, and non-users of any treatment (25.3%). Users of any SUT also had higher proportions of those in parole/probation, those who had a substance-related ED visit, those who participated in support groups, and those who had detoxification. Additional analysis showed that substance-related ED visits were significantly higher among those with severe SUD (10.5% vs. 0.7% and 1.4% among those with mild and moderate SUD, respectively; $F[1.90, 95.03] = 232.40$, $p < .001$).

Associations of Treatment Use Patterns with SUD and MI Severity

Table 2 presents results from a multinomial logistic regression assessing the likelihood of each of three treatment patterns relative to no treatment. After adjusting for predisposing and enabling factors, DUD only, compared with AUD only, was associated with a higher likelihood of all three treatment types. The dual diagnosis of DUD and AUD was associated with a higher likelihood of receiving both SUT and MHT.

Table 2
Associations of treatment use pattern with substance use disorder (SUD) and mental illness (MI) severity among all adults with SUD: Multinomial logistic regression results

	Both SUT and MHT	**SUT only**	**MHT only**
	RRR (95% CI)	**RRR (95% CI)**	**RRR (95% CI)**
	Vs. No treatment		
SUD type: vs. AUD only			
DUD only	2.26 (1.76–2.91)***	1.69 (1.20–2.39)**	1.35 (1.18–1.53)***
Both AUD and DUD	1.67 (1.24–2.26)**	1.22 (0.78–1.92)	1.09 (0.87–1.35)
SUD severity: vs. Mild disorder			
Moderate disorder	1.18 (0.89–1.58)	2.26 (1.63–3.13)***	0.89 (0.74–1.08)
Severe disorder	2.77 (2.13–3.60)***	4.00 (2.69–5.95)***	0.71 (0.59–0.87)**
Mental illness (MI) severity: No MI			
Mild	2.56 (1.93–3.40)***	1.41 (0.94–2.12)	2.65 (2.17–3.23)***
Moderate	4.17 (2.89–6.03)***	1.57 (0.98–2.52)	4.87 (3.91–6.06)***
Serious	7.27 (5.41–9.79)***	0.84 (0.52–1.35)	7.30 (6.17–8.64)***
Nicotine dependence vs. no dependence	1.65 (1.25–2.16)**	1.46 (1.04–2.07)*	0.99 (0.77–1.27)
Age group: vs. 35–49			
18–25	0.67 (0.51–0.87)**	0.47 (0.35–0.64)***	1.07 (0.91–1.26)
26–34	0.71 (0.55–0.92)*	0.52 (0.37–0.73)***	0.89 (0.75–1.06)
50+	1.17 (0.88–1.56)	0.72 (0.46–1.13)*	0.82 (0.68–0.99)*

AUD = Alcohol use disorder; DUD = Drug use disorder

SUT = Specialty substance use treatment; MHT = Mental health treatment

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

	Both SUT and MHT RRR (95% CI)	SUT only RRR (95% CI)	MHT only RRR (95% CI)
	Vs. No treatment		
Male vs. Female	0.58 (0.49–0.68)***	1.10 (0.84–1.45)**	0.45 (0.39–0.53)***
Race/ethnicity: vs. Non-Hispanic White			
Non-Hispanic Black	0.49 (0.36–0.66)***	0.72 (0.48–1.07)	0.48 (0.36–0.64)***
Hispanic	0.78 (0.55–1.11)	1.15 (0.73–1.79)	0.69 (0.55–0.87)**
Other	0.72 (0.41–1.27)	0.64 (0.37–1.09)	0.55 (0.42–0.72)***
College degree: vs. No degree	0.96 (0.76–1.22)	0.63 (0.43–0.92)*	1.81 (1.51–2.16)***
Income: vs. Below poverty			
Up to 2x poverty	0.89 (0.66–1.19)	0.70 (0.47–1.06)	0.91 (0.69–1.20)
More than 2x poverty	0.61 (0.43–0.85)***	0.41 (0.29–0.56)***	0.91 (0.71–1.17)
Any health insurance coverage	2.62 (1.95–3.53)**	1.75 (1.16–2.65)**	2.17 (1.71–2.76)***
Problem self-perception	2.80 (2.24–3.49)***	1.85 (1.28–2.66)**	1.26 (1.05–1.52)*
Parole or probation state	3.69 (2.51–5.40)***	2.66 (1.46–4.84)**	0.91 (0.56–1.48)
No. of chronic medical condition	1.12 (1.01–1.25)*	1.06 (0.91–1.22)	1.22 (1.12–1.34)***
Model statistics	N = 19,548; population N = 46.4 million; design df = 50		
AUD = Alcohol use disorder; DUD = Drug use disorder			
SUT = Specialty substance use treatment; MHT = Mental health treatment			
*p<.05; **p<.01; ***p<.001			

Compared with mild SUD, severe SUD (RRR = 2.77, 95% CI = 2.13–3.60) and all levels of MI severity (RRR = 7.27, 95% CI = 5.41–9.79 for serious MI) were associated with a higher likelihood of receiving both SUT and MHT. Both moderate (RRR = 2.26, 95% CI = 1.63–3.13) and severe (RRR = 4.00, 95% CI = 2.69–5.95) SUD were associated with a higher likelihood of receiving SUT only, whereas MI severity was not a

significant factor. Severe SUD (RRR = 0.71, 95% CI = 0.59–0.87) was associated with a lower likelihood of receiving MHT only, whereas all levels of MI severity (RRR = 7.30, 95% CI = 6.17–8.64 for serious MI) were associated with a higher likelihood of receiving MHT only.

In sensitivity analyses adjusting for polydrug use and ED visits, the pattern of associations was similar, though effect sizes for SUD severity were attenuated. Both polydrug use and ED visits were significant factors for SUT, likely reflecting greater clinical severity. ED visits may also partially lie on the pathway between SUD severity and treatment receipt, suggesting potential mediation rather than pure confounding. In additional sensitivity analyses including interaction terms between SUD severity and MI severity, the joint adjusted Wald test was statistically significant (F[18, 33] = 2.39, p = 0.014), indicating some non-additive effects. However, predicted probabilities showed that the overall pattern of associations across treatment types remained substantively similar.

Among the covariates, nicotine dependence was associated with a higher likelihood of receiving both SUT and MHT as well as SUT only. Compared with the 35–49 age group, all other age groups had a lower likelihood of receiving any treatment. Male sex was associated with a lower likelihood of receiving both SUT and MHT or MHT only, but a higher likelihood of receiving SUT only. Black, Hispanic, and other racial/ethnic groups were also associated with a lower likelihood of receiving both SUT and MHT or MHT only. Higher income was associated with a lower likelihood of receiving SUT, with or without MHT. Any health insurance coverage and problem self-perception were associated with a higher likelihood of any treatment. Parole/probation was associated with a higher likelihood of receiving any SUT, with or without MHT. Finally, a greater number of chronic medical conditions was associated with a higher likelihood of receiving both SUT and MHT as well as MHT only.

Figure 1 shows adjusted predicted probabilities of treatment patterns by SUD and MI severity. The probability of receiving no treatment declined only modestly with increasing SUD severity, whereas it decreased substantially with increasing MI severity. The probability of receiving both SUT and MHT increased progressively with greater MI severity, while the probability of receiving SUT only decreased across levels of MI severity.

Associations of Treatment Use Patterns with SUD and MI Severity among Treatment Users

The first two columns of Table 3 present the results from a multinomial logistic regression assessing the likelihood of receiving both SUT and MHT or SUT only relative to MHT only. Compared with AUD only, DUD, with or without co-occurring AUD, was associated with a higher likelihood of receiving both SUT and MHT. In contrast, the SUD type was not significantly associated with the likelihood of receiving SUT only versus MHT only.

Table 3

Associations of treatment types with substance use disorder (SUD) and mental illness (MI) severity among treatment users: Multinomial and binary logistic regression results

	Both SUT and MHT RRR (95% CI)	**SUT only RRR (95% CI)**	**Both SUT and MHT OR (95% CI)**
	Vs. MHT only		**Vs. SUT only**
SUD type: vs. AUD only			
DUD only	1.77 (1.37–2.29)***	1.33 (0.93–1.91)	1.27 (0.86–1.88)
Both AUD and DUD	1.68 (1.19–2.36)**	1.28 (0.78–2.09)	1.21 (0.74-2.00)
SUD severity: vs. Mild disorder			
Moderate disorder	1.33 (0.94–1.89)	2.55 (1.72–3.77)***	0.49 (0.31–0.78)**
Severe disorder	3.99 (3.03–5.24)***	5.35 (3.80–7.54)***	0.78 (0.50–1.20)
Mental illness (MI) severity: No MI			
Mild	1.05 (0.75–1.46)	0.59 (0.39–0.90)*	1.78 (1.19–2.66)**
Moderate	0.94 (0.69–1.30)	0.35 (0.22–0.54)***	2.55 (1.46–4.43)**
Serious	1.10 (0.78–1.55)	0.13 (0.08–0.21)***	8.09 (4.94–13.24)***
Nicotine dependence vs. no dependence	1.71 (1.23–2.37)**	1.62 (1.14–2.30)**	1.07 (0.72–1.60)
Age group: vs. 35–49			
18–25	0.63 (0.47–0.84)**	0.41 (0.29–0.56)***	1.59 (1.03–2.44)*
26–34	0.86 (0.62–1.18)	0.61 (0.40–0.94)*	1.38 (0.86–2.22)

AUD = Alcohol use disorder; DUD = Drug use disorder

SUT = Substance use treatment; MHT = Mental health treatment

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

	Both SUT and MHT RRR (95% CI)	SUT only RRR (95% CI)	Both SUT and MHT OR (95% CI)
	Vs. MHT only		**Vs. SUT only**
50+	1.41 (1.02–1.95)	0.83 (0.53–1.30)	1.59 (0.94–2.67)
Male vs. Female	1.22 (1.00-1.48)*	2.21 (1.66–2.93)***	0.56 (0.41–0.77)**
Race/ethnicity: vs. Non-Hispanic White			
Non-Hispanic Black	1.11 (0.74–1.66)	1.56 (1.06–2.28)*	0.69 (0.43–1.13)
Hispanic	1.05 (0.72–1.52)	1.53 (1.02–2.31)*	0.75 (0.47–1.21)
Other	1.30 (0.72–2.33)	1.09 (0.59–2.04)	1.45 (0.62–3.38)
College degree: vs. No degree	0.52 (0.39–0.68)***	0.35 (0.22–0.55)***	1.37 (0.84–2.25)
Income: vs. Below poverty			
Up to 2x poverty	0.96 (0.70–1.31)	0.80 (0.53–1.21)	1.27 (0.85–1.91)
More than 2x poverty	0.69 (0.50–0.95)*	0.49 (0.34–0.71)***	1.32 (0.90–1.95)
Any health insurance coverage	1.12 (0.76–1.64)	0.78 (0.50–1.20)	1.36 (0.91–2.03)
Problem self-perception	2.13 (1.72–2.64)***	1.28 (0.91–1.80)	1.62 (1.18–2.21)*
Parole or probation state	3.66 (2.06–6.50)***	2.77 (1.28–5.98)*	1.27 (0.69–2.34)
No. of chronic medical condition	0.92 (0.82–1.04)	0.85 (0.72–0.99)*	1.06 (0.89–1.26)
Model statistics	N = 8,293; population N = 18.9 million;		N = 2,765; population N = 6.7 million; design df = 50; F (22,29) = 7.59; p<.001

AUD = Alcohol use disorder; DUD = Drug use disorder

SUT = Substance use treatment; MHT = Mental health treatment

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

	Both SUT and MHT RRR (95% CI)	SUT only RRR (95% CI)	Both SUT and MHT OR (95% CI)
	Vs. MHT only		**Vs. SUT only**
	design df = 50		
AUD = Alcohol use disorder; DUD = Drug use disorder			
SUT = Substance use treatment; MHT = Mental health treatment			
*p<.05; **p<.01; ***p<.001			

Regarding SUD and MI severity, severe SUD was associated with a higher likelihood of receiving both SUT and MHT (RRR = 3.99, 95% CI = 3.03–5.24); however, MI severity was not associated with the likelihood of receiving both SUT and MHT versus MHT only. Both moderate and severe SUD were associated with a higher likelihood of receiving SUT only (RRR = 2.55, 95% CI = 1.72–3.77 for moderate SUD; RRR = 5.35, 95% CI = 3.80–7.54 for severe SUD); however, all levels of MI severity were associated with a lower likelihood of receiving SUT only versus MHT only. Nicotine dependence was associated with a higher likelihood of receiving both SUT and MHT as well as SUT only.

Among the covariates, young adults, college graduates, and those with higher income had a lower likelihood of any SUT, whereas male gender and parole/probation were associated with a higher likelihood of any SUT, relative to MHT only. Being Black or Hispanic was associated with a higher likelihood of SUT only, and self-perception of problems was associated with a higher likelihood of both SUT and MHT. The number of chronic medical conditions was associated with a lower likelihood of SUT only.

Correlates of the Receipt of Both SUT and MHT versus SUT Only

The third column of Table 3 presents the results from a logistic regression model examining the correlates of receiving both SUT and MHT, compared with SUT alone. SUD type was not a significant factor, but moderate SUD was associated with a lower likelihood of receiving both SUT and MHT. All levels of MI were associated with a higher likelihood of receiving both SUT and MHT. The 18–25 age group, compared with the 35–49 age group, and problem self-perception were associated with a higher likelihood of receiving both SUT and MHT, whereas male sex was associated with a lower likelihood of receiving both treatments.

DISCUSSION

In this nationally representative study, we examined how SUD and MI severities, after adjusting for predisposing and enabling factors, were associated with behavioral health treatment patterns among U.S. adults with SUD. Overall, only 14.4% of adults with SUD received SUT, whereas 37.1% received MHT, indicating that most individuals with SUD did not receive SUT. When treatment occurred, MHT was substantially more common than SUT, consistent with prior research documenting higher utilization of mental health services relative to SUT among individuals with SUD.[10,12] Even individuals with SUD without co-occurring MI have been shown to have higher odds of receiving MHT than SUT.[9]

The observed differences between SUT and MHT are unlikely to be attributable to differences in how the two treatment measures were defined, as our findings indicated that the NSDUH measures of SUT and MHT reflected similar patterns of service delivery. Both measures captured professional counseling, medication, or other treatment received in inpatient, outpatient, and correctional settings and via telehealth. In addition, among those receiving outpatient treatment, substantial proportions of both SUT and MHT users received services in specialty care settings as well as general medical settings, and telehealth was commonly used in both treatment systems. Thus, the substantially higher prevalence of MHT than SUT likely reflects differences in both individual- and system-level factors affecting the use of these treatments.

At the individual level, increasing SUD severity, whether from AUD or DUD, is associated with SUT, whereas increasing MI severity and relatively milder SUDs are associated with greater reliance on MHT. Receipt of both SUT and MHT is concentrated among individuals with the highest clinical severity in both SUD and MI, suggesting that greater, co-occurring clinical complexity or functional impairment drives the combination of mental health and substance use services at higher levels of need. Receipt of SUT alone appears primarily driven by moderate and severe SUD, suggesting that moderate disorder may prompt engagement with SUT but may not yet necessitate a combination of SUT and MHT. These findings largely support the study hypotheses.

Extending prior work,[3,36] self-perception of having a substance use problem, a perceived-need factor, was also found to be significantly associated with a higher likelihood of both SUT and MHT, even after accounting for SUD severity, MI severity, and other predisposing and enabling factors. This shows that, along with objective clinical severity, individuals' recognition of their substance use as problematic is likely to be an important motivator for treatment seeking. Although not empirically measured in this study, individuals with co-occurring behavioral health needs may also preferentially seek MHT rather than SUT because of stigma concerns, as stigma toward SUDs remains greater than stigma toward other psychiatric disorders.[54]

At the system-level, these treatment use patterns likely reflect clinical triage processes, service eligibility thresholds, and crisis- or justice-system-mediated pathways that preferentially connect individuals with more severe substance use problems to addiction treatment services. As indicated by the significance of parole/probation for SUT in this study and in previous studies,[38,49] contact with the criminal justice system appears to be an important referral pathway to SUT. As expected, health insurance coverage was

also strongly associated with all treatment types, underscoring the importance of structural access facilitators.

Also consistent with previous research,[5,42–45] the likelihood of receiving any SUT, with or without MHT, was higher among individuals with DUD than among those with AUD, despite AUD's higher population prevalence. The lower treatment utilization observed among individuals with AUD, despite comparable disease burden, may be partly attributable to alcohol's normalized status in U.S. culture as a legally sanctioned substance. The legal and social normalization of alcohol use may delay problem recognition among individuals and healthcare providers and reduce perceived need or external pressure to seek treatment, contributing to persistently lower utilization of alcohol-focused services.[46,47] In contrast, people with DUD often experience greater social stigma and discrimination[48] and are more likely to be identified through healthcare encounters (e.g., emergency medical services) or involvement with the criminal justice system, both of which frequently serve as external referral pathways into treatment, including mandated care.[40,49–51] Moreover, policy responses to the opioid crisis over the past decade have substantially expanded treatment infrastructure targeting illicit drug use, including medication-based treatment and overdose-response systems, potentially further widening differences in treatment engagement between DUD and AUD.[52,53]

The findings also reveal significant patterns by sociodemographic factors and physical health conditions. Young adults (age ≤ 34) were less likely to receive SUT, with or without MHT; middle-aged adults (ages 35–49) were more likely to receive SUT only; and those aged 50 and older were less likely to receive MHT only. Given the well-established gender and racial/ethnic gaps,[55–57] the lower likelihood of MHT among males and racial/ethnic minorities was not surprising. Individuals with a greater chronic medical burden were more likely to engage in MHT, possibly reflecting increased contact with healthcare systems.

This study has several limitations: (1) Because NSDUH data are cross-sectional, observed associations reflect correlations rather than causal relationships; thus, we cannot establish causal effects of SUD or MI severity or other factors on treatment use. (2) Among individuals who received both SUT and MHT, the dataset does not allow the distinction between services delivered in an integrated setting and those obtained separately across systems, precluding any assessment of treatment integration. (3) Treatment use was self-reported and may be subject to recall or social desirability bias. (4) NSDUH does not capture treatment duration, intensity, or quality, precluding assessment of adequacy of care. (5) NSDUH does not include detailed measures of treatment availability and accessibility, such as geographic proximity to providers, transportation barriers, or local service availability. As a result, we were unable to empirically account for structural access factors (e.g., local service availability and accessibility) that may influence treatment receipt. Future studies linking NSDUH data with area-level measures of treatment availability may help address this limitation.

CONCLUSIONS & IMPLICATIONS

The study findings suggest that treatment engagement among adults with SUD is shaped by intersecting clinical, other individual-level, and system-level factors. Severity of SUD and MI, individuals' perceptions of their substance use problems, and sociodemographic characteristics appear to influence pathways into behavioral health treatment. These pathways are further shaped by policy differences related to substance types, underlying social stigma, and access-related enabling resources. Such patterns align with Andersen's health service utilization model, in which predisposing, enabling, and need factors jointly influence service use.

Despite some data limitations, the study findings have important health services implications. First, many individuals with SUD engage with mental health services without receiving SUT, indicating missed opportunities for early, integrated intervention in MHT settings. Prior research has emphasized integrating SUT into MHT[13] and strengthening referral mechanisms to ensure coordinated care for individuals with co-occurring conditions.[10] Mental health providers may be a critical point of contact for individuals with milder or emerging substance use problems, suggesting that routine substance use screening, brief intervention, and facilitated referral within mental health settings could substantially expand access to SUT.

At the same time, SUT systems may benefit from greater integration of mental health assessment and treatment capacity, given the significant association between MI severity and receipt of both SUT and MHT observed in this study. The pattern in which individuals with higher levels of clinical need are more likely to receive both types of treatment suggests that they may occur later in the course of illness rather than earlier. Earlier coordination of mental health services within SUT programs may help address this gap in service use and improve continuity of care. These interpretations align with the growing policy emphasis on integrated behavioral health care across general healthcare and substance use and mental health service settings.[58–62] Although the present study did not evaluate treatment effectiveness, previous research also signals evidence of the effectiveness of integrated services.[62]

Second, the strong association between SUD severity and engagement in SUT suggests that treatment use may be largely severity-dependent, with individuals with milder SUD less likely to receive treatment. Expanding low-threshold and early-intervention services, including outpatient, telehealth, and community-based options, may help engage individuals earlier in the course of SUDs before progression to more severe conditions. At the same time, given the significance of self-perceived problems in treatment use, efforts to improve screening, feedback, motivational enhancement, and public awareness may play an important role in increasing treatment engagement.

Finally, several gaps remain that warrant further investigation. NSDUH data lack detailed measures of treatment availability and accessibility, which may significantly influence treatment receipt. Future research that incorporates these structural factors is needed to better understand barriers to care. In addition, longitudinal studies with treatment outcome data are needed to evaluate whether different patterns of treatment use, including combined SUT and MHT, are associated with improved clinical and functional outcomes.

Declarations

Ethics approval and consent to participate:

This study, based on de-identified public-domain data, was exempted by the University of Texas at Austin's Institutional Review Board (Exemption approval No. #STUDY00007908). In accordance with the Declaration of Helsinki, consent for participation was obtained from all subjects involved in the study by the U.S. Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration.

Consent for publication:

Both authors agree to publish this paper.

Competing interests:

The authors have no relevant financial or non-financial interests to disclose.

Funding:

No funding was received for conducting this study.

Author Contribution

Both NGC and JM conceptualized the study and conducted the literature review. NGC analyzed the data and drafted the original version of the paper. JM reviewed and edited the original version. Both NGC and JM contributed to the final review and editing.

Acknowledgments:

Not applicable

Data Availability

The NSDUH public-use data files analyzed in this study are available for download from https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health/datafiles by selecting the appropriate survey year and preferred data format (e.g., SPSS, SAS, or Stata).

References

1. Liu L, Zhang C, Nahata MC. Trends in treatment need and receipt for substance use disorders in the US. JAMA Netw Open. 2025;8(1). https://doi.org/10.1001/jamanetworkopen.2024.53317.
2. Substance Abuse and Mental Health Services Administration. Key Substance Use and Mental Health Indicators in the United States: Results from the 2023 National Survey on Drug Use and Health (HHS Publication No. PEP24-07-021, NSDUH Series H-59). Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration: Rockville, MD, USA. 2024. Available online: https://www.samhsa.gov/data/report/2023-nsduh-annual-national-report
3. Choi NG, Marti CN. Treatment use among U.S. adults with a substance use disorder: Associations with symptom severity, problem self-perception, comorbid mental illness, and mental health treatment. Int J Environ Res Public Health. 2025;22(4):640. https://doi.org/10.3390/ijerph22040640.
4. Johnson K, Rigg KK, Hopkins Eyles C. Receiving addiction treatment in the US: Do patient demographics, drug of choice, or substance use disorder severity matter? Int J Drug Policy. 2020;75:102583. https://doi.org/10.1016/j.drugpo.2019.10.009.
5. Mintz CM, Hartz SM, Fisher SL, et al. A cascade of care for alcohol use disorder: Using 2015–2019 National Survey on Drug Use and Health data to identify gaps in past 12-month care. Alcohol Clin Exp Res. 2021;45(6):1276–86. https://doi.org/10.1111/acer.14609.
6. Pasman E, Blair L, Solberg MA, et al. The substance use disorder treatment gap among US college students: Findings from the 2021 National Survey on Drug Use and Health. Drug Alcohol Depend Rep. 2024;12:100279. https://doi.org/10.1016/j.dadr.2024.100279.
7. Priester MA, Browne T, Iachini A, et al. Treatment access barriers and disparities among individuals with co-occurring mental health and substance use disorders: An integrative literature review. J Subst Abuse Treat. 2016;61:47–59. https://doi.org/10.1016/j.jsat.2015.09.006.
8. Sahker E, Pro G, Poudyal H, et al. Evaluating the substance use disorder treatment gap in the United States, 2016–2019: A population health observational study. Am J Addict. 2024;33(1):36–47. https://doi.org/10.1111/ajad.13465.
9. Dhinsa J, Roman-Urrestarazu A, van Kessel R, et al. Understanding predictors of mental health and substance use treatment utilization among US adults: A repeated cross-sectional study. Glob Epidemiol. 2023;5:100109. https://doi.org/10.1016/j.gloepi.2023.100109.
10. Edlund MJ, Booth BM, Han X. Who seeks care where? Utilization of mental health and substance use disorder treatment in two national samples of individuals with alcohol use disorders. J Stud Alcohol Drugs. 2012;73(4):635–46. https://doi.org/10.15288/jsad.2012.73.635.
11. Han B, Compton WM, Blanco C, et al. Prevalence, treatment, and unmet treatment needs of US adults with mental health and substance use disorders. Health Aff (Millwood). 2017;36(10):1739–47. https://doi.org/10.1377/hlthaff.2017.0584.
12. Harris KM, Edlund MJ. Use of mental health care and substance abuse treatment among adults with co-occurring disorders. Psychiatr Serv. 2005;56(8):954–9. https://doi.org/10.1176/appi.ps.56.8.954.
13. Mojtabai R. Use of specialty substance abuse and mental health services in adults with substance use disorders in the community. Drug Alcohol Depend. 2005;78(3):345–54.

https://doi.org/10.1016/j.drugalcdep.2004.12.003.

14. Ali MM, Teich JL, Mutter R. Reasons for not seeking substance use disorder treatment: Variations by health insurance coverage. J Behav Health Serv Res. 2017;44(1):63–74. https://doi.org/10.1007/s11414-016-9538-3.
15. Hoover K, Lockhart S, Callister C, et al. Experiences of stigma in hospitals with addiction consultation services: A qualitative analysis of patients' and hospital-based providers' perspectives. J Subst Abuse Treat. 2022;138:108708. https://doi.org/10.1016/j.jsat.2021.108708.
16. Mojtabai R, Chen LY, Kaufmann CN, et al. Comparing barriers to mental health treatment and substance use disorder treatment among individuals with comorbid major depression and substance use disorders. J Subst Abuse Treat. 2014;46(2):268–73. https://doi.org/10.1016/j.jsat.2013.07.012.
17. Barry CL, McGinty EE, Pescosolido BA, et al. Stigma, discrimination, treatment effectiveness, and policy: Public views about drug addiction and mental illness. Psychiatr Serv. 2014;65(10):1269–72. https://doi.org/10.1176/appi.ps.201400140.
18. Andrews CM, Hinds OM, Lozano-Rojas F, et al. State funding for substance use disorder treatment declined in the wake of Medicaid expansion. Health Aff (Millwood). 2023;42(7):981–90. https://doi.org/10.1377/hlthaff.2022.01568.
19. Lindenfeld Z, Cantor JH, Chang JE. Trends in the availability of comprehensive services within outpatient substance use treatment facilities from 2018 to 2022. Am J Drug Alcohol Abuse. 2024;50(5):715–26. https://doi.org/10.1080/00952990.2024.2370462.
20. O'Malley DM, Abraham CM, Lee HS, et al. Substance use disorder approaches in US primary care clinics with national reputations as workforce innovators. Fam Pract. 2022;39(2):282–91. https://doi.org/10.1093/fampra/cmab095.
21. Zerden LS, Gaiser M, Daberko L, et al. State-by-state variation in the credentialing, training, supervision, and Medicaid reimbursement of the high-school, associate's, and bachelor's-level addiction counselor workforce. Subst Use Addctn J. 2025;46(4):859–70. https://doi.org/10.1177/29767342251330418.
22. Alegría M, Frank RG, Hansen HB, et al. Transforming mental health and addiction services. Health Aff (Millwood). 2021;40(2):226–34. https://doi.org/10.1377/hlthaff.2020.01472.
23. Kress CB, Schlesinger S. The prevalence of comorbidities and substance use disorder. Nurs Clin North Am. 2023;58(2):141–51. https://doi.org/10.1016/j.cnur.2023.02.007.
24. Mericle AA, Ta Park VM, Holck P, et al. Prevalence, patterns, and correlates of co-occurring substance use and mental disorders in the United States: Variations by race/ethnicity. Compr Psychiatry. 2012;53(6):657–65. https://doi.org/10.1016/j.comppsych.2011.10.002.
25. Najt P, Fusar-Poli P, Brambilla P. Co-occurring mental and substance abuse disorders: A review on the potential predictors and clinical outcomes. Psychiatry Res. 2011;186(2–3):159–64. https://doi.org/10.1016/j.psychres.2010.07.042.

26. Saani Inusah AH, Wu M, Babyak Z et al. Healthcare utilization among adults with co-occurring substance use and mental health disorders (2018–2023): A study based on All of Us program. medRxiv [preprint]. 2026:2026.01.28.26344935. https://doi.org/10.64898/2026.01.28.26344935
27. Andersen RM. Revisiting the behavioral model and access to medical care: Does it matter? J Health Soc Behav. 1995;36(1):1–10.
28. Andersen RM. National health surveys and the behavioral model of health services use. Med Care. 2008;46(7):647–53. https://doi.org/10.1097/MLR.0b013e31817a835d.
29. Babitsch B, Gohl D, von Lengerke T. Re-revisiting Andersen's Behavioral Model of Health Services Use: A systematic review of studies from 1998–2011. Psychosoc Med. 2012;9:Doc11. https://doi.org/10.3205/psm000089.
30. Graham A, Hasking P, Brooker J, et al. Mental health service use among those with depression: An exploration using Andersen's behavioral model of health service use. J Affect Disord. 2017;208:170–6. https://doi.org/10.1016/j.jad.2016.08.074.
31. Ober AJ, Watkins KE, McCullough CM, Setodji CM, Osilla K, Hunter SB. Patient predictors of substance use disorder treatment initiation in primary care. J Stud Alcohol Drugs. 2018;90:64–72. https://doi.org/10.1016/j.jsat.2018.04.004.
32. Center for Behavioral Health Statistics and Quality. 2023 National Survey on Drug Use and Health (NSDUH): Methodological summary and definitions. Substance Abuse and Mental Health Services Administration. 2024. Available at: https://www.samhsa.gov/data/report/2023-methodological-summary-and-definitions
33. Substance Abuse and Mental Health Services Administration. Key substance use and mental health indicators in the United States: Results from the 2024 National Survey on Drug Use and Health (HHS Publication No. PEP25-07-007, NSDUH Series H-60). Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. 2025. Available at: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health/national-releases
34. Substance Abuse and Mental Health Services Administration. Key substance use and mental health indicators in the United States: Results from the 2022 National Survey on Drug Use and Health (HHS Publication No. PEP23-07-01-006, NSDUH Series H-58). Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration., 2023. Available at: https://www.samhsa.gov/data/report/2022-nsduh-annual-national-report
35. Heatherton TF, Kozlowski LT, Frecker RC, et al. The Fagerström Test for Nicotine Dependence: A revision of the Fagerström Tolerance Questionnaire. Br J Addict. 1991;86(9):1119–27. https://doi.org/10.1111/j.1360-0443.1991.tb01879.x.
36. Moore J, Choi N, DiNitto D. The association of substance use disorder (SUD) type and other factors in SUD recognition among U.S. adults. J Psychoact Drugs. 2025. https://doi.org/10.1080/02791072.2025.2577303.

37. Epstein JF, Hourani LL, Heller DC. Predictors of treatment receipt among adults with a drug use disorder. Am J Drug Alcohol Abuse. 2004;30(4):841–69. https://doi.org/10.1081/ADA-200037550.
38. Hai AH, Morrison M, Beadleston A, et al. Adults on probation and parole who receive substance use treatment: An analysis of correlates in a national sample, 2015–2021. J Psychiatr Res. 2025;185:154–60. https://doi.org/10.1016/j.jpsychires.2025.03.035.
39. Hiller ML, Knight K, Simpson DD. Recidivism following mandated residential substance abuse treatment for felony probationers. Prison J. 2006;86(2):230–41. https://doi.org/10.1177/0032885506287951.
40. Moore J, Renn T, Veeh C et al. Differences in MOUD receipt by legal referral type in outpatient treatment. J Subst Use Addict Treat. 2026:209888. https://doi.org/10.1016/j.josat.2026.209888
41. Allison P. *When can you safely ignore multicollinearity?* Statistical Horizons. 2012. Available at: https://statisticalhorizons.com/multicollinearity/
42. Bearnot B, Rigotti NA, Baggett TP. Access to treatment for alcohol use disorder at US health centers: A national study. J Gen Intern Med. 2018;33(12):2040–2. https://doi.org/10.1007/s11606-018-4631-3.
43. Bearnot B, Fine DR, Rigotti NA, et al. Access to treatment for drug use disorder at US health centers: A national study. J Gen Intern Med. 2019;34(12):2723–5. https://doi.org/10.1007/s11606-019-05043-1.
44. Le P, Rich JJ, Bernstein EY, et al. Disparities in treatment for alcohol use disorder among All of Us participants. Am J Psychiatry. 2024;181(11):973–87. https://doi.org/10.1176/appi.ajp.20230730.
45. Martin CE, Parlier-Ahmad AB, Beck L, et al. Need for and receipt of substance use disorder treatment among adults, by gender, in the United States. Public Health Rep. 2022;137(5):955–63. https://doi.org/10.1177/00333549211041554.
46. Koob GF. Alcohol use disorder treatment: Problems and solutions. Annu Rev Pharmacol Toxicol. 2024;64:255–75. https://doi.org/10.1146/annurev-pharmtox-031323-115847.
47. Tarp K, Sari S, Nielsen AS. Why treatment is not an option: Treatment-naïve individuals suffering from alcohol use disorders' narratives about alcohol use and treatment seeking. Nordisk Alkohol Nark. 2022;39(4):437–52. https://doi.org/10.1177/14550725221082512.
48. Leslie M, Osborn CJ, Rumrill P, et al. Workplace discrimination experiences of Americans with alcohol use disorders and Americans with drug use disorders: A comparative analysis. Rehabil Couns Bull. 2020;65(3):185–96. https://doi.org/10.1177/0034355220970265.
49. Pickard JG, Sacco P, van den Berk-Clark C, et al. The effect of legal mandates on substance use disorder treatment completion among older adults. Aging Ment Health. 2020;24(3):497–503. https://doi.org/10.1080/13607863.2018.1544209.
50. Rosenberg A, Heimer R, Keene DE, et al. Drug treatment accessed through the criminal justice system: Participants' perspectives and uses. J Urban Health. 2019;96(3):390–9. https://doi.org/10.1007/s11524-018-0308-9.

51. Shearer RD, Winkelman TNA, Khatri UG. State-level variation in substance use treatment admissions among criminal legal-referred individuals. Drug Alcohol Depend. 2022;240:109651. https://doi.org/10.1016/j.drugalcdep.2022.109651.
52. Estrada MAG, Abraham AJ, Andrews CM, et al. Statewide efforts to address the opioid epidemic: Results from a national survey of single state agencies. J Subst Use Addict Treat. 2024;160:209309. https://doi.org/10.1016/j.josat.2024.209309.
53. Murrin S, .S. Department of Health and Human Services Office of Inspector General. *States' Use of Grant Funding for a Targeted Response to the Opioid Crisis.* U: Washington, DC, USA, 2020. Available online: https://oig.hhs.gov/documents/evaluation/3205/OEI-BL-18-00460-Complete%20Report.pdf
54. Yang LH, Wong LY, Grivel MM, et al. Stigma and substance use disorders: An international phenomenon. Curr Opin Psychiatry. 2017;30(5):378–88. https://doi.org/10.1097/YCO.0000000000000351.
55. Pattyn E, Verhaeghe M, Bracke P. The gender gap in mental health service use. Soc Psychiatry Psychiatr Epidemiol. 2015;50(7):1089–95. https://doi.org/10.1007/s00127-015-1038-x.
56. NeMoyer A, Cruz-Gonzalez M, Alvarez K, et al. Reducing racial/ethnic disparities in mental health service use among emerging adults: Community-level supply factors. Ethn Health. 2022;27(4):749–69. https://doi.org/10.1080/13557858.2020.1814999.
57. Yirenya-Tawiah A, Cubbin C. Racial and ethnic disparities in mental health service utilization during COVID-19. J Racial Ethn Health Disparities. 2025. https://doi.org/10.1007/s40615-025-02456-z.
58. •. Top of Form.
59. Harris J, Dalkin S, Jones L, et al. Achieving integrated treatment: A realist synthesis of service models and systems for co-existing serious mental health and substance use conditions. Lancet Psychiatry. 2023;10(8):632–43. https://doi.org/10.1016/S2215-0366(23)00104-9.
60. McClellan C, Maclean JC, Saloner B, et al. Integrated care models and behavioral health care utilization: Quasi-experimental evidence from Medicaid health homes. Health Econ. 2020;29(9):1086–97. https://doi.org/10.1002/hec.4027.
61. Reilly J, Meurk C, Sara GE, et al. Comprehensive care processes for substance use disorders in adult mental health services: A systematic review. Aust N Z J Psychiatry. 2025;59(3):209–23. https://doi.org/10.1177/00048674241312790.
62. The Commonwealth Fund. Integrating primary care and behavioral health to address the behavioral health crisis. The Commonwealth Fund. 2022. Available at: https://www.commonwealthfund.org/publications/explainer/2022/sep/integrating-primary-care-behavioral-health-address-crisis
63. Wetzler S, Counts N, Schwartz B, et al. Impact of New York State's Health Home Model on health care utilization. Psychiatr Serv. 2023;74(9):1002–5. https://doi.org/10.1176/appi.ps.20220264.

Figures

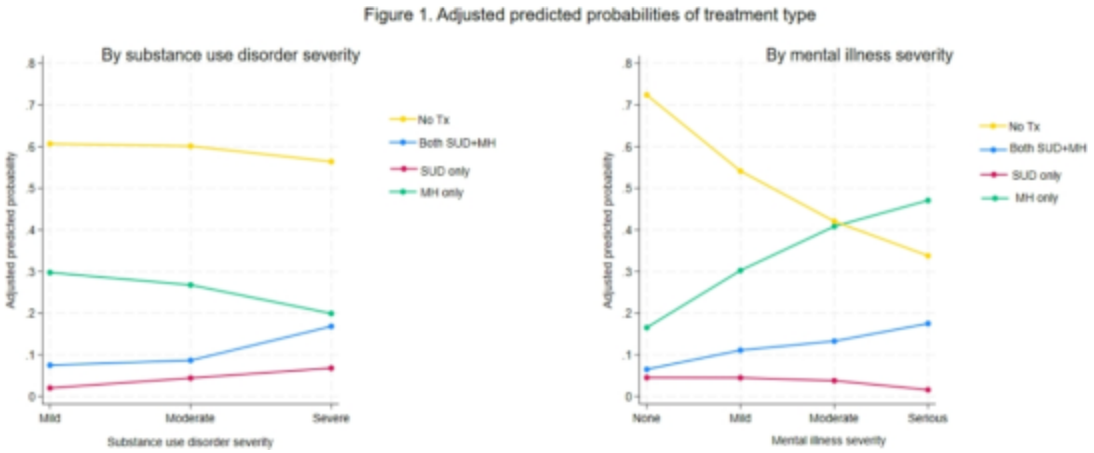


Figure 1

Adjusted predicted probabilities of treatment type