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Mental Health Service Utilization and Disparities in the U.S: Observation of the First Year into the COVID Pandemic

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Abstract

This study examined mental health service utilization and disparities during the first year of COVID. We analyzed data from all adult respondents with any mental illness in the past year ($n = 6967$) in the 2020 National Survey on Drug Use and Health to evaluate if mental health service utilization differed by geographic areas, race/ethnicity, and age groups. Only 46% of individuals with any mental illness had received mental health treatment. Compared to non-Hispanic Whites, Asian and Hispanics were less likely to receive outpatient services and prescription medicine. Rural residents received less outpatient treatment compared to large metropolitan residents. No difference was found in telemedicine utilization across area types and race/ethnicity groups. Older individuals were less likely to utilize telemedicine services. Our findings highlighted continued mental health treatment disparities among race/ethnic minorities and other sub-populations during COVID. Targeted strategies are warranted to allow older populations to benefit from telemedicine.

Keywords

Mental health; Treatment utilization; Disparity; Telemedicine; COVID

Introduction

The COVID pandemic has resulted in unprecedented negative impacts on public mental health (Czeisler et al., 2020; Paudel, 2021; Xiong et al., 2020). Quarantine and social distancing policies, although necessary to mitigate the spread of the virus, had considerable mental health and psychosocial consequences (Brooks et al., 2020). Uncertainties due to the rapidly evolving situations, declined social activities, fear to be infected, economic recession and financial strain, and loss of family members, all took mental tolls on the public and can lead to psychological disorders including anxiety, depression, post-traumatic stress disorder (PTSD), and substance use (Dos Santos et al., 2021; Thombs et al., 2020). Globally, the

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COVID pandemic has brought about a surge in stress, anxiety, and depression (Salari et al., 2020). Based on Household Pulse Survey (Center for Disease Control & Prevention, 2022), in January 2021, 41.1% of the adult population reported anxiety or depressive symptoms, rising from 11.1% in 2019 (Panchal et al., 2021).

Healthcare services, including treatment for mental health illnesses, were severely disrupted by the COVID pandemic (World Health Organization, 2020). Many healthcare settings were short-staffed due to not only workforces being reassigned to support the COVID control effort, but also burnout and mental exhaustion among health professionals (De Kock et al., 2021; Fiorillo & Gorwood, 2020). A paradigm shift in mental health treatment and care that took place during the time of the pandemic is the rapid expansion of telemedicine (Busch et al., 2021; Kalin et al., 2020). Healthcare settings modified their practice by offering mental health counseling and medication prescription via phone and/or internet-based platforms to allow continued care and support for patients with preexisting mental health problems and those who are suffering from the psychosocial consequences of the pandemic (Busch & Kyanko, 2021; Cantor et al., 2021; Shore et al., 2020).

The long-standing health disparities due to race/ethnicity, age, and rural/urban gaps, which have been a grand public health challenge in the U.S., were by all means worsened during the COVID pandemic (Su et al., 2022; Summers-Gabr, 2020; Xue et al., 2022). The COVID pandemic also exacerbated age bias and the unaddressed mental health needs of older adults (Carpenter et al., 2021). The pandemic crisis posed disproportionately heightened risks of unemployment, economic difficulties, unstable housing, isolation, and bereavement in socially vulnerable groups, and subsequently limited their mental health treatment utilization (De Vogli et al., 2021). In addition, since telemedicine has been playing an increasingly important role in mental health treatment delivery, there are concerns that lack of broadband access and technological devices (e.g., smartphone, tablet, or computer) intensifies the vicious cycle of healthcare disparity and mental health challenges among underserved populations during COVID (Summers-Gabr, 2020; Yang & Qi, 2022).

Three years into the COVID pandemic, mental health service utilization and disparity have been inadequately studied in the U.S. Lee and colleagues' article documented delayed mental healthcare among populations with lower household incomes and no insurance (Lee & Singh, 2021). Barriers to mental health service utilization, such as increased caseload and losing contact with patients, had been reported in qualitative studies (Costa et al., 2021; Slone et al., 2021). To comprehensively illuminate the mental health service utilization patterns after the COVID pandemic in the U.S., we analyzed data from a national representative sample based on the most recently available National Survey on Drug Use and Health (NSDUH) data in 2020. Respondent-reported utilization of mental health services among adult populations with mental health services needs was examined. We focused on quantifying and contrasting mental health service utilization among vulnerable populations, including race/ethnic minorities, rural residents, and elderly populations. The study findings revealed the subpopulations in the U.S. that faced the most significant unmet mental health needs during the COVID crisis.

Methods

Data Source

NSDUH is a nationally representative cross-sectional survey that is conducted annually in all 50 states and the District of Columbia (Substance Abuse and Mental Health Survey Administration [SAMHSA], 2022). NSDUH has detailed data on substance use and mental health that enabled us to include several measurements of mental illness, substance use, treatment utilization, as well as an extensive set of socio-demographic characteristics. The survey is representative of general populations aged 12 and over in the U.S, as it covers residents of regular households (including houses, townhouses, apartments, and condominiums), noninstitutional group quarters (e.g., shelters, boarding houses, dormitories, migratory work camps), and military bases. Persons experiencing homelessness who did not use shelters, active military personnel, and those who were in jails, nursing homes, mental institutions, and long-term care hospitals were excluded. The weighted response rate in 2020 was 60.4% (SAMHSA, 2020a).

Detailed sampling strategies of the NSDUH are described elsewhere (SAMHSA, 2020b). It is worth noting that the data collection methods were modified during 2020 due to COVID: the Quarter 1 (January to March 2020) data collection was completed using standard NSDUH in-person data collection protocols; however, the data collection effort was suspended on March 16, 2020, and resumed in Quarter 4 with using a combination of in-person and web-based screening and survey procedures. Due to these methodological and procedural changes in 2020, NSDUH advises not to compare data collected in 2020 with earlier survey years.

Study Population

All respondents aged 18 years and older and classified by NSDUH as having any mental illnesses (AMI) in the past year were included in our study ($n = 6967$). Adult respondents were classified as having AMI by NSDUH if they had past year mental, behavioral, or emotional disorder of sufficient duration that met the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) criteria (SAMHSA, 2021).

Outcome Measures

The outcomes of interest included mental health service utilization in the past year. Reception of any mental health treatment was a recoded variable created from one or more questions from the *Adult Mental Health Service Utilization and Recoded Drug Treatment* section, which queried the respondents if they had received treatment or services for problems related to emotions, nerves, or mental health (not including alcohol or drug use). Past year's mental health treatment variable was constructed as a binary variable, receiving the value of 1 if the respondents received treatment and 0 otherwise. The respondents who had not received needed mental health treatment reported reasons for not receiving treatment/counseling in the past year. For those who had received mental health treatment, the survey further queried their resources of treatment, including inpatient (overnight hospital stays), outpatient (mental health clinic/center, the office of a private therapist, psychologist, psychiatrist, social worker, or counselor, a doctor's office, an

outpatient medical clinic, and/or partial day hospital or day treatment program), and prescription medications (1 = received and 0 = not received). Telemedicine-based mental health treatment utilization in the past year, in addition to the above-mentioned inpatient/outpatient treatment sources and prescription medications, was determined by a multiple-choice question asking the respondents' sources of treatment, counseling, or support for their emotions, nerves, or mental health (in addition to the above-mentioned inpatient/outpatient treatment sources and prescription medications). The respondents who indicated receiving mental health treatment using either internet or phone hotlines were considered as receiving additional telemedicine-based mental health treatment in the past year.

Covariates

Our independent variables of interest included *metropolitan area*, *race/ethnicity*, and *age*. The *metropolitan* variable was used to characterize the respondents' geographic place of residence as large metropolitan areas, small metropolitan areas, or non-metropolitan/rural areas (recoded based on the 2013 rural/urban continuum codes; U.S. Department of Agriculture, 2013). *Race/ethnicity* variable was constructed as a categorical variable including non-Hispanic White, non-Hispanic Black/African American, Hispanic, non-Hispanic Asian, and others. There were only approximately 5% non-Hispanic American Indian or Alaska Native, non-Hispanic Native Hawaiian or Pacific Islander, and non-Hispanic more than one race, so they were grouped into "others" race/ethnicity category. *Age* variable was a categorical variable that included 18–25 years old, 26–34 years old, 35–49 years old, and 50 or older.

Guided by the Andersen Behavioral Model (Andersen, 1995), we included three categories of covariates that are correlated with health service utilization 1) pre-disposing factors, which consist of sociodemographic characteristics including *gender* (female, male), *marital status* (married, widowed, divorced or separated, never been married), in addition to age and race/ethnicity characteristics described above; 2) enabling factors, pertaining to available resources to facilitate health service utilization. This category of factors included *highest education attainment* (less than high school, high school graduate, some college/associate degree, college graduate), *employment status* (employed full time, employed part time, unemployed, other), *total family income* (less than \$20,000, \$20,000–49,999, \$50,000–74,999, \$75,000 or more), and *current health insurance coverage* (no insurance, public insurance, private insurance, other); 3) needs factors, which comprise of clinical profiles and preexisting disease conditions, e.g., had experienced a *major depressive episode* in the past year (measured via a series of questions based on Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria; American Psychiatric Association, 2013) and *serious psychological distress* (such as feeling deeply depressed, nervous, hopeless, restless or fidgety, worthless, and/or feeling that everything was an effort, and feeling) in the past year measured based on the Kessler Psychological Distress Scale; Kessler et al., 2003). Having any co-occurring *substance use disorders* (SUDs; including alcohol, marijuana, cocaine, heroin, hallucinogen, inhalant, methamphetamine, pain reliever, tranquilizer, stimulant, and sedative use disorders in the past year based on DSM-5) was also taken into consideration because comorbid mental illnesses and SUDs have intertwined risk factors, disease progressions, and treatment approaches (National Institute on Drug Abuse, 2018). Detailed

descriptions and computations of the covariates are available on SAMHSA's NSDUH website (SAMHSA, 2021b).

Data Analysis

Statistical analyses were conducted using SAS version 9.4 (SAS Institute Inc, Cary, NC). All analyses used survey weights to be representative of the U.S population and accounted for the complex survey design of NSDUH. We first conducted descriptive analyses using weighted proportions and corresponding 95% confidence intervals (CIs) to describe the characteristics of respondents with AMI, mental health treatment utilization in the past year, as well as reasons for not receiving any mental health treatment. We then assessed the univariate associations between mental health treatment utilization types and covariates of interests using Rao–Scott χ^2 test. Lastly, logistic regression models were used to investigate the association between population characteristics and mental health treatment utilization, including any treatment, outpatient, prescription medication, and additional telemedicine service. Given the small percentage of respondents receiving inpatient mental health treatment (approximately 2.9%), we did not perform univariate analyses or logistic regression on this outcome.

Results

Characteristics of Adult Respondents with Mental Illness in the Past Year

Table 1 shows the characteristics of adults with AMI in the 2020 NSDUH (unweighted $N = 6967$, weighted $N = 52,075,928$, representing 21.2% of the total respondents; all percentages were weighted). Approximately half (51.5%) of these respondents lived in large metropolitan areas. The majority of the respondents with AMI were non-Hispanic White (67.6%), followed by Hispanic (14.7%) and non-Hispanic Black (9.8%). Approximately one-third were above 50 years (32.9%), 36.4% were male, and 37.1% were currently married. More than half of the population had either some college/associate degree (35.3%) or college degree (30.2%). Less than half were full-time employed (41.9%) and 33.5% had a total annual family income of \$75,000 or more. Most of the respondents were privately insured (58.8%) or publicly insured (29.2%), and approximately 10.2% had no insurance. In the past year, 39.3% of the respondents were categorized by NSDUH as having a major depressive episode, 56.5% had experienced serious psychological distress, and the proportion of the respondents with any SUD is 25.4%.

Mental Health Service Utilization and Reasons for not Receiving Services

Among respondents with AMI in the past year, 46.0% had received any treatment, with 2.9% receiving inpatient treatment, 27.9% receiving outpatient treatment, and 38.7% receiving prescription medications. Additional telemedicine services for mental health were utilized by 4.6% of the respondents (Table 2). Among those who reported utilization of telemedicine as an additional resource for mental health services, 74.2% (95% CI 67.0–81.4%) had received any mental health services, including 9.6% (95% CI 4.6–14.6%) having reported inpatient hospital stays, 57.1% (95% CI 48.9–65.2%) receiving outpatient services, and 52.5% (95% CI 44.4–60.7%) receiving prescription medicine. Among the respondents with mental illness but not receiving any mental health treatment in the past year, the top

five reasons for not receiving services included (1) not being able to afford the cost (43%), (2) not knowing where to go (33.6%), (3) thinking one could handle the problem without treatment (29.2%), (4) insurance not covering at all/not paying enough for mental health treatment (18.3%), and (5) not wanting others to find out/confidentiality concerns (13.2%) (Table 2).

Type of Mental Health Service by Respondent Characteristics

Relative to large or non-metropolitan areas, the highest proportion of residents with AMI in small metropolitan received any mental health services (51.0%), outpatient treatment (31.4%), and prescription medication (44.7%; all $P < 0.01$); the proportion of respondents receiving additional telemedicine services for mental health was not significantly different across area types. Among all race/ethnicity categories, non-Hispanic White had the highest proportion of receiving any treatment (52.1%), outpatient mental health treatment (30.8%), and prescription medication (45.0%), while non-Hispanic Asians had the lowest (all $P < 0.001$). The differences in receiving additional telemedicine services across race/ethnicity groups were not statistically significant. Relative to other age categories, respondents in the 35–49 years age category received the highest proportion of any mental health treatment (52.0%), outpatient mental health treatment (32.1%), and prescription medication (45.1%; all $P < 0.05$). Additional telemedicine services for mental health were more likely to be received by younger age categories, e.g., 6.0% among patients aged 26–34 years, while only 2.5% among those aged above 50 ($P = 0.002$). Female and higher education attainment were positively associated with every type of mental health treatment utilization, including telemedicine. Respondents who were half-time employed had the highest proportion of utilizing outpatient treatment (33.1%) and additional telemedicine services (10.0%) among all employment statuses ($P < 0.05$). Having no insurance coverage was significantly associated with any mental health treatment, outpatient treatment, and prescription medication (all $P < 0.0001$), but not additional telemedicine service utilization. All types of mental health treatment and additional telemedicine services were more likely to be utilized by those who experienced major depressive episodes or serious psychological distress in the past year (all $P < 0.001$) (Table 3).

Logistic Regression of Mental Health Service Utilization

Logistic regressions confirmed that respondents who lived in small metropolitan areas were more likely to receive any mental health treatment (AOR 1.25; $P < 0.05$) and prescription medicine (AOR 1.36; $P < 0.01$), while those in rural areas were less likely to receive outpatient treatment for their mental illness than those in large metropolitan areas (AOR 0.71, $P < 0.05$). There were no such differences across area types found in additional telemedicine service utilization. Non-Hispanic Asian and Hispanic respondents had systematically lower proportions to have received any mental health treatment, outpatient treatment, and prescription medications, as compared to non-Hispanic White (all $P < 0.01$). Non-Hispanic Black/African Americans were also less likely to receive any treatment and prescription medication (both $P < 0.001$). No statistically significant difference in additional telemedicine service utilization was found across race/ethnic groups in the regression model. In terms of age, respondents aged 50 and above were significantly less likely to receive additional telemedicine services (AOR 0.47, $P < 0.01$), but no

significant difference was found between older and younger respondents' utilization of other types of mental health treatment. As for other covariates, females were more likely to receive all types of mental health treatment and additional telemedicine services. Having college or higher education attainment was also associated with any mental health service reception and outpatient treatment. Full-time employees had significantly lower odds to receive all types of mental health services than those who were unemployed or half-time employed. Mental health treatment and additional telemedicine services were more likely to be utilized by respondents who had experienced major depressive episodes and/or serious psychiatric distress in the past year. In contrast, having any SUD was associated with neither type of mental health treatment nor additional telemedicine service utilization (Table 4).

Discussion

The study highlighted the unmet mental health treatment needs during the first year of the COVID pandemic, that nationally less than half of the adult populations with mental illnesses received treatment to address their mental health issues. As reflected by the survey responses, some of the pre-existing challenges (e.g., low accessibility and affordability) in mental health service utilization had unquestionably been exacerbated due to stay-at-home orders and the rapid shifting in healthcare service modalities during the early stage of the pandemic (Arevian et al., 2020; Bojdani et al., 2020; Busch & Kyanko, 2021; Mueller et al., 2021). The disruption in mental health care brought by COVID could not be completely solved by substituting in-person treatment with telemedicine (Costa et al., 2021; McDowell et al., 2021). The low telemedicine utilization rate (~ 5%) reported in the survey may suggest only a supplementary role of telemedicine in mental health service provision during the first year of COVID. It is worth noting that the rate of telemedicine use reported in this survey was much lower compared to the number reported elsewhere (e.g., ~ 41% of behavioral health visits were reported to be conducted via telemedicine in October 2020; Mehrotra et al., 2020). The proportion of telemedicine use should be interpreted cautiously due to different survey question set up in the 2020 NDSUH survey, where internet/phone services were framed as additional sources of mental health care that were delivered in addition to inpatient, outpatient, and prescription medicine; therefore, some of the outpatient counseling and medication prescriptions delivered via the internet may not have been captured as telemedicine use in the study. Nonetheless, this finding calls for further studies to confirm the rate of telemedicine use in mental health care and strategies to enhance the role of telemedicine in mental health services.

The findings draw attention to the long-standing racial disparity in healthcare (Hines et al., 2017; Wu et al., 2018) that has been persistently manifested during the COVID pandemic. Non-Hispanic Asian and Hispanic respondents with mental illnesses consistently fell behind in all types of mental health treatment utilization as compared to non-Hispanic White. In addition to the residential segregation and inequitable distribution of health-related resources (Yelton et al., 2022), the unmet mental health needs among Asian and Hispanic populations might be attributable to negative cultural beliefs about mental health and misconceptions of pharmaceutical treatment for mental illness (Garcia et al., 2011; Givens et al., 2007; Lu et al., 2021). Surprisingly, no significant difference in telemedicine utilization across race/ethnic groups was found, possibly due to the lessened stigma-related concerns to receive

telemedicine-delivered mental health care (Arafat et al., 2021; Fletcher et al., 2018). This finding calls for a better understanding of diverse cultural groups' concerns and preferences of mental health treatment, with which culturally competent strategies (such as ethnic matching and culturally tailored languages in assessment and counseling) can be devised to engage race/minority patients with mental illnesses in treatment (Sue et al., 2012).

A surprising finding is that residents in large metropolitan areas utilized less mental health treatment than those in small metropolitan areas. We speculate the reason for this phenomenon being the COVID crisis was initially concentrated in urban areas before it gradually spread to suburbs and then rural areas (Matheson et al., 2020), so urban residents, as compared to those in suburbs, might have avoided in-person healthcare services due to the fear of COVID exposure during the first year of the pandemic. Although non-metropolitan and large metropolitan areas were not significantly different in any mental health treatment, the gap in outpatient mental health treatment in rural areas identified in this study warrants attention and targeted approaches to address rural-specific service barriers, including the limited availability of specialty mental health care, lack of trained mental health providers, and underdeveloped care coordination in rural areas (Andrilla et al., 2018; Kopley & Streeter, 2018; Morales et al., 2020; Myers, 2019). Researchers have raised concerns that inconsistent uptake of telemedicine in rural areas as it is in metropolitan areas will exacerbate the already wide disparity in access and quality of care (Summers-Gabr, 2020; Yang & Qi, 2022). However, no significant difference in additional telemedicine service utilization was found between types of areas. This null finding would somewhat serve to reduce the concerns about the negative impacts of the digital divide on rural mental health service disparity. With enhanced broadband coverage, telemedicine could be a viable approach to increase access and alleviate mental health treatment disparity in rural areas (Myers, 2019).

Older populations experienced disproportionately greater COVID-related challenges, including social isolation, fear of being infected, disruption of daily routine, and heightened risks of complications and mortality from COVID (Chen et al., 2021; Vahia et al., 2020). Therefore, they could benefit from telemedicine to reduce the commute burdens and COVID risks associated with in-person care (Beauchet et al., 2020). However, this study revealed less telemedicine service utilization among older patients, possibly due to their greater difficulty adapting to internet technology (Lam et al., 2020; Ridout et al., 2021). In addition, some older patients conceived telemedicine as incomplete or less rewarding compared to traditional in-person visits (Aliberti et al., 2022; Ladin et al., 2021). Therefore, compensated high-speed internet and technical assistance are necessary but not sufficient to bridge older patients to their needed mental health care; a thorough understanding of context-specific issues faced by older patients during telemedicine is warranted to develop strategies to promote equitable telemedicine-delivered services for vulnerable older patients (Gillie et al., 2022).

This study revealed other populations among whom mental health treatment and services were under-utilized during COVID. Disproportionately lower mental health service utilization in males was consistently reported in previous studies (Chang et al., 2019; Harris et al., 2015; Sagar-Ouriaghli et al., 2019), because of mental health service seeking are

often perceived to be a sign of weakness, which is contradictory of traditional masculine gender role (Seidler et al., 2016). This finding suggests education efforts to increase mental health awareness and dispel misconceptions to improve mental health service utilization by men. Contradictory to previous findings (Rosenthal et al., 2012), this study found that full-time employees utilized mental health treatment and services at a lower level than part-time employed or unemployed populations, with other covariates (including insurance and income) being controlled. Supported by literature (Dewa, 2014) and respondents' reported reasons for not receiving treatment, full-time employees' mental health treatment seeking may be deterred by workplace stigma towards mental illness and fear of damaging their career if disease status is inadvertently disclosed. Employers should provide a supportive environment and flexible work hours to encourage their employees' mental health service utilization (Giorgi et al., 2020). Higher levels of mental health treatment and additional telemedicine service utilization were observed among respondents who experienced major depressive episodes and/or serious psychological distress. This finding can be explained by the Anderson Behavioral Model of Health Service, that a person needs factors, e.g., pre-existing health conditions, are predictive of their health service utilization (Anderson, 1995). However, such an association was not observed among respondents with co-existing mental illness and SUD. Since the co-occurrence of mental illness is a documented predictor of substance use relapse and overdose death (Evans et al., 2015), heightened efforts are needed to break the treatment-seeking barriers (Priester et al., 2016) and make mental health services available, accessible, and acceptable to this marginalized sub-population during and beyond COVID.

The study has several limitations. First, the cross-sectional design of the 2020 survey did not allow us to make any causal inference of the identified associations. Second, self-reports in NSDUH were subject to recall bias and social-desirability bias. Third, NSDUH excluded the homeless, military personnel on active duty, and residents of institutional group quarters, so the study findings cannot be generalized to these populations. Fourth, web-based screening/interviewing procedures employed in the 2020 NSDUH survey yielded lower response rates than in-person data collection (SAMHSA, 2021), as well as oversampling of tech-savvy respondents and over-estimation of additional telemedicine service utilization. In addition, the change of sampling method employed in 2020 limited our capacity to compare mental health utilization patterns to the pre-pandemic years. Fourth, the publicly available NSDUH dataset did not contain a calendar date variable nor a locator indicator, thus, we were unable to take into account COVID waves, local prevention policies, and their impact on the respondents' treatment-seeking. Fifth, gender was dichotomized as male and female in the NSDUH dataset, so we were not able to examine mental health service use among transgender and non-binary people. Lastly, having AMI in the past year was characterized based on DSM-IV criteria in the NSDUH, which might be classified differently using DSM-5 criteria.

In conclusion, our findings highlighted continued mental health treatment disparities, especially among race/ethnic minorities, during the first year of the COVID pandemic. We suggest future research to investigate the influence of cultural factors on mental health service-seeking and provision for certain race/ethnic minority groups. Although telemedicine-delivered mental health services may help to remediate these disparities, older populations

with mental illness are in need of heightened support to take advantage of telemedicine. This study also suggested the unmet mental health service needs among the male population, full-time employees, patients with insufficient insurance coverage, and patients with co-occurring SUDs.

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Table 1

Sample characteristics of adult respondents with any mental illness in the past year

	Unweighted N = 6967	Weighted number	Weighted % (%)	95% CI (%)	P-value
Area type					
1—Large metropolitan	26,794,695	51.5	49.2	53.7	0.005
2—Small metropolitan	17,495,656	33.6	31.6	35.7	
3—Non-metropolitan	7,785,577	15.0	13.5	16.6	
Race/ethnicity					
1—Non-Hispanic White	35,185,592	67.6	65.3	69.8	< 0.001
2—Non-Hispanic Black/African American	5,113,363	9.8	8.4	11.4	
3—Hispanic	7,665,391	14.7	13.0	16.6	
4—Non-Hispanic Asian	1,971,906	3.8	3.0	4.6	
4—Other	2,139,677	4.1	3.2	5.1	
Age category					
1—18–25 years old	9,995,325	19.2	17.9	20.5	< 0.001
2—26–34 years old	11,199,460	21.5	20.0	23.1	
3—35–49 years old	13,722,720	26.4	24.6	28.1	
4—50 or Older	17,158,422	32.9	30.5	35.5	
Sex					
1—Male	18,954,958	36.4	34.3	38.6	< 0.001
2—Female	33,120,970	63.6	61.4	65.7	
Marital status					
1—Married	19,305,272	37.1	34.9	39.3	< 0.001
2—Widowed	2,832,936	5.4	4.2	7.0	
3—Divorced or separated	8,949,782	17.2	15.3	19.3	
4—Never been married	20,987,937	40.3	38.2	42.4	
Highest education					
1—Less high school	5,476,099	10.5	8.9	12.4	< 0.001
2—High school graduate	12,464,458	23.9	21.9	26.1	
3—Some college/Associate Degree	18,384,945	35.3	33.3	37.4	
4—College graduate	15,750,426	30.2	28.4	32.1	

	Unweighted N = 6967	Weighted number	Weighted % (%)	95% CI (%)	P-value
Weighted N = 52,075,928					
Employment status					
1—Employed full time	21,835,884	41.9	39.8	44.1	< 0.001
2—Employed part time	8,005,843	15.4	14.0	16.9	
3—Unemployed	3,361,067	6.5	5.6	7.4	
4—Other	18,873,133	36.2	33.9	38.6	
Family income					
1—Less than \$20,000	11,045,498	21.2	19.3	23.3	< 0.001
3—\$20,000–\$49,999	16,009,157	30.7	28.7	32.9	
6—\$50,000–\$74,999	7,563,713	14.5	13.1	16.1	
7—\$75,000 or more	17,457,560	33.5	31.5	35.6	
Insurance					
0—No insurance	5,312,729	10.2	9.0	11.5	< 0.001
1—Public insurance	15,224,081	29.2	27.1	31.5	
2—Private insurance	30,637,782	58.8	56.6	61.1	
3—Other insurance	901,336	1.7	1.3	2.3	
Having major depressive episode					
0—Not in the past year	30,784,146	60.7	58.6	62.9	< 0.001
1—Yes in the past year	19,901,725	39.3	37.1	41.4	
Having serious psychological distress					
0—Not in the past year	22,662,927	43.5	41.3	45.8	< 0.001
1—Yes in the past year	29,413,001	56.5	54.2	58.7	
Having any SUD					
0—Not in the past year	35,445,818	74.6	72.6	76.5	< 0.001
1—Yes in the past year	16,630,110	25.4	23.5	27.4	

Mental health service utilization during the past year and reasons for not receiving treatment among adult respondents with any mental illnesses

Table 2

	Unweighted n	Weighted n	Weighted % (%)	95% CI (%)
Receiving mental health treatment and services				
Unweighted N = 6967				
Weighted N = 52,075,928				
Received any mental health treatment	3362	23,832,903	46.0	43.8 48.2
Received any inpatient treatment	181	1,492,609	2.9	2.2 3.5
Received outpatient treatment	2139	14,399,092	27.9	26.0 29.9
Received prescription medication	2756	20,158,298	38.7	36.6 40.9
Received telemedicine services	385	2,377,247	4.6	3.8 5.3
Reasons for not receiving mental health treatment^a				
Unweighted N = 3,576				
Weighted N = 27,977,667				
Could not afford the cost	543	3,279,186	43.0	37.6 48.5
Not knowing where to go	440	2,565,707	33.6	28.3 39.0
Thought one could handle the problem without treatment	337	2,227,294	29.2	23.2 35.2
Insurance not covering at all or not paying enough	278	1,717,564	22.5	18.3 26.7
Didn't want others to find out/confidentiality concerns	242	1,441,819	18.9	13.2 24.6
Didn't have time	221	1,218,529	16.0	12.3 19.7
Didn't think treatment would help	164	1,216,231	16.0	10.0 21.9
Fear of neighbor's negative opinion	181	1,187,575	15.6	11.4 19.8
Fear of being committed	187	1,125,591	14.8	11.3 18.2
Fear of negative effect on job	129	879,276	11.5	8.2 14.8
Didn't think treatment is needed	103	833,613	10.9	5.1 16.7
No transportation or not convenient	52	309,322	4.1	2.3 5.9

^a Among the respondents with mental health illnesses who reported receiving no mental health treatment in the past year

Table 3

Types of mental health service utilized during the past year by adult respondents with any mental illnesses' characteristics

	Any treatment		Outpatient treatment		Prescription medication		Telemedicine	
	Weighted % (95% CI)	P-value	Weighted % (95% CI)	P-value	Weighted % (95% CI)	P-value	Weighted % (95% CI)	P-value
Received the following services for mental health in the past year:								
Unweighted N	6938	0.002	6901	0.003	6966	< 0.001	6951	0.213
Weighted N	51,810,571		51,541,752		52,060,249		51,971,750	
Weighted % (95% CI)	46.0% (43.8–48.2%)		27.9% (26.0–29.9%)		38.7% (36.5–40.8%)		4.6% (3.8–5.3%)	
Rural/urban								
1—Large metropolitan	42.3		27.5		33.5		5.0	
2—Small metropolitan	51.0		31.4		44.7		4.5	
3—Non-metropolitan	47.6		21.5		43.3		3.2	
Race/ethnicity								
1—Non-Hispanic White	52.1	< 0.001	30.8	< 0.001	45.0	< 0.001	4.9	0.027
2—Non-Hispanic Black/African American	38.5		28.7		29.0		2.5	
3—Hispanic	31.8		19.3		24.0		3.6	
4—Non-Hispanic Asian	21.0		16.0		14.0		8.8	
4—Others	38.2		20.6		35.0		2.7	
Age category								
1—18–25 years old	42.5	0.001	28.5	0.032	33.1	< 0.001	5.7	0.002
2—26–34 years old	41.1		26.7		31.6		6.0	
3—35–49 years old	52.0		32.1		45.1		5.1	
4—50 or older	46.5		25.0		41.5		2.5	
Gender								
1—Male	37.6	< 0.001	22.0	< 0.001	31.5	< 0.001	3.1	0.006
2—Female	50.8		31.3		42.9		5.4	
Marital status								
1—Married	47.0	0.041	27.2	0.283	40.9	0.001	4.0	0.114
2—Widowed	43.3		21.3		34.4		1.7	
3—Divorced or separated	53.0		31.9		47.1		4.7	
4—Never been married	42.4		27.8		33.7		5.4	
Highest education								
		< 0.001		< 0.001		0.007		0.005

Received the following services for mental health in the past year:		Any treatment		Outpatient treatment		Prescription medication		Telemedicine	
	Unweighted N	6938	6901	6966	6951				
	Weighted N	51,810,571	51,541,752	52,060,249	51,971,750				
	Weighted % (95% CI)	46.0% (43.8–48.2%)	27.9% (26.0–29.9%)	38.7% (36.5–40.8%)	4.6% (3.8–5.3%)				
		Weighted % (%)	Weighted % (%)	Weighted % (%)	Weighted % (%)	P-value	P-value	P-value	P-value
1—Less high school		32.6	15.6	26.7	2.7				
2—High school grad		43.2	24.0	38.5	2.7				
3—Some college/Associate Degree		46.3	27.4	40.4	5.1				
4—College graduate		52.6	36.1	41.1	6.0				
Employment			0.240		0.011				0.001
1—Employed full time		44.0	27.0	35.5	3.8				
2—Employed part time		48.8	33.1	38.6	7.8				
3—Unemployed		42.4	21.7	35.2	4.5				
4—Other		47.7	27.9	43.1	4.1				
Family income			0.573		0.321				0.342
1—Less than \$20,000		44.3	26.7	37.6	4.2				
2—\$20,000–\$49,999		45.6	27.4	38.4	4.4				
3—\$50,000–\$74,999		49.7	28.3	43.7	3.5				
4—\$75,000 or more		45.8	29.0	37.6	5.5				
Insurance			< 0.001		< 0.001				0.539
0—No insurance		29.7	16.1	22.6	3.5				
1—Public insurance		50.4	30.3	46.0	4.7				
2—Private insurance		47.0	29.1	38.3	4.8				
3—Other insurance		34.0	21.0	24.7	1.9				
Having major depressive episode			< 0.001		< 0.001				< 0.001
0—Not in the past year		37.6	21.4	31.1	3.3				
1—Yes in the past year		59.7	39.1	51.1	6.5				
Having serious psychological distress			< 0.001		< 0.001				< 0.001
0—Not in the past year		38.2	21.3	31.7	2.7				
1—Yes in the past year		52.0	33.1	44.1	6.0				
Having any SUD			0.075		0.191				0.479
0—Not in the past year		44.6	27.7	37.3	4.4				

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Received the following services for mental health in the past year:		Any treatment		Outpatient treatment		Prescription medication		Telemedicine	
Unweighted N	Weighted % (95% CI)	Unweighted N	Weighted % (95% CI)	Unweighted N	Weighted % (95% CI)	Unweighted N	Weighted % (95% CI)	Unweighted N	Weighted % (95% CI)
6938	51.810,571	6901	51,541,752	6966	52,060,249	6951	51,971,750		
	46.0% (43.8–48.2%)		27.9% (26.0–29.9%)		38.7% (36.5–40.8%)		4.6% (3.8–5.3%)		
	Weighted % (95% CI)		Weighted % (95% CI)		Weighted % (95% CI)		Weighted % (95% CI)		Weighted % (95% CI)
	49.0	28.3	40.8	5.0					
	1—Yes in the past year								

Logistic regression of mental health service utilization during the past year among adult respondents with any mental illnesses

Table 4

	Received the following services for mental health in the past year:		Outpatient treatment		Prescription medication		Telemedicine	
	Unweighted N	6967	6901	6966	6951	6951	6951	6951
	Weighted N	52,075,928 AOR (95% CI)	51,541,752 AOR (95% CI)	52,060,249 AOR (95% CI)	51,971,750 AOR (95% CI)	51,971,750 AOR (95% CI)	51,971,750 AOR (95% CI)	51,971,750 AOR (95% CI)
Area type								
Large metropolitan		Ref	Ref	Ref	Ref	Ref	Ref	Ref
Small metropolitan		1.24* (1.01–1.53)	1.17 (0.94–1.46)	1.36** (1.10–1.69)	0.92 (0.64–1.32)	0.92 (0.64–1.32)	0.92 (0.64–1.32)	0.92 (0.64–1.32)
Non-metropolitan		1.06 (0.81–1.39)	0.71* (0.52–0.97)	1.19 (0.90–1.57)	0.67 (0.40–1.10)	0.67 (0.40–1.10)	0.67 (0.40–1.10)	0.67 (0.40–1.10)
Race/ethnicity								
Non-Hispanic White		Ref	Ref	Ref	Ref	Ref	Ref	Ref
Non-Hispanic Black/African American		0.57** (0.40–0.80)	1.00 (0.68–1.50)	0.49*** (0.33–0.72)	0.54 (0.27–1.06)	0.54 (0.27–1.06)	0.54 (0.27–1.06)	0.54 (0.27–1.06)
Hispanic		0.51*** (0.38–0.69)	0.64** (0.46–0.88)	0.44*** (0.32–0.61)	0.78 (0.46–1.34)	0.78 (0.46–1.34)	0.78 (0.46–1.34)	0.78 (0.46–1.34)
Non-Hispanic Asian		0.24*** (0.13–0.41)	0.39*** (0.23–0.68)	0.21*** (0.12–0.39)	1.76 (0.75–4.13)	1.76 (0.75–4.13)	1.76 (0.75–4.13)	1.76 (0.75–4.13)
Other		0.59* (0.36–0.99)	0.80 (0.60–1.06)	0.66 (0.39–1.01)	0.48 (0.21–1.07)	0.48 (0.21–1.07)	0.48 (0.21–1.07)	0.48 (0.21–1.07)
Age								
< 50		Ref	Ref	Ref	Ref	Ref	Ref	Ref
50		0.99 (0.78–1.27)	0.80 (0.60–1.06)	1.12 (0.87–1.43)	0.47** (0.26–0.86)	0.47** (0.26–0.86)	0.47** (0.26–0.86)	0.47** (0.26–0.86)
Sex								
Male		Ref	Ref	Ref	Ref	Ref	Ref	Ref
Female		1.70*** (1.40–2.07)	1.53*** (1.24–1.89)	1.58*** (1.29–1.93)	1.95** (1.25–3.03)	1.95** (1.25–3.03)	1.95** (1.25–3.03)	1.95** (1.25–3.03)
Marital status								
Not married		Ref	Ref	Ref	Ref	Ref	Ref	Ref

Received the following services for mental health in the past year:		Any treatment	Outpatient treatment	Prescription medication	Telemedicine
Unweighted N		6967	6901	6966	6951
Weighted N		52,075,928	51,541,752	52,060,249	51,971,750
		AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Married		1.07 (0.86–1.32)	0.94 (0.76–1.18)	1.19 (0.96–1.47)	0.82 (0.54–1.24)
Highest education					
Less than college		Ref	Ref	Ref	Ref
College graduate or more		1.55 ^{***} (1.26–1.90)	1.77 ^{***} (1.42–2.21)	1.18 (0.95–1.46)	1.43 (0.96–2.12)
Employment status					
Unemployed/part-time employed		Ref	Ref	Ref	Ref
Full time employed		0.80 [*] (0.65–0.97)	0.76 [*] (0.61–0.96)	0.79 [*] (0.64–0.97)	0.58 ^{***} (0.40–0.82)
Family income					
< \$75,000		Ref	Ref	Ref	Ref
\$75,000		0.86 (0.70–1.06)	0.96 (0.77–1.20)	0.85 (0.69–1.06)	1.30 (0.92–1.83)
Insurance					
Uninsured		Ref	Ref	Ref	Ref
Insured		2.12 ^{***} (1.58–2.83)	2.12 ^{***} (1.54–2.64)	2.30 ^{***} (1.70–3.14)	1.34 (0.78–2.30)
Having major depressive episode					
Not in the past year		Ref	Ref	Ref	Ref
Yes in the past year		2.25 ^{***} (1.84–2.74)	2.14 ^{***} (1.74–2.64)	2.10 ^{***} (1.72–2.57)	1.68 ^{**} (1.18–2.40)
Having serious psychological distress					
Not in the past year		Ref	Ref	Ref	Ref
Yes in the past year		1.45 ^{***} (1.18–1.80)	1.47 ^{**} (1.17–1.86)	1.49 ^{***} (1.20–1.86)	1.68 [*] (1.10–2.57)
Having any SUD					
Not in the past year		Ref	Ref	Ref	Ref
Yes in the past year		1.14 (0.92–1.40)	0.95 (0.75–1.21)	1.09 (0.88–1.36)	0.94 (0.65–1.34)

AOR adjusted odd ratio, CI confidence interval, Reference group

*** p < .001,

** p < .01,

* p < .05

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