



# Mental Health Treatment Use, Perceived Treatment Need, and Reasons for Non-Use Among U.S. Adults with Serious Suicidal Thoughts During the COVID-19 Pandemic

Namkee G. Choi<sup>1</sup> · C. Nathan Marti<sup>1</sup> · Bryan Y. Choi<sup>2</sup>

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## Abstract

Analyzing the 2021 National Survey on Drug Use and Health data with generalized linear models, we examined: (1) COVID pandemic-related and other correlates of mental health treatment use and unmet perceived treatment need among U.S. adults who experienced serious suicidal thoughts ( $N=3,177$ ); and (2) correlates of self-reported reasons for not receiving treatment. We found that 61% used any mental health treatment, and 48% of users and 37% of nonusers reported perceived treatment need. Significant correlates of treatment use were demographic factors, insurance, major depressive disorder, and illicit drug use disorder. Significant correlates of perceived treatment need were age 18–34, some college education, and major depressive episode. Perceived negative effect of the COVID pandemic on mental health was a significant factor for both treatment use and perceived need. The most frequent reasons for not getting treatment were the cost of treatment or lack of insurance and stigma-related concerns.

**Keywords** Suicide Ideation · Mental Health care · Major Depressive Episode · COVID · Health Insurance

## Introduction

The Centers for Disease Control and Prevention (CDC) reported that in 2021, 12.3 million adults in the U.S. seriously thought about suicide, 3.5 million made plans for suicide, 1.7 million attempted suicide, and a little over 46,000 adults (of more than 48,000 for all age groups) died by suicide (CDC, 2023). Suicide rates increased significantly from 2006 to 2018 and had a slight decrease in 2019 and 2020; however, the rate increased significantly again in 2021 (Garnett & Curtin, 2023). A recent CDC data also showed that

the number of deaths by suicide increased 2.6% from 2021 to 2022 (CDC, 2023).

Given the serious emotional, physical, and economic impacts of suicidal behaviors on individuals who engage in such behaviors, family members, and the community, it is imperative to provide effective preventive interventions for individuals with suicidal thoughts. While suicide is often precipitated by multiple bio-psycho-social risk factors (Lengvenyte et al., 2021; O'Connor & Nock, 2014; Richardson et al., 2023), research has shown hopelessness, severe depression, and psychiatric comorbidity (anxiety disorder, bipolar disorder, post-traumatic stress disorder, and/or alcohol and other substance use disorders) to be strong risk factors for adult suicidality (Brådvik, 2018; Bloomfield-Claggett et al., 2022; Conejero et al., 2018; Cogle et al., 2009; De La Vega et al., 2018; Liu et al., 2022; Onaemo et al., 2022; Ribeiro et al., 2018; Rojas et al., 2014; Sidaway et al., 2015). Thus, it is crucial that suicide prevention approaches include access to mental health treatment for those with suicidal thoughts.

An earlier systematic review and meta-analysis of 13 studies of psychotherapy for depression on hopelessness and suicidality among adults found insufficient evidence

✉ Namkee G. Choi  
nchoi@austin.utexas.edu

C. Nathan Marti  
nate.marti@utexas.edu

Bryan Y. Choi  
bchoiemdoc@gmail.com

<sup>1</sup> Steve Hicks School of Social Work, University of Texas at Austin, 1925 San Jacinto Blvd, Austin, TX 78712, USA

<sup>2</sup> Department of Emergency Medicine, Philadelphia College of Osteopathic Medicine and BayHealth, Philadelphia, USA

that depression treatment can reduce suicidality (Cuijpers et al., 2013). However, other studies found that psychotherapeutic and/or pharmacological interventions were effective in reducing depressive symptoms and suicidal ideation in depressed individuals. For example, a study found that both interpersonal therapy and antidepressant medications were effective in reducing suicidal ideation (Weitz et al., 2014). A meta-analysis of mindfulness-based cognitive therapy involving seven randomized controlled trials also found that the intervention significantly reduced general depressive symptoms and suicidal ideation (Zhang et al., 2022). A meta-analysis of internet-based cognitive behavioral therapy also found it to be associated with a significant reduction in suicidal ideation (Büscher et al., 2020). For older adults, brief problem-solving therapy and primary care-based depression screening and management were effective at reducing depressive symptoms, suicidal ideation, and preventing suicidal behaviors (Choi et al., 2016; Gustavson et al., 2016; Kirkham et al., 2016; Okolie et al., 2017).

Research has shown that about one half of U.S. adults with past-year suicidal ideation, plans, or attempts reported contact with any type of mental health services, with higher likelihood of such contacts among women, non-Hispanic whites, and those with more severe clinical state and poorer general health (Choi et al., 2015; Stanley et al., 2015). Conversely, along with male gender and minority ethnicity, lower psychological distress, absence of mental health diagnosis, lower severity of suicidality, better perceived general health, lower use of medical services, and lower perceived need for treatment were associated with a higher likelihood of non-receipt of mental health treatment among people with suicidality (Tang et al., 2022).

The lower rate of help-seeking among men with mental health problems and suicidality has been attributed to anticipated stigma (in the work place and from those other than loved ones) and self-reliance beliefs (i.e., beliefs in one's ability to handle problems), especially among older men and in areas where mental health service resources are rare (Ewert, 2021; Keller & Owens, 2022; Mackenzie et al., 2010; Oliffe et al., 2019; Vogt et al., 2014). Black and Hispanic individuals are significantly less likely than non-Hispanic white individuals to report suicidal ideation (in part due to the protective effect of religiosity), but also significantly less likely to use mental health services, especially outpatient services (Bommersbach et al., 2022; Sheehan et al., 2018). Stigma, mistrust of traditional mental health services, religiosity, and affordability issues are deterrent to accessing formal mental health treatment among Blacks, especially Black men, and older adults (Conner et al., 2010; Fanegan et al., 2022; Hudson et al., 2018). Other studies also found that stigma, fear of negative impact of help-seeking, preference for self-management, fear of hospitalization,

and structural and financial factors (e.g., availability of treatment, cost, lack of insurance coverage, time) are key barriers to mental health treatment use among suicidal individuals regardless of age, gender, and race/ethnicity (Hom et al., 2015; Voelker et al., 2021).

The COVID-19 pandemic that began in 2020 has also added a new dimension to mental health and mental health treatment utilization. Some people were more vulnerable than others to the psychosocial effects of the global pandemic and lockdown, and the prevalence of suicidal ideation increased significantly among both non-clinical and clinical samples, although there was a nonsignificant downward trend in suicide in 2020 (Elbogen et al., 2021; Killgore et al., 2020; Raifman et al., 2022; Yan et al., 2023). With respect to mental health service encounters, in-person mental health encounters were reduced by half during the early months of the pandemic, but there was a rapid recovery of service delivery attributable to telehealth uptake (accounting for 48% of average monthly encounters), with only a 0.7% decrease in encounter volumes during the pandemic compared to pre-pandemic times (Zhu et al., 2022). However, Blacks, Hispanics, Asians, people living alone, people with lower incomes, and rural area residents were less likely to have accessed telehealth services (Lin et al., 2023; Zhu et al., 2022).

Both physical and mental health service use have traditionally been examined with Andersen's Behavioral Model of Health Services Use as a conceptual and analytic framework (Andersen & Newman, 1973; Andersen, 1995; Dhingra et al., 2010; NeMoyer et al., 2022). The model posits that healthcare service use is determined by predisposing factors (individual biological, demographic, and social-structural characteristics as well as health beliefs), enabling resources (that facilitate access to care), and need (perceived/evaluated physical and/or mental health problem severity, e.g., a major depressive episode, presence of a suicide attempt within the year). Previous studies found significant enabling factors of mental health treatment use to include social connectedness, having helpful knowledge about mental illness, previous experience with mental health service use, income, health insurance, having a primary care doctor, employment, and urban residence (Dhingra et al., 2010; Graham et al., 2017; Simo et al., 2018; Vasiliadis et al., 2023). Need factors tend to be the strongest predictor of both physical (especially among medically vulnerable population groups, e.g., older adults and poor/uninsured individuals; Babitsch et al., 2012) and mental health service use (Graham et al., 2017; Vasiliadis et al., 2023).

With suicide rates increasing again in 2021 and 2022, more research is needed to examine the associations between the COVID pandemic-related factors, along with other predisposing, enabling, and need factors, and mental

health treatment use and unmet perceived treatment need among those who experienced serious suicidal thoughts. In this study, based on the 2021 National Survey on Drug Use and Health (NSDUH) and Andersen's Behavioral Model, we first examined the predisposing, enabling, and need factors, including perceived negative effect of the COVID pandemic, associated with mental health treatment use and unmet perceived treatment need among U.S. adults who had serious suicidal thoughts. We then examined self-reported reasons for not receiving treatment and the correlates of the reasons. Based on previous study findings of significant predisposing, enabling, and need factors for mental health service use and the pandemic's negative mental health effects, as discussed above, the study hypotheses were: (H1) the likelihood of any past-year mental health treatment use would be higher among younger (age < 50) individuals, women, and those with any health insurance, lower self-rated health, past-year major depressive episode, past-year suicide plan or attempt, any substance use disorder, and the perceived negative effect of COVID on mental health; however, the likelihood would be lower among men, racial/ethnic minority groups, those with less than college education and income below 2x poverty line, and those in small or non-metropolitan areas; and (H2) the likelihood of unmet perceived mental health treatment need would be higher among younger individuals, women, those without any health insurance, small or non-metropolitan area residents, and those with past-year major depressive episode, past-year suicide plan or attempt, any substance use disorder, and the perceived negative effect of COVID on mental health. Additionally, we hypothesized that (H3) self-reported reasons for not receiving mental health treatment despite perceived need would be cost and/or a lack of insurance, stigma concerns, lack of perceived need for treatment at certain times, doubts about treatment efficacy, and self-reliance beliefs, in addition to structural barriers (time, transportation, inconvenience, and COVID-related access delays). We further hypothesized that the correlates of one or more reasons would be younger age, racial/ethnic minority status, lack of health insurance, small- or non-metropolitan area residence, and the perceived negative effect of COVID on mental health. The findings significantly add to the knowledge base regarding mental health treatment use and barriers to treatment-seeking among U.S. adults with serious suicidal ideation during the COVID pandemic and provide empirical data on ways to improve mental health treatment access among these adults.

## Methods

### Data Source

As in previous years, the Substance Abuse and Mental Health Services Administration collected 2021 NSDUH data from the U.S. civilian, non-institutionalized, aged 12+ population to measure the prevalence of substance use, mental and substance use disorders, behavioral health treatment, and physical/functional health and healthcare use. NSDUH uses a multi-stage, stratified sampling design, with states as the first level of stratification, and an independent, multistage area probability sample within each state and the District of Columbia (Center for Behavioral Health Statistics and Quality [CBHSQ], 2022). Because of the ongoing COVID-19 pandemic, NSDUH data collection in 2021 was done using both in-person and web-based modes. In-person data collection commenced in approved areas based on COVID-19 infection metrics after potential respondents were first given the opportunity to complete the survey via the web. Where available, respondents also could transition between data collection modes (CBHSQ, 2022). Over the four quarters, web-based data collection decreased, i.e., 76.6% of interviews in Quarter 1 to 41.5% of interviews in Quarter 4. However, the public-use NSDUH data do not include indicators of the data collection method each respondent used. Given the different data collection methods used in 2021, pooling of NSDUH data from previous years or comparisons of 2021 with previous years' data are not warranted (CBHSQ, 2022).

### Participants and Procedures

The 2021 NSDUH public use data set includes responses from a total of 58,034 individuals who completed an in-person or web-based NSDUH survey. Of these, 10,743 were age 12–17, and 47,291 were age 18 years or older (adults). In the present study, we focused on 47,291 adults, and then 3,177 (representing over 12 million U.S. adults) of those who reported serious suicidal thoughts in the preceding 12 months.

### Measures

#### Past-year Suicidal Thoughts

In NSDUH, this was assessed with a question, “*At any time in the past 12 months, that is from [date] up to and including today, did you seriously think about trying to kill yourself?*” Response categories were yes (= 1) or no (= 0).

### Past-year Suicide Plans and Attempts

These were measured with questions: “*During the past 12 months, did you make any plans to kill yourself?*” and “*During the past 12 months, did you try to kill yourself?*” Response categories to each question were yes (= 1) or no (= 0).

### Past-year Mental Health Treatment Use

In NSDUH, this was measured with questions about the receipt of treatment, counseling, or alternative services for any problem with emotions, nerves, or mental health (including major depressive episode), but not treatment for alcohol or drug use. It included the following: (1) inpatient treatment: overnight or longer stay in a hospital or other facility (private or public psychiatric hospital, psychiatric or medical unit of a general hospital, other type of hospital, residential treatment center, or other some facility); (2) outpatient mental health treatment at an outpatient mental health center, private therapist’s office, non-clinic doctor’s office, outpatient medical clinic, day treatment program, or other outpatient setting (e.g., emergency department, school/university setting); (3) intake of any prescription medication; (4) treatment from alternative service providers including acupuncturist or acupressurist, chiropractor, herbalist, in-person support group or self-help group, Internet support group or chat room, spiritual or religious advisor, other healer, telephone hotline, nurse, occupational therapist, or massage therapist; and/or (5) virtual treatment: any professional counseling, medication, or treatment over the phone, by email, or through video calling.

### Unmet Perceived Mental Health Treatment Need

This was assessed with a question, regardless of any mental health service use or nonuse: “*During the past 12 months, was there any time when you needed mental health treatment or counseling for yourself but didn’t get it?*” Response categories were yes (= 1) or no (= 0).

### Reasons for not Receiving Mental Health Treatment

NSDUH asked respondents who reported perceived treatment need the reasons for not receiving treatment. The list of reasons included: (1) treatment cost or lack of or insufficient insurance coverage; (2) stigma concerns, including fear of neighbors’ negative opinion or negative effect on job, fear of being committed or medicated, confidentiality concerns, not wanting others to find out, or sense of shame, embarrassment, or fear; (3) not knowing where to go, no available treatment, waitlist, or too much red tape; (4) not

thinking that treatment was needed or it would help at that time, lack of motivation, or self-reliance beliefs; (5) no time, no transportation, or inconvenience, and (6) COVID-related problems (reduced access, closure, waitlist, dislike of telehealth, fear of exposure to COVID).

### Predisposing and Enabling Factors

Predisposing factors were age (18–25 years, 26–34 years, 35–49 years, 50–64, and 65 + years [to protect respondents’ anonymity, NSDUH’s public-use data files do not provide chronological age]), gender, and race/ethnicity. Enabling factors were marital status, education ( $\leq$  high school, some college or associate degree, bachelor’s degree), family income (living in poverty, up to 2 times poverty, and more than 2 times poverty), health insurance (yes = 1, no = 0), and county of residence (metropolitan, small metropolitan, nonmetropolitan). Work status was shown for descriptive purposes only.

### Physical and Behavioral Health Need Factors

Physical health condition was measured with self-rated health (fair or poor = 1 through excellent = 4). Behavioral health conditions included past-year major depressive episode, suicide plan, suicide attempt, substance use disorders (nicotine, alcohol, cannabis, illicit drugs excluding cannabis), and the perception that the COVID pandemic had a significant negative effect on one’s mental health.

### Analysis

We used Stata/MP 18’s svy function (College Station, TX) and subpop command in all analyses to account for NSDUH’s multi-stage, stratified sampling estimates to ensure that variance estimates incorporate the full sampling design. All estimates presented in this study are weighted except sample sizes. First, we used Pearson’s  $\chi^2$  tests and t-tests to compare characteristics of adults who reported past-year serious suicidal thoughts to those who did not. Second, focusing on those who had serious suicidal thoughts, we used Pearson’s  $\chi^2$  tests and t-tests to compare (1) any mental health treatment users to nonusers, and (2) reporters of unmet perceived treatment need to non-reporters with respect to predisposing, enabling, and need factors. Third, we fit two generalized linear models (GLM) for a Poisson distribution with a log link function to test H1 (correlates of any mental health treatment use) and H2 (correlates of unmet perceived treatment need). Finally, we fit five GLMs to examine the correlates of each category of reasons for no treatment receipt. Due to their small numbers, COVID-related reasons were combined into the no-time or

no-transportation reasons. GLM model results are presented as incidence rate ratios (IRR) with 95% confidence intervals (CI). We used the Poisson distribution with a log link rather than logistic regression models because odds ratios exaggerate the true relative risk to some degree when the event (i.e., mental health treatment use, perceived treatment need, and reasons for not receiving treatment) is a common (i.e., > 10%) occurrence (Grimes & Schulz, 2008). As a preliminary diagnostic, variance inflation factor (VIF), using a cut-off of 2.50 (Allison, 2012), from linear regression models was used to assess multicollinearity among covariates. VIF diagnostics indicated that multicollinearity was not a concern once the work status variable was removed from the GLM models. Significance was set at  $p < .05$ .

## Results

### Characteristics of Adults with Serious Suicidal Thoughts

Table 1 shows that 4.8% of U.S. adults age 18+ in 2021 reported serious suicidal thoughts in the preceding 12 months. More than a third of those who had serious suicidal thoughts were under age 26 and nearly a quarter were between ages 26 and 34. More than one half were women and nearly two thirds were non-Hispanic whites. Compared to those who did not have suicidal thoughts, those who did were more disadvantaged in all enabling resources (education, work status, health insurance). More than a quarter of those who had suicidal thoughts made plans for suicide, and nearly 13% attempted suicide. Compared to 6% of those who did not have suicidal thoughts, 55% of those who did had past-year major depressive episode. The rates of substance use disorders among those who had suicidal thoughts were also significantly higher than among those who did not have suicidal thoughts (e.g., 26% vs. 11% for alcohol use disorder; 22% vs. 5% for cannabis use disorder; and 14% vs. 3% for illicit drug use disorder). More than a third of those who had suicidal thoughts (vs. 17% of those who did not have suicidal thoughts) reported that COVID had a significant negative effect on their mental health. Overall, 61% (vs. 22% of those who did not have suicidal thoughts) received any mental health treatment, and 44% (vs. 6% of those who did not have suicidal thoughts) reported perceived mental health treatment need at any time in the past year but did not receive treatment.

### Characteristics of Mental Health Treatment Users Among those who had Serious Suicidal Thoughts

The middle columns of Table 1 show that treatment users, compared to treatment nonusers, included higher proportions of those who were older, women (61% vs. 47%), non-Hispanic white (71% vs. 54%), and married (32% vs. 19%). Treatment users also included higher proportions of those who had a college degree (28% vs. 18%), any health insurance (91% vs. 78%), major depressive episode (64% vs. 41%), and illicit drug use disorder (18% vs. 9%). Higher proportions of treatment users also reported significant negative effects of COVID on their mental health (40% vs. 26%) and COVID-related delay or cancellation in mental health appointments (45% vs. 16%). Treatment users also included higher proportions of those who made suicide plans (28% vs. 22%) and those who reported perceived treatment need (but did not get treatment) (48% vs. 37%), but they did not significantly differ from treatment nonusers on suicide attempt (14% vs. 10%). Of treatment users, 69% had pharmacotherapy, 53% outpatient treatment, 33% alternative therapy, and 12% inpatient stay. In all, 65% reported receiving virtual therapy.

### Characteristics of those with Unmet Perceived Treatment need Among those who had Serious Suicidal Thoughts

The last three columns of Table 1 show that compared to those who did not report unmet perceived treatment need, those who did were younger and included higher proportions of women (65% vs. 48%), those with some college education (46% vs. 36%), those with major depressive episode (71% vs. 42%), and those with cannabis use disorder (26% vs. 19%). Compared to those who did not report unmet perceived treatment need, those who reported unmet need also included a higher proportion of individuals who made suicide plans (30% vs. 22%), but they did not significantly differ on suicide attempt (12% vs. 13%).

The most frequently mentioned reasons for not receiving treatment despite perceived need were treatment cost or lack of or insufficient insurance coverage (51%), followed by stigma concerns (40%), not having thought that treatment was needed at the time or would be effective or self-reliance beliefs (36%), not knowing where to go or unavailability of treatment programs (36%), lack of time or transportation (20%), and COVID-related problems (1.5%).

**Table 1** Characteristics of U.S. adults who had serious suicidal thoughts and any mental health treatment receipt and perceived mental health treatment need among those who had serious suicidal thoughts

	All adults age 18+			Adults who had serious suicidal thoughts					
	Serious suicidal thoughts			Mental health treatment use			Unmet perceived mental health treatment need		
	No N=44,114 (95.2%)	Yes N=3,177 (4.8%)	P	No N=1,217 (39.1%)	Yes N=1,960 (60.9%)	P	No N=1,569 (56.4%)	Yes N=1,608 (43.6%)	P
Age group (%)			<0.001			0.031			<0.001
18–25	12.1	35.0		39.0	32.5		27.8	44.4	
26–34	15.4	24.0		27.6	21.7		21.5	27.3	
35–49	24.7	21.3		16.4	24.4		24.0	17.7	
50–64	25.3	13.5		11.1	15.0		16.8	9.1	
65+	22.5	6.2		5.9	6.4		9.9	1.5	
Female (%)	51.1	55.5	0.003	46.6	61.3	<0.001	48.3	64.9	<0.001
Race/ethnicity (%)			0.003			<0.001			0.314
Non-Hispanic White	62.1	64.5		54.4	70.9		65.0	63.8	
Non-Hispanic Black	12.1	12.0		16.0	9.5		12.6	11.3	
Hispanic	17.1	15.5		19.7	12.8		14.4	16.8	
Asian/Pacific Islander	6.4	3.9		5.3	3.0		4.7	2.9	
American Indian/ Alaska Native	0.6	0.9		1.3	0.7		0.8	1.1	
Multi-racial	1.7	3.2		3.3	3.1		2.4	4.2	
Marital status (%)			<0.001			0.023			0.333
Married	49.2	26.4		19.2	31.0		28.6	23.6	
Widowed	6.4	2.6		3.3	2.1		2.7	2.5	
Divorced/separated	14.8	12.9		12.8	13.0		13.8	11.7	
Never married	29.6	58.1		64.7	53.9		54.9	62.2	
Education (%)			<0.001			<0.001			0.003
≤ High school	39.0	35.6		44.0	30.2		37.7	32.8	
Some college/associ- ate degree	29.6	40.3		38.0	41.8		35.8	46.2	
College degree	31.4	24.1		18.0	28.0		26.5	21.0	
Income (%)			<0.001			0.078			0.571
Below poverty	14.5	21.6		20.8	22.1		21.4	21.9	
Up to 2x poverty	19.8	24.0		28.5	21.1		22.8	25.5	
More than 2x poverty	65.7	54.4		50.8	56.8		55.9	52.6	
Work status (%)			<0.001			0.099			0.316
Not working	38.1	31.4		29.2	32.7		32.6	29.8	
Unemployed	4.9	11.4		14.5	9.4		12.1	10.5	
Working part-time	11.8	16.5		15.6	17.0		14.7	18.8	
Working full-time	45.3	40.8		40.6	40.8		40.7	40.8	
Any health insurance coverage (%)	90.2	85.8	<0.001	78.2	90.6	<0.001	86.1	85.4	0.801
Residential area (%)			0.030			0.235			0.092
Large metropolitan area	54.8	49.4		47.0	51.0		51.0	47.4	
Small metropolitan area	30.4	34.7		37.9	32.6		31.9	38.2	
Nonmetropolitan area	14.8	15.9		15.2	16.4		17.1	14.4	
Self-ratings of health (1 = fair, 4 = very good/excellent), M (SE)	2.57 (0.01)	2.19 (0.03)	<0.001	2.36 (0.05)	2.08 (0.05)		2.23 (0.05)	2.14 (0.04)	0.195
Planned suicide (%)	0.1	25.5	<0.001	21.8	27.9	0.046	22.0	30.1	0.009
Attempted suicide (%)	0.06	12.7	<0.001	10.4	14.2	0.059	13.1	12.2	0.694
Major depressive episode (MDE) (%)	6.0	54.8	<0.001	41.3	63.5	<0.001	42.4	70.9	<0.001
Nicotine dependence (%)	8.9	14.1	<0.001	11.8	15.5	0.267	15.5	12.1	0.106
Alcohol use disorder (%)	10.7	25.8	<0.001	23.5	27.3	0.236	24.1	28.1	0.254
Cannabis use disorder (%)	5.0	21.8	<0.001	23.8	20.6	0.195	18.6	25.9	0.013



**Table 1** (continued)

	All adults age 18+			Adults who had serious suicidal thoughts					
	Serious suicidal thoughts			Mental health treatment use			Unmet perceived mental health treatment need		
	No <i>N</i> =44,114 (95.2%)	Yes <i>N</i> =3,177 (4.8%)	<i>P</i>	No <i>N</i> =1,217 (39.1%)	Yes <i>N</i> =1,960 (60.9%)	<i>P</i>	No <i>N</i> =1,569 (56.4%)	Yes <i>N</i> =1,608 (43.6%)	<i>P</i>
Illicit drug (not cannabis) disorder (%)	3.3	14.4	<0.001	9.2	17.7	0.001	12.9	16.2	0.172
Significant negative impact of COVID on mental health (%)	12.7	34.7	<0.001	25.8	40.4	<0.001	27.7	43.8	<0.001
Delays/cancellations in mental health appointment due to COVID (%)	17.0	33.5	<0.001	15.7	45.0	<0.001	29.5	38.8	0.011
Any mental health treatment (%)	22.1	60.9	<0.001	0	100	<0.001	56.5	66.7	0.002
Perceived mental health treatment need (%)	6.0	43.6		37.2	47.8	0.002	0	100	<0.001
Type of mental health treatment received (%)									
Inpatient					11.9		5.8	9.2	0.042
Outpatient					52.5		31.0	33.3	0.431
Prescription medication					69.3		39.9	45.2	0.093
Alternative medicine					32.5		17.6	22.6	0.076
Virtual (tele) treatment					64.8		36.1	43.8	0.013
Reasons for not receiving treatment despite perceived need (%)									
Cost, lack of insurance								50.6	
Stigma concerns								40.4	
Not thinking treatment was needed/would work, self-reliance beliefs								36.3	
Not knowing where to go, program unavailability								36.1	
Lack of time, transportation, inconvenience								20.3	
COVID-related reasons (closure, telehealth dislike, fear of exposure)								1.5	

### Correlates of Mental Health Treatment Use: Generalized Linear Modeling Results

The second column of Table 2 shows that the likelihood of treatment use was higher among women (IRR = 1.20, 95% CI = 1.10–1.31) and those who had any health insurance (IRR = 1.20, 95% CI = 1.10–1.31), major depressive episode (IRR = 1.26, 95% CI = 1.16–1.37), and illicit drug use disorder (IRR = 1.14, 95% CI = 1.02–1.26), and those who reported significant negative mental health effect of the COVID pandemic (IRR = 1.16, 95% CI = 1.06–1.26). On the other hand, the likelihood of treatment use was lower among Blacks (IRR = 0.79, 95% CI = 0.65–0.96), Asian/Pacific Islanders (IRR = 0.75, 95% CI = 0.56–0.99), never married individuals (IRR = 0.85, 95% CI = 0.76–0.95), those who had high school or lower education (IRR = 0.78, 95% CI = 0.66–0.93), and those who had higher self-rated health (IRR = 0.91, 95% CI = 0.86–0.96).

### Correlates of Unmet Perceived Treatment Need: Generalized Linear Modeling Results

The third column of Table 2 shows that the likelihood of unmet perceived treatment need was higher among younger age groups (IRR = 2.59, 95% CI = 1.73–3.89, IRR = 2.29, 95% CI = 1.53–3.42, and IRR = 1.59, 95% CI = 1.07–2.36 for the 18–25, 26–34, and 35–49 age groups, respectively), women (IRR = 1.26, 95% CI = 1.11–1.43), those with some college education/associate degree (IRR = 1.20, 95% CI = 1.03–1.39), residents in small metropolitan areas (IRR = 1.15, 95% CI = 1.02–1.29), those who had a major depressive episode (IRR = 1.68, 95% CI = 1.42–1.98), and those who reported significant negative impact of the COVID pandemic on their mental health (IRR = 1.19, 95% CI = 1.02–1.39).

### Correlates of Reasons for not Receiving Treatment: Generalized Linear Modeling Results

Table 3 shows that the likelihood of cost or insurance reasons was lower among those who had any insurance

**Table 2** Predisposing, enabling, need, and COVID factors associated with mental health treatment use and unmet perceived treatment need among adults who had serious suicidal thoughts: GLM results

	Mental health treatment use vs. nonuse IRR (95% CI)	Unmet perceived treatment need vs. no perceived need IRR (95% CI)
Received any mental health treatment		1.15 (0.98–1.36)
Age group: vs. 50+ years		
18–25	0.97 (0.80–1.17)	2.59 (1.73–3.89)***
26–34	0.91 (0.76–1.09)	2.29 (1.53–3.42)***
35–49	1.05 (0.91–1.23)	1.59 (1.07–2.36)*
Female vs. Male	1.20 (1.10–1.31)***	1.26 (1.11–1.43)**
Race/ethnicity: vs. Non-Hispanic White		
Non-Hispanic Black	0.79 (0.65–0.96)*	1.07 (0.86–1.34)
Hispanic	0.84 (0.70–1.02)	1.08 (0.88–1.33)
Asian/Pacific Islander	0.75 (0.56–0.99)*	0.88 (0.60–1.31)
American Indian/ Alaska Native	0.74 (0.44–1.25)	0.92 (0.61–1.39)
Multi-racial	0.94 (0.73–1.20)	1.38 (0.98–1.93)
Marital status: vs. Married		
Widowed	0.77 (0.45–1.33)	1.90 (0.92–3.93)
Divorced/separated	0.88 (0.75–1.03)	1.00 (0.80–1.25)
Never married	0.85 (0.76–0.95)**	0.79 (0.66–0.94)*
Education: vs. College degree		
≤ High school	<u>0.78 (0.66–0.93)**</u>	<u>1.08 (0.89–1.31)</u>
Some college/associate degree	0.89 (0.79–1.01)	1.20 (1.03–1.39)*
Income: >2x poverty		
Below poverty	1.06 (0.94–1.19)	0.98 (0.83–1.15)
Up to 2x poverty	0.90 (0.78–1.05)	0.95 (0.79–1.13)
Any health insurance coverage	1.50 (1.21–1.85)***	0.99 (0.83–1.18)
Residential area: vs. Large metropolitan area		
Small metropolitan area	0.92 (0.85–1.00)	1.15 (1.02–1.29)*
Nonmetropolitan area	0.98 (0.86–1.12)	1.03 (0.85–1.25)
Self-ratings of health	0.91 (0.86–0.96)**	0.96 (0.89–1.03)
Planned suicide	1.05 (0.95–1.16)	1.12 (0.95–1.32)
Attempted suicide	1.09 (0.97–1.22)	0.75 (0.61–0.92)**
Major depressive episode (MDE)	1.26 (1.16–1.37)***	1.68 (1.42–1.98)***
Nicotine dependence	1.10 (0.95–1.27)	0.93 (0.76–1.14)
Alcohol use disorder	1.10 (0.97–1.25)	1.02 (0.87–1.19)
Cannabis use disorder	0.93 (0.84–1.03)	1.02 (0.87–1.19)
Illicit drug (not cannabis) disorder	1.14 (1.02–1.27)*	1.09 (0.93–1.31)
Significant negative impact of COVID on mental health	1.16 (1.06–1.26)**	1.19 (1.02–1.39)*

*N* = 3,173 for each model

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

coverage (IRR = 0.61, 95% CI = 0.52–0.71) but higher among those who reported significant negative impact of the COVID pandemic on their mental health (IRR = 1.26, 95% CI = 1.08–1.46).

The likelihood of stigma-related reasons was higher among those age 18–25 (IRR = 1.81, 95% CI = 1.10–2.98), American Indians/Alaska Natives (IRR = 2.00, 95% CI = 1.38–2.89), and those who planned suicide (IRR = 1.28, 95% CI = 1.00–1.65).

The likelihood of no perceived need, doubt about treatment, or self-reliance reasons was higher among residents in small metropolitan areas (IRR = 1.37, 95% CI = 1.07–1.75) but lower among those who reported significant negative impact of the COVID pandemic on their mental health (IRR = 0.67, 95% CI = 0.53–0.86).

The likelihood of not knowing where to go or unavailable treatment reasons was higher among American Indians/Alaska Natives (IRR = 2.15, 95% CI = 1.48–3.12), those who were never married (IRR = 1.40, 95% CI = 1.07–1.83), those who planned suicide (IRR = 1.28, 95% CI = 1.01–1.60), and those who perceived significant negative impact of COVID on their mental health (IRR = 1.30, 95% CI = 1.01–1.68), but lower among those who had nicotine dependence (IRR = 0.60, 95% CI = 0.38–0.94).

The likelihood of lack of time or transportation or COVID-related reasons was higher among those who planned suicide (IRR = 1.46, 95% CI = 1.02–2.10), but lower among those who had high school or lower education (IRR = 0.54, 95% CI = 0.37–0.78), those who attempted suicide (IRR = 0.49, 95% CI = 0.25–0.98), and those who had nicotine dependence (IRR = 0.42, 95% CI = 0.22–0.80).

## Discussion

We examined mental health treatment use, unmet perceived treatment need, and reasons for not receiving treatment despite perceived need among U.S. adults who had serious suicidal thoughts. In addition to the usual predisposing, enabling, and need factors that have often been associated with health services use, negative mental health effects of the COVID pandemic ongoing in 2021 were factored in this study. Of those who reported serious suicidal thoughts, 61% reported any mental health treatment use; however, 48% of these users and 37% of those who did not use any mental health treatment (i.e., 44% of all those who had serious suicidal thoughts) reported perceived treatment need at any time in the preceding 12 months but did not receive treatment. This indicates that nearly one half of treatment users wanted more treatment, and that more than one third of nonusers wanted to receive treatment. The most frequent



**Table 3** Significant characteristics associated with barriers to treatment use among those who reported perceived need

	Cost/lack of insurance IRR (95% CI)	Stigma-related concern IRR (95% CI)	No need/self-reliance beliefs IRR (95% CI)	Not knowing where to go or treatment not available IRR (95% CI)	Lack of time and transportation and COVID IRR (95% CI)
Age group: vs. 50+					
18–25		1.81 (1.10–2.98)***			
26–34		1.29 (0.74–2.25)			
35–49		0.85 (0.48–1.51)			
Race/ethnicity: vs. Non-Hispanic White					
Non-Hispanic Black		0.81 (0.52–1.27)		0.83 (0.55–1.27)	
Hispanic		0.97 (0.70–1.34)		0.87 (0.56–1.35)	
Asian/Pacific Islander		0.96 (0.58–1.57)		0.87 (0.53–1.43)	
American Indian/Alaska Native		2.00 (1.38–2.89)***		2.15 (1.48–3.12)***	
Multi-racial		1.16 (0.74–1.81)		1.21 (0.71–2.04)	
Marital status: vs. Married					
Widowed				0.24 (0.03–1.95)	
Divorced/separated				1.28 (0.76–2.13)	
Never married				1.40 (1.07–1.83)*	
Education: vs. College degree &lt; High school					0.54 (0.37–0.78)**
Some college/associate degree					1.00 (0.71–1.42)
Any health insurance coverage	0.61 (0.52–0.71)***				
Residential area: vs. Large metropolitan area					
Small metropolitan area			1.37 (1.07–1.75)*		
Nonmetropolitan area					
Self-rated health					
Planned suicide		1.28 (1.00–1.65)*		1.28 (1.01–1.60)*	1.46 (1.02–2.10)*
Attempted suicide					0.49 (0.25–0.98)*
Nicotine dependence				0.60 (0.38–0.94)*	0.42 (0.22–0.80)*
Significant negative impact of COVID on mental health	1.26 (1.08–1.46)**		0.67 (0.53–0.86)**	1.30 (1.01–1.68)*	

*N* = 1,606 for each model

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

Covariates entered in each model but not shown (not significant) were: Gender, family income, self-rated health, major depressive episode, alcohol use disorder, cannabis use disorder, and illicit drug (not cannabis) use disorder

reasons for not getting treatment were the cost of treatment or lack of insurance and stigma-related concerns.

The rates of treatment use and perceived treatment need in this study appear to be higher than the rates (56% for treatment use and 35% for perceived need) found in the 2008–2012 NSDUH-based study that included those age 21 or older (Choi et al., 2015). Consistent with previous study findings, our multivariable analysis results show that significant correlates of treatment use were gender and race/ethnicity (predisposing factors); marital status, education, and insurance (enabling factors); and major depressive disorder and illicit drug use disorder (need factors). Additionally,

our findings show that the perceived negative effect of the COVID pandemic on mental health was a significant correlate of treatment use. The most significant correlates of unmet perceived treatment need were age 18–34, some college education, major depressive episode, and the perceived negative effect of COVID on mental health. The finding that male gender and being Black or Asian/Pacific Islander were associated with a lower likelihood of treatment use (and perceived treatment need among males) is consistent with previous findings (Choi et al., 2015) and concerning given the significantly higher male than female suicide rates and increasing numbers of suicide among Blacks and other

minority groups (CDC, 2023). These results mostly support H1 and H2.

Depression/depressive symptoms, anxiety, psychological distress, post-traumatic stress symptoms, poor sleep quality, and suicidal ideation increased during the COVID pandemic among COVID patients, healthcare workers, and the general population (Elbogen et al., 2021; Raifman et al., 2022; Panchal et al., 2023; Vindegaard & Benros, 2020). Thus, the higher likelihood of mental health treatment use and perceived treatment need among those who reported pandemic-related negative mental health effects is not surprising. Along with the substantial negative impact of the pandemic-related stressors on mental health, the COVID-pandemic likely contributed to normalizing mental health problems and treatment need. As many people experienced social isolation, loneliness, and fear of infection and death during the global pandemic, discussing depression, anxiety, and other mental health problems have become more acceptable and provided positive momentum to raise awareness of the problems (Nealon, 2021).

What is concerning is that those who made suicide plans or attempted suicide were not more likely to have used mental health treatment, which is consistent with those of a previous study (Choi et al., 2015). Moreover, even though suicide attempt survivors are at elevated suicide risk (Bostwick et al., 2016), they were less likely to report unmet perceived need for treatment. Previous research has also shown that suicide attempt survivors and others who were at elevated suicide risk were more likely to drop out of mental health treatment than those not at elevated risk (Hom & Joiner, 2017). According to research, the primary reason for unmet mental health needs among suicide attempters was stigma from healthcare providers regarding suicide (Frey et al., 2016; Shand et al., 2018). Experience of mental illness, suicide stigma or anticipated suicide stigma, and secrecy among suicide attempters can contribute to loneliness and hopelessness and to increased suicidality (Mayer et al., 2020; Oexle et al., 2019).

Multivariable findings regarding correlates of cost/insurance reasons for not receiving treatment (lack of insurance and the pandemic's negative impact on mental health) were expected. The correlates of stigma concerns (age 18–25, being American Indian/Alaska Native, having planned suicide) were also not surprising. A study found that while younger adults, relative to older adults, held lower levels of stigmatizing attitudes and beliefs toward mental illnesses, they were slightly less likely to seek care and substantially more likely to delay care out of fear of others finding out that they experienced mental health problems (Collins et al., 2014). Another study found that young adults' mental health stigma and embarrassment may be due to their poor mental health literacy (Mitchell et al., 2017). The finding that

American Indian/Alaska Native people were twice more likely than non-Hispanic white people to report stigma as well as program unavailability as reasons for not receiving mental health treatment needs to be understood within the context of educational disparity, the pervasiveness of poverty, inadequate access to both physical and mental health care, and quality of service issues affecting confidence among people in need of treatment (Gone & Trimble, 2012; Grandbois, 2005). The link between stigma concerns and lack of available treatment programs and lack of time/transportation was also shown in the case of those who planned suicide. Lack of available treatment programs, and thus the lack of psychoeducation about mental illness and contact with mental health professionals and other patients, likely contribute to misinformation and stigma about mental health problems. When treatment programs are not easily accessible, those who lack time and transportation would also be less likely to use the programs. However, those who attempted suicide were less likely to report lack of time, transportation, and inconvenience as reasons for not receiving treatment, suggesting that they may have used services even if they had not been conveniently located. The findings also suggest that never married individuals and those who experienced the pandemic's negative mental health effects may have had fewer social support and connections that may have helped them find available services.

Residence in small metropolitan areas was positively associated with the lack of perceived treatment need and self-reliance beliefs and negatively associated with the report of the pandemic's significant impact on mental health. Self-reliance/independence is likely reflective of certain cultural values in small towns. A study of community members who lived in rural counties in the Southern U.S. found a direct association of higher levels of public stigma, self-stigma, and mental health self-reliance with general self-reliance and attitudes toward help-seeking (Keller & Owens, 2022).

The study has the following limitations: (1) Respondents' self-reported suicidal behaviors and other variables were not ascertained. Reporting of suicidal thoughts and behaviors and substance use may have been affected by social desirability bias and self-stigma. (2) Due to different data collection methods and variables used in 2021, pooling of data from and comparisons with previous years' NSDUH were not possible. (3) While NSDUH reported that the response patterns significantly differed between in-person and web-based respondents (CBHSQ, 2022), we could not discern the data collection mode in the public data file although they may bias results if not controlled for in regression models.

Despite these limitations, our findings have important policy and clinical implications. First, it is important to have the empirical data that almost two out of five adults who had serious suicidal thoughts did not receive any mental health

care, and a substantial proportion of both treatment user and nonusers reported perceived treatment need. Our findings underscore that a significant proportion of people with serious suicidal ideation want mental health treatment.

Second, age group, gender, and/or racial disparities in treatment use and perceived need should be ameliorated on the policy level with more public education about mental health problems aimed at stigma reduction and improvement in affordability, availability, and accessibility of treatment programs. A study based on the 2008–2014 NSDUH and the Area Resource File showed that mental health treatment was associated with a 17.1 to a 20.4% point decline in the probability of attempting suicide, and that greater access to mental health treatment, as measured by mental health provider density, was associated with more mental health treatment, which, in turn, significantly reduced suicide attempts (McClellan et al., 2021). McClellan et al. concluded that higher densities of behavioral health providers imply a lower opportunity cost of seeking and receiving treatment for those at risk of suicide. The increased discussion about mental health during the COVID pandemic should be harnessed to improve people's understanding of and attitudes toward mental health and to add more resources for treatment and other support especially for those who are affected by public and self-stigma and/or reside in areas where such resources are scarce. Studies have shown that both education and interpersonal contact with members of the stigmatized group reduced public stigma among all age groups (Corrigan et al., 2012). Removing any barriers to treatment that were found in this study will help increase access to treatment and treatment use, which in turn will help reduce suicide among those who need treatment.

Third, mental health care for suicide planners and attempters needs to be improved. While this study did not specifically focus on barriers to receiving treatment among suicide planners and attempters, previous research, as discussed above, showed the likely reasons to be stigma in the healthcare system. Healthcare providers should screen for suicidal ideation and make appropriate referrals.

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**Data Availability** This study is based on de-identified public-domain data (The National Survey on Drug Use and Health).

## Declarations

**Ethical Approval** This study based on de-identified public-domain data was exempt by the University of Texas at Austin's Institutional Review Board.

**Conflict of Interest** The authors declare that there is no conflict of interest.

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