

# Motivation and Use of Telehealth Among People with Depression in the United States

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## Abstract

**Introduction:** The global mental health crisis, compounded by the challenges of the COVID-19 pandemic, underscores the urgent need for accessible mental health care solutions. Telehealth services have emerged as a promising technology to address barriers to access mental health services. However, population-based studies examining telehealth utilization among individuals with depression are limited. **Methods:** Using data from the National Cancer Institute's Health Information National Trends Survey (HINTS) of 2022 (n=4502), we investigated telehealth utilization among individuals diagnosed with depression in the United States. We employed multivariable logistic regression analysis to assess the association, adjusting for demographics, health behaviors, health status, trust in the medical system, and access to transportation. We also studied the factors that motivated the use of telehealth among individuals diagnosed with depression. **Results:** In the multivariable adjusted logistic regression models, individuals diagnosed with depression (AOR 2.59, 95% CI 1.96-3.42) were significantly more likely to use telehealth services relative to individuals with no depression diagnosis. Other factors associated with increased telehealth use included women (AOR 1.36, 95% CI 1.07-1.72), Hispanic ethnicity (AOR 1.78, 95% CI 1.28-2.48), being married or living with a partner (AOR 1.30, 95% CI 1.05-1.62), frequent healthcare visits (AOR 2.31, 95% CI 1.71-3.11), health insurance coverage (AOR 1.86, 95% CI 1.04-3.34), confidence in self-care (AOR 1.38, 95% CI 1.07-1.78), and lack of reliable transportation (AOR 1.57, 95% CI 1.01-2.42). Major motivation factors that influenced telehealth use among individuals with depression primarily included convenience, such as reduced travel times, as well as clinicians' recommendations. **Conclusion:** Telehealth is a promising option for accessing mental health care, particularly for those with depression. Further research is needed to understand how well telehealth works and how it can be combined with traditional care, ensuring fair costs and keeping information safe.

## Keywords

telehealth, mental health, depression, healthcare access

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## Introduction

The state of mental health is in crisis, both in the United States (U.S.) and globally.<sup>1</sup> In 2021, the U.S. Surgeon General released an advisory, declaring youth mental health a “devastating national mental health crisis.”<sup>2</sup> Globally, in 2019, more than 970 million people were living with a mental health condition, the most common being anxiety and depression.<sup>3</sup> Between 2010 and 2018, the number of U.S. adults with major depressive disorder (MDD) increased by 2 million, from 15.5 to 17.5 million (12.9%), with an economic burden estimated to be around \$326.2 billion in 2020.<sup>4</sup> Further, the mental health crisis was significantly

impacted and worsened during the COVID-19 pandemic. The World Health Organization estimated that the global

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prevalence of anxiety and depression increased by 25% in the first year of the COVID-19 pandemic.<sup>5</sup> In general, when compared to other developed nations, the U.S. exhibits some of the highest prevalence and poorest outcomes in mental health, including adverse outcomes such as high rates of suicide and drug-related fatalities.<sup>6</sup>

In recent years, particularly following the emergence of the COVID-19 pandemic, there has been a notable increase in the uptake and utilization of telehealth services within the U.S. and global healthcare systems.<sup>7-10</sup> Telehealth, as an alternative to traditional in-person care, could potentially address and overcome many key barriers that are encountered when seeking mental health services, including stigma, trust in healthcare systems, geographic isolation, transportation insecurity, competing responsibilities, excessive delays to connect with providers and affordability, among many other barriers.<sup>11-15</sup> These significant challenges hinder patients' access to healthcare and mental health services.

According to a report from the Centers for Disease Control and Prevention, in 2021, about 37% of the U.S. adult population has used telehealth in the last 12 months.<sup>16</sup> Moreover, the report indicated that telehealth use was higher among women, those of older age, non-Hispanic Whites, individuals with higher educational attainment, those living in the Northeast and West regions in the U.S. or large metropolitan regions, and those with family income at or above 200% of the Federal Poverty Level. Several systematic reviews that explored the use of telehealth in depression treatment revealed that telehealth yields comparable outcomes to in-person care in improving depression severity, patient satisfaction, quality of life, physical and mental functioning, and cost-effectiveness for the services.<sup>17-20</sup> Using the Press Ganey patient satisfaction surveys from 17 primary care facilities at New York City Health + Hospitals, another study found that patients' mean satisfaction for access measures for telehealth visits was significantly higher than in-person visits.<sup>21</sup>

Further, telehealth broadens treatment access in underserved populations, including rural communities in mental health care provider shortage areas. A recent review reported that telehealth services could substantially improve the symptoms of mental health disorders in rural populations, including a reduction in relapse and rehospitalization among young individuals.<sup>22</sup> Even prior to the COVID-19 pandemic, telehealth use among Medicare beneficiaries, especially those in rural areas, were on the rise.<sup>23</sup> The benefits of telehealth among the behavioral health workforce are also well documented, including better work-life balance, scheduling flexibility, reduced commute time to the workplace, and less job-related burnout.<sup>18</sup>

There is a growing body of literature on telehealth use; however, studies employing population-based data to explore and estimate telehealth use among U.S. patients with depression are scarce. Therefore, this study utilized a population-representative sample of data extracted from a national-level database in the U.S. to understand the use of telehealth services among people diagnosed with depression and assess their motivations for using telehealth services.

## Methods

### *Data Sources*

This study used data from the National Cancer Institute's Health Information National Trends Survey (HINTS). The HINTS is a cross-sectional survey that collects information from a nationally representative sample of U.S. civilian non-institutionalized adults aged 18 years or older on various topics, including how respondents use technology to access and manage healthcare services and health information.<sup>24</sup> The National Cancer Institute has administered the survey every few years, since its inception in 2003. The current study utilized data from the sixth iteration of the HINTS (i.e., HINTS 6), which was carried out among a randomly selected sample of adults across the U.S., using a self-administered mailed questionnaire. HINTS 6 was fielded between March 7 and November 8, 2022, to achieve 6252 completed questionnaires. The overall response rate was 28.1%. For our study, we restricted our analysis to observations with complete information for the variables of interest and those who had attempted to schedule any medical care within the past 12 months, resulting in a final sample of 4502 respondents.

## Measures

### *Main Study Variables*

The dependent variable in the current study is the "use of telehealth (video or phone)," measured through the HINTS 6 survey question, "In the past 12 months, did you receive care from a doctor or health professional using telehealth?" Responses were categorized as "yes, through a video visit," "yes, through an audio visit," "yes, through a video or audio visit," or "no." For our study, we created a binary variable for telehealth service use, classifying "yes" for video or audio visits and "no" otherwise. The independent variable binary (yes vs. no), through which the respondent's depression diagnosis status was assessed. This assessment was conducted through the survey question, "Has a doctor or other health professional ever told you that you had depression or anxiety disorder?"

## Explanatory Variables

Andersen's Behavioral Model of Health Services Utilization (aka, "Andersen's Model") was used to categorize the control variables into predisposing, enabling, and need factors, essential in determining the individual's behaviors in accessing and utilizing healthcare services.<sup>25,26</sup> Andersen's model suggests that access to and utilization of health services by individuals is a function of their predispositions to use health services, factors that enable or impede utilization, and people's need for care.<sup>27</sup> Predisposing factors usually include demographic, social structure, and health beliefs factors. In the current study in particular, these factors encompassed respondents' age, gender, race and ethnicity, and marital status. Respondents' age was categorized as "18 to 34 years," "35 to 39 years," "40 to 44 years," and "45 years or older." Gender was a binary measure "men versus women." Respondents' race and ethnicity were categorized as "non-Hispanic Whites," non-Hispanic Blacks," "Hispanics," "non-Hispanic Asians," and "non-Hispanic others." For the marital status, respondents were categorized as either married or not married (including single, separated, divorced, and widowed).

Andersen's model identifies enabling factors as individual finance and organization (e.g., annual household income, health insurance coverage, having a regular health care provider, etc.) and social support (including informational, emotional, and other tangible supports provided through social networks, etc.).<sup>27-29</sup> Following this construct, enabling factors in this study included respondents' location, education level, employment status, annual household income, health insurance status, and having a regular health care provider. Educational attainments were categorized as "less than high school, high school graduate, some college, and college graduate or more," and employment status was measured based on whether the respondents were employed (yes vs. no). Annual household income was classified as "less than \$20 000," "between \$20 000 and \$34 999," "\$35 000 to \$49 999," "\$50 000 to \$74 999," and "\$75 000 or more." Having health insurance was similarly measured through a binary variable (yes vs no). Respondents' residential location was assessed through their metropolitan vs. non-metropolitan location.

Need-for-care has two components: perceived need and evaluated need. Perceived need stands for the way people view their own general health and functional status and the way people experience and respond emotionally to symptoms of "illness, pain, and worry" about any health condition.<sup>27,28</sup> Evaluated need is described as "professional judgment and objective measurement about a patient's physical status and need for medical care."<sup>27</sup> Need factors in the current study were thus assessed through self-reported health status, body mass index (BMI), smoking status, confidence in the ability to take good care of their

own health, and the number of comorbid medical conditions. Self-reported health status was classified as "poor or fair," "good," and "very good or excellent," whereas the respondent's confidence in being able to take good care of their own health was categorized into "completely or very confident," "somewhat or a little" or "not at all." Moreover, BMI was grouped into "underweight (BMI < 18.5 kg/m<sup>2</sup>)," "normal (BMI = 18.5-24.99 kg/m<sup>2</sup>)," "overweight (BMI = 25-29.99 kg/m<sup>2</sup>)," "obese (BMI = 30-39.99 kg/m<sup>2</sup>)," and "severely obese (BMI ≥ 40 kg/m<sup>2</sup>)." Respondents' smoking status was categorized as "current smoker" versus "not a current smoker." In addition, the number of comorbid conditions was determined based on the respondents' answers to whether they had been diagnosed with diabetes, cancer, high blood pressure, heart conditions such as heart attack, angina, or congestive heart failure, or respiratory diseases, including asthma, chronic lung disease, emphysema, or chronic bronchitis. Based on the number of these medical diagnoses, we created a nominal variable indicating the respondent's status of having "0 comorbidity," "1 comorbidity," and "2 or more comorbidities."

We also examined the motivations of respondents for choosing telehealth services among those diagnosed with depression. HINTS6 survey questions included: "Why did you opt for a telehealth visit(s)?" Responses were recorded as: "Clinician recommended or required telehealth visit," "I sought advice on the need for in-person medical care," "I aimed to avoid potential infection at medical facilities (e.g., COVID-19 or flu)," "It was more convenient than visiting a doctor (e.g., reduced travel or wait times)," or "I wanted to involve family or other caregivers in my appointment."

## Statistical Analysis

The unit of analysis in the study was the individual survey respondent. The Jackknife replicate weights and other survey weights were used in analyses to adjust for the complex design features of the HINTS database and make the findings generalizable to the U.S. population, as well as to produce more accurate variance estimates. Descriptive statistics were provided by calculating weighted proportions for the dependent, independent, and other study covariates. We used the Chi-Square test to assess the two-way associations among the dependent, independent, and other covariates. Finally, we fit a multivariable regression model to examine the associations between the dependent variable (i.e., use of telehealth) and main independent variable (i.e., diagnosis of depression) after adjusting for the predisposing, enabling, and need factors to compute adjusted Odds Ratios (AORs) and 95% confidence intervals (CIs). Using bar charts, we also examined the motivations of respondents for choosing telehealth visits for patients with and without a depression

diagnosis. All analyses were considered statistically significant when  $P$ -value  $< .05$ .

## Results

Table 1 presents descriptive statistics comparing respondents who reported using telehealth (53.8%) and those who reported no telehealth use (46.2%). Overall, the prevalence of telehealth use was higher among respondents with depression and among women, college-educated individuals, those with frequent healthcare access, those having more than 2 comorbid medical conditions, and those with health insurance coverage.

The results show that an estimated 41.4% of individuals diagnosed with depression reported using telehealth. Moreover, 57.9% of women utilized telehealth services. Further, individuals above age 45 showed higher telehealth usage (57.6%) compared to only 8.9%, 10.4%, and 23.1% for those aged 40 to 44 years, 35 to 39 years, and younger than 35 years, respectively. The descriptive statistics also show that a majority of the individuals reporting telehealth usage were non-Hispanic white (64%), with Heterosexual or straight sexual orientation (91.1%), had a high school/college degree (78.2%), were married or living with a romantic partner (60.7%), had an income of \$75 000 and above (50.4%), had health insurance coverage (94.4%), lived in metropolitan areas (88.5%), were in excellent or very good health (44.9%), were overweight (31.7%), had fewer or no comorbidity (47.7%), had experienced unfair treatment or discrimination by healthcare system (7.8%), had reported cancer (12.2%), were completely/very confident in their ability to take good care of themselves (70.2%) and had limited access to reliable transportation (14.4%). Additionally, employed individuals (59.8% vs. 59%) and those who are single, divorced, widowed, or separated exhibited lower telehealth usage compared to those who are married or living with a romantic partner (39.3% vs. 60.7%).

Table 2 outlines the results of the multivariable regression analysis. Respondents who were diagnosed with depression were more likely (AOR 2.59, 95% CI 1.96-3.42) to utilize telehealth services as compared to the respondents with no previous history of depression. Additionally, women (AOR 1.36, 95% CI 1.07-1.72), Hispanics (AOR 1.78, 95% CI 1.28-2.48), married or living with a romantic partner (AOR 1.30, 95% CI 1.05-1.62), those capable of good self-care (AOR 1.38, 95% CI 1.07-1.78), individuals lacking reliable transportation facilities (AOR 1.57, 95% CI 1.01-2.42), frequent provider visit (AOR 2.31, 95% CI 1.71-3.11), those with more than 2 comorbid diseases (AOR 1.37, 95% CI 1.01-1.86), and those with health insurance (AOR 1.86, 95% CI 1.04-3.34) were more likely to report telehealth use. Finally, respondents who lacked a reliable mode of transportation were more likely to use telehealth

(AOR 1.57, 95% CI 1.01-2.42) compared to individuals with a reliable mode of transportation.

Figure 1 presents our analysis of motivational factors influencing telehealth service selection. We found that convenience, such as reduced travel or wait times, emerged as a significantly stronger motivation for telehealth use among the depression group compared to the non-depression group (72% vs. 59%). The primary motivation reported by respondents in both depression and non-depression groups was clinician recommendation for a telehealth visit (75% vs. 70%), followed by the desire to prevent infection risks associated with visiting a clinician's office (51% vs. 46%), and the need to assess the necessity of an in-person visit (27% vs. 26%). Lastly, the least significant motivation factor for telehealth visits in both the depression and non-depression groups was the inclusion of others (family/friends) in clinician visits (22% vs. 18%).

## Discussion

Using a nationally representative sample, we examined the use of telehealth among people diagnosed with depression in the U.S. Our findings suggest that people diagnosed with depression are significantly more likely to use telehealth as compared to people without a prior diagnosis of depression. Among other respondent characteristics, we found that women, individuals with a Hispanic background, those married or living with a romantic partner, those who required frequent provider visits, individuals with access to health insurance, those with the ability to take good care of themselves, and those lacking reliable transportation were significantly associated with the use of telehealth. When assessing the motivation for using telehealth among individuals with depression, convenience was the most important factor, followed by recommendations from healthcare providers. Our findings support previous research on the use of telehealth among people with depression. One recent systematic review assessing the use of telepsychiatry in depression found that the treatment provided through telehealth helped patients to better cope with their everyday lives.<sup>30</sup> The study also reported enhanced patient-provider communication, and telehealth empowered patients to get more involved with their treatment.

Further, our study findings are consistent with prior studies assessing patient characteristics with telehealth use.<sup>16,31,32</sup> We found that women, Hispanics, and individuals married or living with a romantic partner were more likely to utilize telehealth services. Analyzing factors like gender and ethnicity reveals disparities in telehealth access, which informs future strategies for achieving equitable access to mental health care. Understanding these disparities could potentially guide interventions to overcome barriers and enhance access while tailoring telehealth delivery to patient characteristics could improve outcomes for diverse patient



**Table 1.** General Characteristics of Respondents who used Telehealth, Health Information National Trends Survey (HINTS), (March 2022 to November 2022), N = 4502.

Variables	Telehealth use (yes) N=2079	Telehealth use (no) N=2423	P-value
	% (se)	% (se)	
Diagnosis of depression	41.4 (1.9)	21.1 (1.5)	<.01
Birth gender			
Female	57.9 (1.6)	47.2 (1.1)	<.01
Age			
18-34 years	23.1 (1.8)	21.9 (1.4)	.040
35-39 years	10.4 (0.9)	6.4 (0.6)	
40-44 years	8.9 (1.0)	9.0 (0.9)	
45 years and above	57.6 (1.8)	62.7 (1.7)	
Race/ethnicity			
Non-Hispanic White	64.0 (1.6)	65.6 (1.6)	.109
Non-Hispanic Black	9.4 (0.9)	12.6 (0.7)	
Hispanic	16.5 (1.1)	13.0 (0.8)	
Non-Hispanic Asian	5.6 (0.9)	5.1 (0.9)	
Non-Hispanic Other	4.5 (0.8)	3.7 (0.6)	
Sexual orientation			
Heterosexual or straight	91.1 (0.9)	92.9 (0.8)	.290
Homosexual or gay, or lesbian	3.4 (0.7)	3.0 (0.5)	
Bisexual	4.2 (0.7)	2.6 (0.6)	
Other sexual orientation	1.2 (0.4)	1.5 (0.3)	
Education attainment			.014
Less than High school	4.1 (1.1)	5.4 (0.8)	
High school graduate	17.8 (1.3)	22.6 (1.2)	
Some college	38.8 (1.6)	40.2 (1.3)	
College graduate	39.4 (1.4)	31.9 (0.8)	
Marital status			
Married or living with a romantic partner	60.7 (1.5)	56.8 (1.4)	.124
Single or divorced or widowed or separated	39.3 (1.5)	43.2 (1.4)	
Income			
Less than \$20 000	11.9 (1.1)	12.7 (1.3)	.288
\$20 000 to \$34 999	9.6 (0.9)	10.8 (0.9)	
\$35 000 to \$49 999	11.8 (1.2)	12.3 (1.1)	
\$50 000 to \$74 999	16.4 (1.1)	19.4 (1.4)	
\$75 000 and above	50.4 (1.7)	44.7 (1.5)	
Employed	59.0 (1.5)	59.8 (1.9)	.705
Frequent provider visits			
0 times	33.4 (1.7)	52.7 (1.5)	<.01
1-4 times	33.0 (1.6)	28.9 (1.3)	
5-9 times	19.2 (1.4)	11.3 (0.9)	
10 or more times	14.5 (1.4)	7.1 (0.6)	
Health insurance coverage	94.4 (1.0)	90.0 (0.8)	.016
Metropolitan living area	88.5 (1.1)	86.7 (0.6)	.248
Health status			
Excellent or very good	44.9 (1.9)	49.4 (1.5)	<.01
Good health status	36.5 (1.9)	36.9 (1.4)	
Fair or poor health status	18.6 (1.1)	13.7 (0.8)	
BMI			
Underweight (<18.5)	2.0 (0.8)	1.0 (0.4)	.268
Normal weight (18.5-24.99)	29.6 (1.6)	31.0 (1.5)	

(continued)

**Table 1. (continued)**

Variables	Telehealth use (yes) N = 2079	Telehealth use (no) N = 2423	P-value
	% (se)	% (se)	
Overweight (25-29.99)	31.7 (1.6)	35.3 (1.4)	
Obese (30-39.99)	29.9 (1.4)	27.1 (1.7)	
Severely obese ( $\geq 40$ )	6.8 (0.8)	5.6 (0.7)	
Currently smoking status	11.5 (1.3)	13.3 (1.3)	.337
Comorbidities			
No comorbidity	47.7 (2.1)	54.7 (1.7)	.015
1 comorbidity	29.3 (1.5)	26.6 (1.5)	
2 or more comorbidity	23.0 (1.5)	18.6 (1.1)	
Trust healthcare system	97.5 (0.5)	97.3 (0.5)	.757
Experienced unfair treatment or discrimination by healthcare system	7.8 (0.8)	6.6 (0.8)	.390
Having ability to take good care of themselves			
Completely/very confident	70.2 (1.5)	69.0 (1.6)	.617
Somewhat/a little/not at all confident	29.8 (1.5)	31.0 (1.6)	
Lack of reliable transportation	14.4 (1.3)	10.3 (1.7)	.096
Cancer, ever told	12.2 (0.9)	9.8 (0.7)	.113

P-value denotes the chi-square value of independence.

**Table 2.** Multivariable Logistic Regression Analyzing the Association Between the Use of Telehealth and Depression Diagnosed by a Doctor or Health Professional, Health Information National Trends Survey (HINTS) (March 2022 to November 2022), N = 4502.

Variables	Telehealth use (video or phone) AOR	[95% CI]	P-value
Depression diagnosed, ever	2.59	1.96, 3.42	<.001**
Birth gender			
Female	1.36	1.07, 1.72	.016*
Age			
18-34 year (ref.)	1		
35-39 year	1.53	1.00, 2.35	.053
40-44 year	0.94	0.60, 1.47	.780
45 y and above	0.85	0.60, 1.20	.357
Race/ethnicity			
Non-Hispanic White (ref.)	1		
Non-Hispanic Blacks	0.89	0.63, 1.24	.486
Hispanic	1.78	1.28, 2.48	.001**
Non-Hispanic Asian	1.59	0.96, 2.64	.072
Non-Hispanic Other	1.23	0.69, 2.17	.479
Sexual orientation			
Heterosexual or straight (ref.)	1		
Homosexual or, gay or lesbian	1.00	0.53, 1.87	.991
Bisexual	0.94	0.42, 2.12	.887
Other sexual orientation	0.64	0.23, 1.75	.374
Education attainment			
Less than high school (ref.)	1		
High school graduate	1.32	0.69, 2.53	.398
Some college	1.45	0.75, 2.80	.259

(continued)

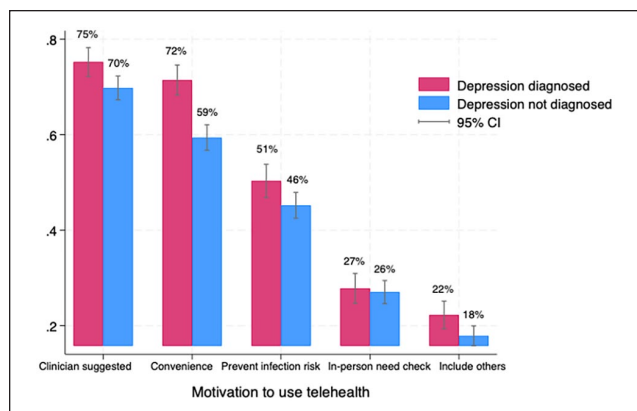
**Table 2. (continued)**

Variables	Telehealth use (video or phone) AOR	[95% CI]	P-value
College graduate	1.81	0.95, 3.46	.072
Marital status			
Single or divorced or widowed or separated (ref.)	1		
Married or living with a romantic partner	1.30	1.05, 1.62	.017*
Income			
Less than \$20 000 (ref.)	1		
\$20 000 to \$34 999	0.98	0.62, 1.55	.933
\$35 000 to \$49 999	1.16	0.65, 2.05	.610
\$50 000 to \$74 999	1.04	0.64, 1.68	.869
\$75 000 and above	1.29	0.81, 2.06	.281
Employed (ref. not employed)	1.12	0.90, 1.39	.318
Frequent provider visits			
0 times ref.	1		
1-4 times	1.62	1.28, 2.06	<.001**
5-9 times	2.31	1.71, 3.11	<.001**
10 or more times	2.66	1.84, 3.84	<.001**
Health insurance coverage (ref.=no)	1.86	1.04, 3.34	.037*
Metropolitan living area (ref. non-metropolitan)	1.20	0.90, 1.62	.211
Health status			
Excellent or very good (ref.)	1		
Good health status	1.02	0.81, 1.28	.892
Fair or poor health status	1.16	0.85, 1.59	.332
BMI			
Underweight (<18.5) ref.	1		
Normal weight (18.5-24.99)	0.65	0.20, 2.16	.477
Overweight (25.-29.99)	0.64	0.18, 2.25	.475
Obese (30-39.99)	0.69	0.20, 2.46	.562
Severely obese ( $\geq 40$ )	0.56	0.15, 2.02	.365
Currently smoking status (ref=no)	0.86	0.55, 1.35	.517
Comorbidities			
No comorbidity ref.	1		
1 comorbidity	1.23	0.97, 1.57	.089
2 or more comorbidity	1.37	1.01, 1.86	.042*
Trust Healthcare system	0.80	0.38, 1.66	.535
Experienced unfair treatment or discrimination by healthcare system	1.09	0.77, 1.55	.625
Completely/very confident in their ability to take good care of themselves (ref=Somewhat/a little/not at all confident)	1.38	1.07, 1.78	.014*
Lack of reliable transportation	1.57	1.01, 2.42	.044*
Cancer, ever told	1.19	0.86, 1.66	.288

Abbreviations: AOR, adjusted odds ratio; CI, confidence intervals.

Analysis was also adjusted for survey-year.

\*\* $p < .01$ . \* $p < .05$ .



**Figure 1.** Motivation reasons for telehealth use by US Adults (grouped by depression), health information national trends survey, 2022 (n = 2079).

groups. Prior evidence investigating characteristics of telehealth users indicates that women in general have higher rates of telehealth service utilization, and that these rates increased exponentially during the COVID-19 pandemic as more women than men opting in for telehealth rather than in-person care.<sup>31,33-36</sup> The higher utilization among women may be due partly to the convenience of telehealth in terms of time and location.<sup>37</sup> Women in general are more health-oriented and find telehealth a convenient tool for routine check-in visits or consultations for health and medical conditions including mental health services.<sup>38</sup> Another plausible explanation for higher rates of telehealth use among women particularly during the COVID-19 pandemic is that women were more likely to bear a disproportionate burden of childcare and other caregiving responsibilities, and experienced higher rates of mental health issues, and found telehealth more appealing to address time constraints and transportation challenges.<sup>39</sup>

Another finding in the current study worth highlighting is that individuals with frequent healthcare provider visits were more likely to utilize telehealth. This result aligned with prior published findings exploring associations between in-person provider visits and telehealth utilization.<sup>33,40-42</sup> Current evidence indicates that people in poor health and with multiple chronic medical conditions who have frequent in-person provider visits tend to get more recommendations for and have higher rates of telehealth services utilization.<sup>40,41</sup> Thus, a critical concern among policymakers is whether telehealth visits actually change the volume of in-person office visits, or lead to more telehealth or in-person follow-up visits<sup>43</sup>; recent large-scale studies suggest similar follow-up visits between in-person and telehealth visits. A recent study from Epic, utilizing data from 190 million patients across 208 organizations, including 1197 hospitals and more than 25400 clinics,

reported within the mental health specialty, in-person visits exhibited a higher rate of 90-day follow-up compared to telehealth visits (40% vs. 10%).<sup>44</sup> However, this particular area of telehealth research and investigating factors associated with in-person follow-up visits after tele-mental health warrants further exploration in the future.

In the last few years, digital mental health companies such as BetterHelp, Meru Health, Talkspace, Cerebral, Hims & Hers have grown, among others, providing different mental health services, including prescription medications.<sup>45-48</sup> These companies, backed by private equities, rely on aggressive marketing to get patients signed up for services and provide one-on-one, group video, texting, and coaching videos with licensed mental health professionals. Although these companies have witnessed significant growth in patient volume, significant concerns remain regarding the effectiveness of these online mental health services.<sup>48</sup> First, there is a concern about training and compensation for therapists who are independent contractors. These online therapists earn significantly less than traditional mental health therapists and may not receive adequate training to deliver safe, effective, and ethical mental healthcare online.<sup>48</sup> Another important concern is the privacy and security of the user data. Last year, Cerebral, with a mission “Everyone deserves access to affordable, high-quality mental health care,” admitted to sharing 3.1 million patients’ data, including the names, phone numbers, email IDs, dates of birth, IP addresses, self-assessment of mental health condition, and services, among other confidential information, with social media advertisers like Facebook, Google, and TikTok.<sup>49</sup> These data privacy and security issues may deter patients with mental health needs from utilizing telehealth services.<sup>49</sup>

Despite the current study’s contribution to the ongoing discussion about adopting telehealth services, especially among people diagnosed with depression, it is imperative to acknowledge several inherent limitations that warrant consideration when interpreting our study findings. First, we employed a cross-sectional observational study design, so we cannot infer the causality and direction of associations for our findings. Second, even though more people with depression are using telehealth, we do not have information on whether the respondents used telehealth services for depression-related issues or something else. Our study also omitted variable bias. Important and impactful variables with the potential to influence respondents’ telehealth use may have been excluded due to the unavailability of data. Third, as HINTS is a self-reported survey, there may be the possibility of recall or social desirability bias.

These limitations underscore the need for further research to understand the utilization of telehealth for mental healthcare, including depression. First, there is a need for randomized controlled trials to understand short and



long-term treatment effectiveness and patient experience of telehealth interventions compared to in-person visits. These studies could focus on the characteristics of the patients, factors related to therapists, technology use, health services use, and frequency of telehealth visits. Future studies may also need to probe the question and investigate how telehealth can be integrated with traditional care, especially primary care, to enhance patient continuation of care and ultimately promote health. Second, payment parity for telehealth services is also a major challenge. More patients have access to telehealth services in states with telehealth parity laws and pro-telehealth regulatory environments.<sup>50,51</sup> Third, further research could examine the factors contributing to the “digital divide,” including access to the internet and digital literacy, to understand the determinants of telehealth use better. Fourth, the training and competency of the care providers remain a significant concern with virtual digital health platforms.

Further research is needed to understand the training requirements for the therapists to provide virtual mental health services. Lastly, studies can look at privacy and security issues from provider and patient perspectives to make telehealth services trustworthy and effective. By addressing these challenges and advancing research in telehealth for mental health care, we can work toward improved accessibility, quality care, and outcomes in mental health services for individuals working toward recovery from depression and other mental health conditions.

### Author's Note

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### Author Contribution Statements

SB conceptualized the study with contributions from SK, AM, and MG. SK conducted the data analysis; SB wrote the initial draft with contributions from UB, SK, MG, AM, EC, AR, and KB. All authors reviewed and approved the final version of the manuscript.

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### Ethical Statement

All procedures involving human participants were conducted in accordance with the ethical standards of the Institutional Review Board at Rutgers University and the 1964 Helsinki Declaration, along with its later amendments or comparable ethical standards.

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