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Health Inequalities in the Use of Telehealth in the United States in the Lens of COVID-19

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Abstract

The use of remote health care services, or telehealth, is a promising solution for providing health care to those unable to access care in person easily and thus helping to reduce health inequalities. The COVID-19 pandemic and resulting stay-at-home orders in the United States have created an optimal situation for the use of telehealth services for non-life-threatening health care use. A retrospective cohort study was performed using Kantar's Claritis™ database, which links insurance claims encounters (Komodo Health) with patient-reported data (Kantar Health, National Health & Wellness Survey). Logistic regression models (odds ratios [OR], 95% confidence intervals [CI]) examined predictors of telehealth versus in-person encounters. Adults ages ≥18 years eligible for payer-complete health care encounters in both March 2019 and March 2020 were identified (n = 35,376). Telehealth use increased from 0.2% in 2019 to 1.9% in 2020. In adjusted models of respondents with ≥1 health care encounter (n = 11,614), age, marital status, geographic residence (region; urban/rural), and presence of anxiety or depression were significant predictors of telehealth compared with in-person use in March 2020. For example, adults 45–46 years versus 18–44 years were less likely to use telehealth (OR 0.684, 95% CI: 0.561–0.834), and respondents living in urban versus rural areas were more likely to use telehealth (OR 1.543, 95% CI: 1.153–2.067). Substantial increases in telehealth use were observed during the onset of the COVID-19 pandemic in the United States; however, disparities existed. These inequalities represent the baseline landscape that population health management must monitor and address during this pandemic.

Keywords: COVID-19, health inequalities, pandemic, telemedicine, telehealth

Introduction

One key factor in reducing health disparities is to increase access to health care services, particularly among vulnerable and underrepresented populations such as ethnic minorities and residents living in rural or provider shortage areas.[1] Shortage areas are identified as areas with too few primary care, dental, and mental health care providers or services. In the United States, 81 million people live in primary care Health Professional Shortage Areas (HPSAs) and 120 million people live in mental health care HPSAs.[2] Telemedicine serves to provide remote clinical service (ie, using technology to deliver health care at a distance).[3] Telehealth is the component of telemedicine that provides ''vital health care services through videoconferencing, remote monitoring, electronic consults and wireless communications'' to patients.[4] One of the primary goals of telemedicine and telehealth is to help reduce health disparities by bridging the gap for those who live in rural areas with reduced access to providers.[5,6]

By 2017, in the United States, 76% of hospitals had partial-to-full implementation of telehealth.[4] However, the actual use of telehealth remained low. One study examining a large commercially insured population found that in 2017, there were 6.57 telehealth visits per 1000 members.[7] Although this number has grown substantially when compared with data from 2005 (0.02 per 1000), the use of telehealth was uncommon.

There are a number of barriers and factors related to the use of telehealth. Some of these barriers are policy related, including insurer coverage and reimbursement[4,8] as well as regulatory and legal issues.[4] There are provider barriers,

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including lack of training,[8,9] uncertainty of the value or ability to provide appropriate care,[4,5] and cost of equipment.[8] The digital divide presents a tremendous obstacle to telehealth use; 97% of Americans in urban areas have access to high-speed fixed service and only 65% and 60% have access in rural areas and tribal lands, respectively.[10] Finally, patient characteristics are critical factors affecting this relationship, whereby access and engagement with eHealth vary by age, sex, and socioeconomic status.[11–14]

The telehealth landscape experienced ''dramatic'' changes because of the coronavirus (COVID-19) pandemic as steps were undertaken to reduce the risk of contact for both patients and health care professionals (HCPs).[15,16] In terms of policy, the Centers for Medicare & Medicaid Services (CMS) announced on March 6, 2020 that HCPs may provide telehealth services to treat COVID-19 and for other ''medically reasonable purposes.''[17] Further, CMS granted payment parity between telehealth and in-person visits for Medicare.[18] Starting at the end of March and finalized on July 8, 2020, the Federal Communications Commission (FCC) allocated $200 million for increasing broadband coverage to help provide connected care.[19] From the providers' perspective, HCPs cancelled nonemergency procedures and started using telehealth in lieu of in-person visits.[15] HCPs also proactively revised best practices to evaluate and care for patients using telemedicine.[15] Telemedicine and telehealth also were used as a critical part of the COVID response, including screening, monitoring at-home patients, triaging at-risk or high-risk patients, and reducing health care provider burden by accessing quarantined HCPs.[20]

Given the circumstances of the COVID-19 pandemic, the changes in policy for use of telehealth, and changes in provider practices to switch to telehealth, one would expect a rise in telehealth use. There are, however, remaining questions – is there an indication that telehealth is bridging the gap in health disparities? Do we indeed see greater access to HCPs among vulnerable and underrepresented populations? The current study provides a preliminary look at the telehealth landscape and examines whether there were health inequalities in the use of telehealth at the onset of the COVID-19 epidemic.

Methods

Study design and data sources

This study is a retrospective cohort study using the US National Health and Wellness Survey (NHWS; 2015–2019) and Komodo Health's ''payer-complete'' (herein ''closed'') claims (encounter) data (March 2019 and March 2020). NHWS is an annual, nationally representative, general health, internet-based survey of adults (aged ≥18 years). The survey is self-administered and collected annually from ~97,500 US residents. Panel members are recruited through opt-in emails, co-registration with panel partners, e-newsletter campaigns, banner placements, and affiliate networks. All panelists explicitly agree to be a panel member, register with the panel through a unique e-mail address, and complete an in-depth demographic registration profile. NHWS uses stratified random sampling by sex, age, and race/ethnicity from the US Census to ensure the sample is demographically representative of the US adult population.[21–23] The 2015–2019 NHWS were reviewed by Pearl Institutional Review Board (Indianapolis, Indiana) and granted exemption status (15-KAN-113; 16-KANT-127; 17-KANT-146; 18-KANT-161; 19-KANT-186).

Komodo Health data include >65 billion de-identified clinical, pharmacy, and laboratory encounters for more than 320 million patients enrolled in a health care plan in the United States from 2012-present, >140 million of whom have closed claims from more than 150 payers. These encounters have census-level representation across patient populations (eg, age, geography, risk pools), including hospital networks, physician networks, health care claim processing companies (ie, claims clearinghouses), pharmacies, and health insurers. This study used closed claims (herein ''eligible''), which are health care encounters that came directly from the payer, in order to provide a complete patient journey, including full medical and/or prescription benefit information, insurance eligibility, and insurer-reported costs. Nearly half of the Komodo Health claims data are closed encounters and represent >140 million patients (~93 million patients per year).

Linkage of NHWS self-reported data with Komodo payer-complete claims was performed using a third-party Health Insurance Portability and Accountability Act (HIPAA)-certified de-identification linking software provided by Datavant (Datavant, Inc., San Francisco, CA). This software uses a highly accurate, proprietary probabilistic matching algorithm on Protected Health Information (PHI) from claims and Personally Identifying Information (PII) from NHWS to find the matches. The linking engine has been shown to have a 1%-2% false positive rate and 3%-5% false negative rate. This process allows patients' claims data to be linked to their patient-reported data from NHWS, while ensuring that there is minimal risk of re-identifying the patient from any of the information provided. This linked data set was HIPAA-certified to be de-identified via expert determination, as defined in the HIPAA guidance.[24] Specifically, 186,234 survey respondents with PHI/PII were linked to Komodo Health encounters for the creation of Claritis. In the Claritis data set, there were 54,500 respondents with closed encounters between January 2019 through May 2020. Among this group, 49,705 and 39,522 were eligible for March 2019 and March 2020, respectively, and 35,376 were eligible during both time periods (Fig. 1). Respondents were identified during these 2 time periods, March 2019 (ie, baseline) and March 2020 (ie, declaration of COVID-19 as a pandemic and national emergency in the United States),[25,26] to (1) examine changes in telehealth use as a result of COVID-19, and (2) examine the differential use of telehealth encounters at the onset of COVID-19. In addition, because most health care claims are processed and paid within 3 months of the encounter, near-complete data were available for March only.

This study was reviewed by Pearl Institutional Review Board (Indianapolis, Indiana) and granted exemption status (20-KANT-231).

Study population

Adults aged ≥18 years who participated in the US NHWS survey at least once during the survey years 2015–2019 and

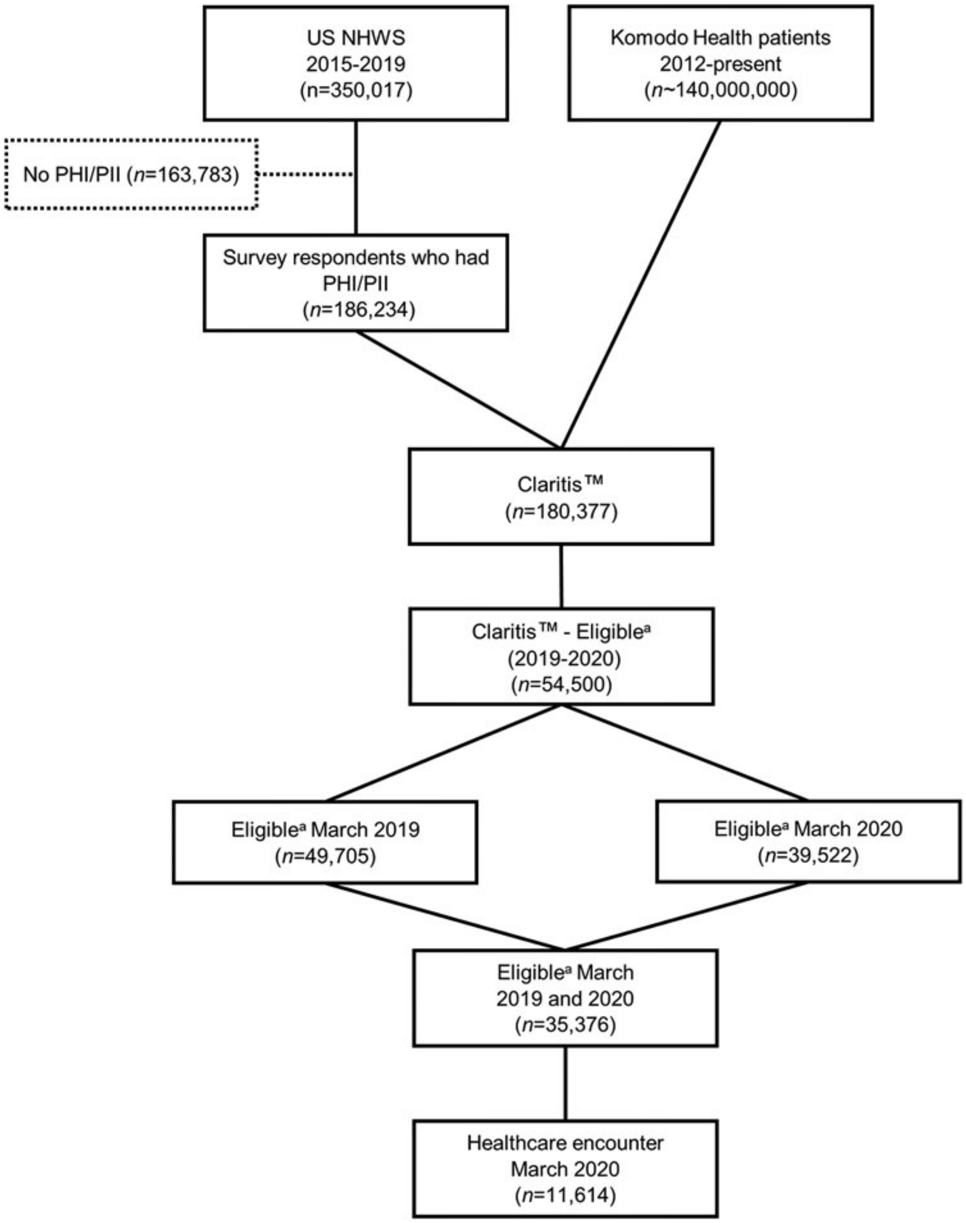

FIG. 1. Consort diagram of study sample. [a]Eligible respondents were defined as those for whom full health care encounter data were available. NHWS, National Health and Wellness Survey; PHI, protected health information; PII, personally identifying information.

were eligible (ie, available closed claims encounter data) in March 2019 and March 2020 (ie, an indicator of continuous health care coverage for ≥1 year) were included.

Study variables

Self-reported data. Respondent characteristics were identified from data of the most recent NHWS survey of participation.

Demographic and socioeconomic characteristics included age (years), sex (male/female), ethnicity (Hispanic/non-Hispanic), race (white only/Black only/Asian only/other), marital status (married or living with partner/divorced, separated, widowed/single, never married), education (up to high school diploma/associate, bachelor, or graduate degree), household income (<$75K/≥$75K), employment status (currently employed part- or full-time/self-employed, student, retired, disabled, or not employed), geographic region according to the 4 US Census regions (South/Northeast/Midwest/West),[27] and urban/rural area.

Health behaviors and status included past month vigorous exercise for at least 20 minutes (for improving or maintaining health, weight loss, or enjoyment; yes/no); past month alcohol use (yes/no); smoking status (current/former/never); body mass index (BMI as kg/m^2; underweight to normal [<25.0 kg/m^2]/overweight [≥25.0 kg/m^2 to <30.0 kg/m^2]/obese [≥30.0 kg/m^2]); Charlson comorbidity index (CCI) score; and self-reported medical diagnosis (SR-MD) (ever) for cardiovascular or metabolic diseases or conditions (angina, atherosclerosis, hypertension, high cholesterol, congestive heart failure, type 2 diabetes, heart attack, pulmonary embolism, stroke, and transient ischemic attack), anxiety or depression, autoimmune disease (osteoarthritis, rheumatoid arthritis, and psoriasis), and respiratory diseases (asthma, chronic obstructive, chronic bronchitis, and emphysema).

Claims data. Health care resource use was examined using encounter data from Komodo Health and classified as an in-person or telehealth visit. Telehealth visits were identified using a combination of CMS telehealth billing codes and place of service codes (see Supplementary Table S1). These claims data were aggregated at a weekly level for each encounter type. Encounters data for this study were identified as claims that occurred in 2019 from encounters registered for the weeks of February 25, March 4, March 11, March 18, and March 25, and in 2020 for the weeks of February 24, March 2, March 9, March 16, and March 23.

Statistical analysis

Descriptive statistics were used to examine respondent characteristics. One-way analysis of variance for continuous variables and chi-square tests for categorical variables were used to compare demographic, socioeconomic and health characteristics with health care use. Additionally, pairwise comparisons adjusted for multiple comparisons using the Bonferroni correction also were conducted. Logistic regression analysis examined predictors of telehealth use in March 2020 and odds ratios (OR) and 95% confidence intervals (CI) were calculated. Results of the unadjusted bivariate analyses for variables associated with telehealth use at $P < 0.2$ and those of conceptual interest were used to identify model predictors. Statistical significance was considered at $P < 0.05$.

Results

Sample characteristics

A total of 35,376 persons were identified for this study as being eligible for payer-complete health care encounters in March 2019 and March 2020 and participated in one of the NHWS US 2015–2019 studies. Characteristics of this sample are presented in Supplementary Table S2. Overall, respondents were aged (mean±SD) 50.8 ± 16.5 years, 63.9% were female, 8.6% were Hispanic, 33.0% identified as nonwhite, and 58.0% were married or living with a partner. Approximately one third were located in the southern region of the US and 89.6% lived in an urban area. Most respondents had a low comorbidity burden (CCI 0 = 86.8%), although 40.6% had a SR-MD for a cardiovascular or metabolic disease or condition and 27.3% for anxiety or depression.

Health care encounters, March 2019 and March 2020

In March 2019 and 2020, 39.9% (n = 14,105) and 32.8% (n = 11,614) of respondents had ≥1 health care encounter, in-person or telehealth, respectively, and 20.5% had ≥1 encounter in both time periods (Supplementary Table S2). Telehealth claims increased 845.0% from 0.2% (n = 71) in March 2019 to 1.9% (n = 669) in March 2020, representing an absolute increase of 1.7%. The distribution of telehealth claims in March 2020 differed across age groups (18–44 years = 2.2%; 45–64 years = 1.8%; ≥65 years = 1.6%; $P = 0.01$). The percentage of telehealth encounters of the total number of encounters in March 2020 was 5.8% and was substantially larger in the younger than older age groups (all pairwise comparisons $P < 0.005$; Fig. 2).

Respondent characteristics according to health care encounter type, March 2020

Among respondents with ≥1 health care encounter in March 2020, demographic and socioeconomic indicators differed by telehealth and in-person encounter (Table 1). Respondents who had a telehealth encounter compared with an in-person encounter tended to be younger ($P < 0.001$), female ($P = 0.002$), Hispanic ($P = 0.018$), married or living with a partner ($P < 0.001$), and employed ($P < 0.001$) (Table 1). Disparities according to encounter type were observed by geographic location and urban/rural designation, with, for example, 92.1% of telehealth visits from respondents living in urban areas relative to 88.5% of in-person encounters from respondents living in urban areas ($P = 0.005$).

Health behaviors related to exercise, alcohol use, smoking, and health status including BMI and CCI did not differ according to the encounter type, in-person or telehealth (all $P > 0.4$) (Table 1). Health status related to SR-MD for cardiovascular or metabolic diseases or conditions, anxiety or depression, and respiratory diseases were associated with type of health care encounter ($P < 0.009$). For example, respondents with cardiovascular or metabolic diseases or conditions had fewer telehealth encounters compared to an in-person encounter (42.9% vs 50.8%, respectively; $P < 0.001$). Conversely, those with anxiety or depression were more likely to have a telehealth encounter than an in-person encounter ($P < 0.001$). The prevalence of anxiety or depression among those who had a health care encounter was 33.1%, although it varied by age group with a higher prevalence for respondents 18–44 years old (43.3%) and lower for those 45–64 years old (35.7%) and ≥65 years old (20.3%). The use of telehealth varied according to the presence or absence of anxiety or depression and age group ($P \le 0.002$; Fig. 3). For example, 6.3% more of respondents 18–44 years old with an SR-MD of anxiety or depression used telehealth than those without an SR-MD ($P < 0.002$). For the older age groups, this pattern was similar; however, the use of telehealth among the diagnosed decreased with advancing age (18–44 years: 12.0%; 45–64: 7.0%; ≥65 years: 5.9%).

Predictive models of telehealth use among those with a health care encounter in March 2020 are presented in Table 2. After adjusting for respondent characteristics, age, marital status, geographic location, urbanization, and SR-MD anxiety or depression were statistically significant predictors of having a telehealth encounter ($P < 0.05$). Specifically, relative to respondents ages 18–44 years, persons aged 45–64 years and ≥65 years were 31.6% (OR 0.684, 95% CI: 0.561–0.834) and 41.5% (OR 0.585, 95% CI: 0.450–0.759) less likely to have a telehealth encounter, respectively ($P < 0.001$). Respondents who were married or living with a partner were 19.1% less likely to have a telehealth encounter than respondents who were single,

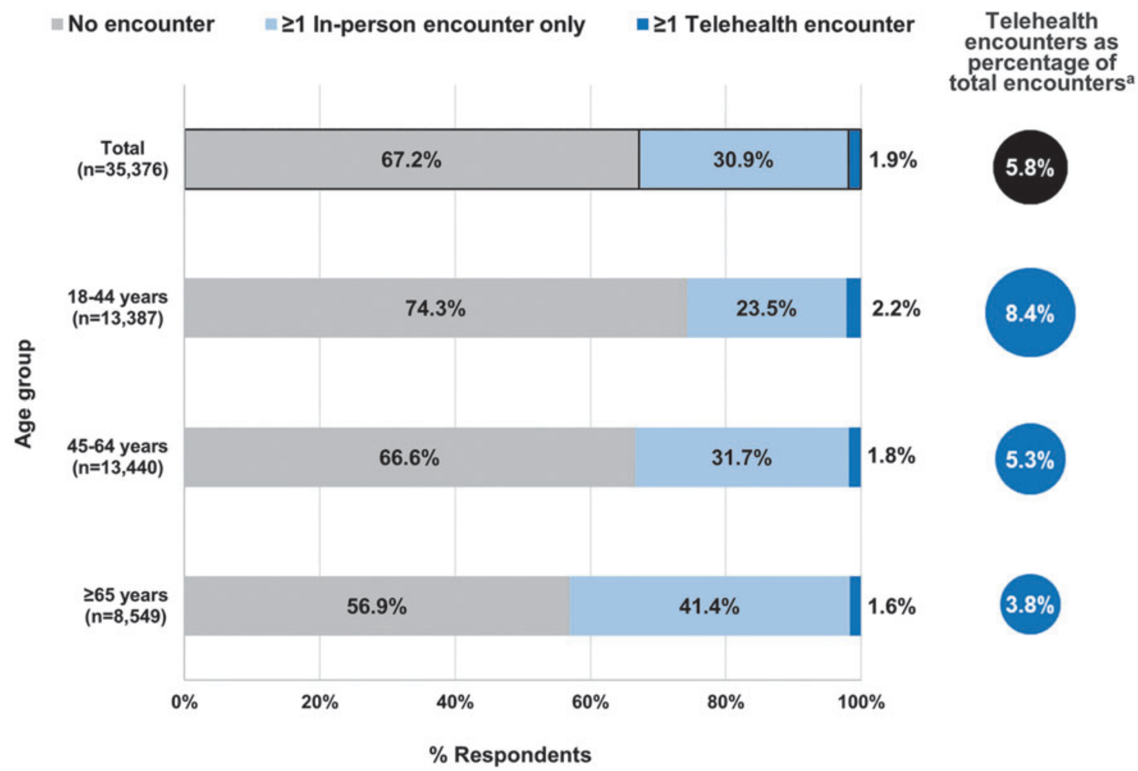

FIG. 2. Distribution of health care encounters in March 2020, stratified by age group (N = 35,376). [a]Overall, 68.8% of respondents with a telehealth encounter also had an in-person encounter. Differences between age groups using pairwise comparisons adjusted for multiple comparisons $P < 0.005$.

divorced, widowed or separated ($P = 0.01$). Geographic location was an indicator of telehealth use as respondents living in the Northeast, Midwest, or West regions of the US were 29.8%-34.1% more likely to have had a telehealth encounter than those living in the South ($P \leq 0.021$). In addition, persons living in urban areas were 54.3% more likely to have a telehealth encounter compared with those in rural areas ($P = 0.004$). Respondents who self-reported ever receiving a medical diagnosis of anxiety or depression were 91.9% more likely to have a telehealth encounter compared with those without an SR-MD for these conditions. Race as an overall category was not a significant predictor of telehealth use ($P = 0.091$); however, respondents identifying as Asian only compared with white only were 42.2% less likely to have a telehealth encounter (Table 2). Other respondent characteristics, such as sex, ethnicity, employment status, or other SR-MD diseases included in the model were not statistically significant predictors of telehealth use at $P > 0.5$.

Discussion

The current study used a unique data set that linked self-reported data, rich in demographic and socioeconomic descriptors beyond those typically available in administrative databases, with health care encounter data from a large representative claims database to examine the use of telehealth during the initial month of COVID-19 stay-at-home orders in the United States. A primary goal of telehealth has been to reduce inequalities in health care access, and accordingly, the research team examined the use of this digital tool in relation to demographic and socioeconomic indicators. The findings revealed a substantial rise from 0.2% to 1.9% in telehealth use in March 2020 compared to the similar time period in 2019. During COVID-19, age, marital status, geographic residence, and presence of anxiety or depression were major predictors of the use of telehealth compared with in-person visits. Furthermore, differential use of telehealth was not observed by sex, ethnicity, socioeconomic status or health behaviors.

The younger age group, specifically those aged 18–44 years, were more likely to have a telehealth than an in-person visit compared with older age groups (45–64 and ≥65 years), and the percentage of total visits was larger among younger than older adults. This result is not surprising, as this age group tends to be more engaged and adaptive to digital and health technology.[12–14,28,29] Among older adults, access and use of digital technology have increased dramatically in the past decade and evidence suggests a greater interest in the use of new technologies for health care than otherwise assumed.[30] However, results from the medical literature, including those presented here, have shown that age remains a substantial barrier in telehealth use.[7,12,13,30] Further, evidence-based studies of the effectiveness of telehealth interventions or care for the elderly are lacking.[31] During a pandemic, improving outreach to older age groups to use telehealth should be explored as well as addressing the potential bias on the provider side, thinking those groups may not be comfortable with technology and telehealth.[32] As older individuals tend to have more comorbidities and polypharmacy, it is imperative that they continue to receive

Table 1. Characteristics of Respondents with ≥1 Telehealth Encounter Among Those with ≥1 Health Care Claim March 2020 (N = 11,614)

	≥1 Telehealth encounter	*≥1 In-person encounter only*	P
Total, N	669	10,945	
Age, years, mean (SD)	48.8 (16.9)	54.9 (16.3)	<0.001
Age group, years, %			<0.001
18–44	43.3%	28.8%	
45–64	35.6%	38.9%	
≥65	21.1%	32.4%	
Female, %	71.0%	65.3%	0.002
Hispanic, %	9.9%	7.4%	0.018
Race, %			0.167
White only	81.8%	80.2%	
Black only	9.3%	9.6%	
Asian only	3.0%	4.8%	
Other	6.0%	5.4%	
Married/Living with Partner,[a] %	49.9%	40.6%	<0.001
Associate/Bachelor or Graduate degree,[b] %	59.9%	59.5%	0.820
Household income, %			0.277
≥$75,000	35.0%	38.0%	
<$75,000	58.0%	55.5%	
Declined to answer	7.0%	6.4%	
Employed (part-/full-time),[c] %	58.4%	51.8%	<0.001
Geographic region, %			0.016
South	27.5%	33.5%	
Northeast	29.7%	26.8%	
Midwest	24.8%	22.8%	
West	17.9%	16.9%	
Urban, %	92.1%	88.5%	0.005
Exercise (past month),[d] %	61.1%	62.4%	0.512
Alcohol use (past month), %	68.5%	66.9%	0.401
Smoking status, %			0.451
Current smoker	12.4%	11.9%	
Former smoker	26.5%	28.7%	
Never smoker	61.1%	59.3%	
Body mass index, kg/m^2, %			0.549
Underweight/Normal (<25.0)	29.4%	28.4%	
Overweight (≥25.0 to <30.0)	27.1%	29.7%	
Obese (≥30.0)	40.4%	38.8%	
Not available	3.1%	3.1%	
Charlson Comorbidity Index, %			0.866
0	82.5%	81.8%	
1	8.7%	8.5%	
2	6.1%	6.4%	
≥3	2.7%	3.2%	
SR-MD,[e] %			
Cardiovascular or metabolic diseases/conditions	42.9%	50.8%	<0.001
Anxiety or depression	50.2%	32.0%	<0.001
Autoimmune diseases	20.3%	22.7%	0.149
Respiratory diseases	21.8%	17.8%	0.009

[a]Excluding declined to answer (n = 24; 0.2%).
[b]Excluding declined to answer (n = 8; 0.1%).
[c]Employed includes full- or part-time employment. Not employed includes students, homemakers, retirees, short- or long-term disability, or unemployed.
[d]Exercised vigorously for 20 minutes in the past 30 days.
[e]Self-reported medical diagnosis (ever) included cardiovascular or metabolic diseases or metabolic conditions (angina, atherosclerosis, hypertension, high cholesterol, congestive heart failure, type 2 diabetes, heart attack, pulmonary embolism, stroke, and transient ischemic attack); anxiety or depression; autoimmune diseases (osteoarthritis, rheumatoid arthritis and psoriasis); and respiratory diseases (asthma, chronic obstructive, chronic bronchitis, and emphysema). The overall prevalence of each SR-MD was 50.3% for cardiovascular or metabolic diseases/conditions, 33.1% for anxiety or depression, 22.6% for autoimmune diseases, and 18.1% for respiratory diseases.
SD, standard deviation; SR-MD, self-reported medical diagnosis.

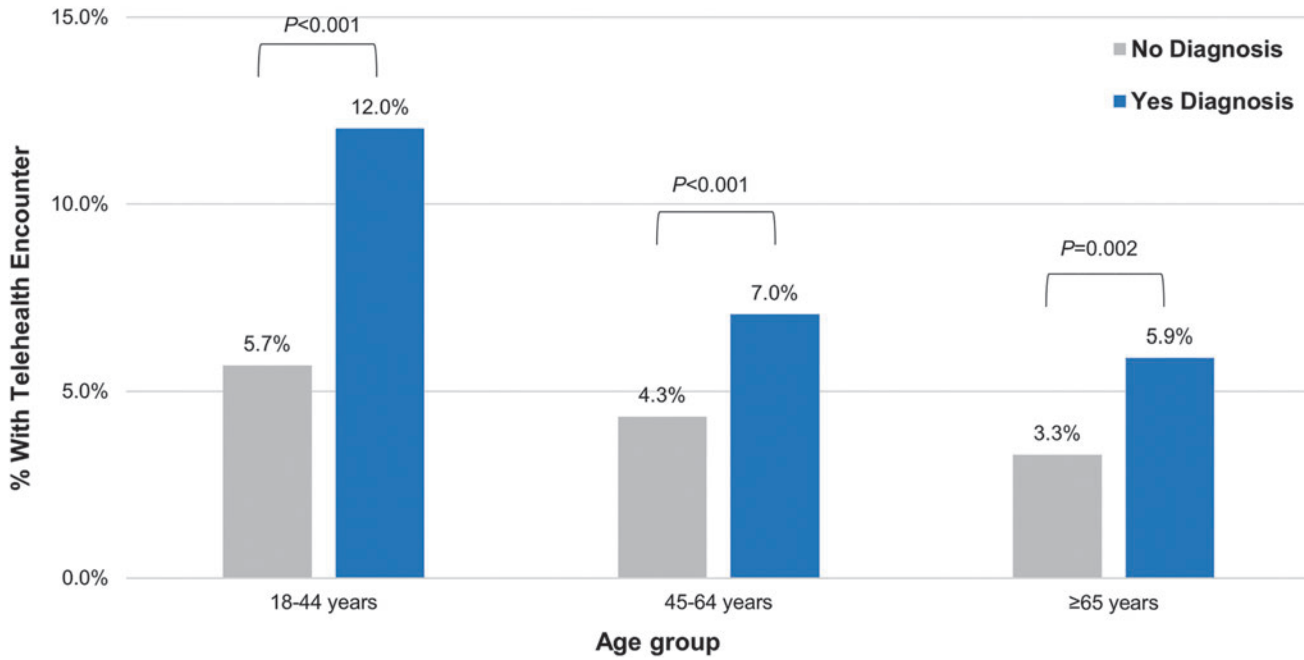

FIG. 3. Percent of respondents with ≥1 telehealth encounter(s) among those with any health care encounter in March 2020, according to the presence of a self-reported medical diagnosis of anxiety or depression (ever), stratified by age group (N = 11,614).

Table 2. Characteristics of Respondents with ≥1 Telehealth Encounter Among Those with ≥1 Health Care Encounter in March 2020 (N = 11,614)

	OR (95% CI)	P
Age group, years		
18–44 (reference)	1.00	
45–64	0.684 (0.561–0.834)	<0.001
≥65	0.585 (0.450–0.759)	<0.001
Female	1.040 (0.868–1.247)	0.669
Hispanic	1.228 (0.926–1.628)	0.154
Race		
White only (reference)	1.00	
Black only	0.929 (0.702–1.228)	0.604
Asian only	0.578 (0.363–0.921)	0.021
Other	0.813 (0.570–1.159)	0.252
Married/Living with Partner	0.809 (0.688–0.951)	0.010
Employed (part-/full-time)	0.845 (0.710–1.006)	0.059
Geographic region		
South (reference)	1.00	
Northeast	1.341 (1.087–1.654)	0.006
Midwest	1.298 (1.042–1.617)	0.020
West	1.330 (1.044–1.769)	0.021
Urban	1.543 (1.153–2.067)	0.004
Self-reported medical diagnosis[a]		
Cardiovascular or metabolic diseases/conditions	0.936 (0.776–1.128)	0.485
Anxiety or depression	1.919 (1.619–2.274)	<0.001
Autoimmune diseases	0.967 (0.782–1.195)	0.756
Respiratory diseases	1.137 (0.933–1.385)	0.204

[a]Self-reported medical diagnosis (ever) included cardiovascular or metabolic diseases or conditions (angina, atherosclerosis, hypertension, high cholesterol, congestive heart failure, type 2 diabetes, heart attack, pulmonary embolism, stroke, and transient ischemic attack); anxiety or depression; autoimmune diseases (osteoarthritis, rheumatoid arthritis and psoriasis); and respiratory diseases (asthma, chronic obstructive, chronic bronchitis, and emphysema).

CI, confidence interval; OR, odds ratio.

care during the pandemic, and patient education and provider training promoting telehealth use among the elderly should be considered.[33,34]

In this study, married respondents were less likely to have had a telehealth encounter compared with those who were single, divorced, or widowed. The disparate impact of social isolation and social distancing because of COVID-19 on health and health care utilization, particularly for those living alone, is of concern and requires further investigation.[35,36] To be sure, respondents with a prior diagnosis of anxiety or depression were more likely to use telehealth than in-person visits compared to those who were not diagnosed with these mental health conditions. This finding is consistent with other research showing that the largest proportion of telehealth visits were for mental health rather than for other conditions.[6] According to US national surveys, anxiety and depression during COVID-19 has been on the rise and disproportionately affects younger age groups more than older ones.[37,38] Indeed, the current study also found a higher prevalence of depression and anxiety among those aged 18–44 and this age group had the highest level of telehealth visits. These results also may reflect the experience, knowledge, and preparedness of the mental health community of providers and patients in the use of telehealth.[39]

Although the hope of telehealth has been to reduce health care inequalities, especially in rural and low-income areas, the current study shows that those who reside in rural compared to urban areas are less likely to use telehealth. Additionally, a clear geographic divide was observed, whereby respondents living in the South were less likely to use telehealth than those in the West, Midwest, or Northeast. Several factors may have affected these results. One factor is because the number of cases of COVID-19 in the southern region of the US lagged compared to those in other regions[40] and some states may have been slower to implement stay-at-home orders,[41] therefore the urgency to implement telehealth may have been lower than in other regions. However, decreased use of telehealth is associated with area deprivation.[12,42] Southern states, in particular, have the lowest median household income and highest percentage of people in poverty than these socioeconomic indicators in the 3 other US regions.[43] Recent emergency FCC budget allocations to increase broadband coverage in rural areas to address these issues have been implemented; however, these changes were enacted starting at the end of March and the impact and benefit likely will take time to realize.[19] The 845% rise in telehealth use in the first month of the COVID-19 crisis, compared to a similar period in the previous year, is likely a conservative estimate of the anticipated change and these results reinforce the need for attention to at-risk and underserved populations.

Strengths and limitations

The current study used a unique population-based data source allowing for a comprehensive evaluation of the relationship between demographic and socioeconomic characteristics with health care resource use and, in particular, telehealth. Several limitations are noted. NHWS data may not necessarily be generalizable to older adults or those with more severe health issues. Concerning the latter, the use of telehealth may be best suited for those with less severe conditions as those with more severe conditions may require in-person care. Additionally, as the NHWS is an online survey, perhaps these respondents may be more likely to use a digital platform, and as such the present results may overestimate the use of telehealth. In spite of this, disparities in telehealth use were observed. Finally, the time frame used in this study represented the start of COVID-19 in the United States when effects, policy, and funding related to COVID-19 were localized, regional, and experienced differently throughout United States.

Conclusion

The current study aimed to explore whether telehealth was able to deliver improvements in greater access to HCPs for vulnerable and underrepresented populations. Especially at this critical moment in time related to the COVID-19 pandemic, telehealth should help reduce inequalities in health care access. This study, using a large and representative claims database linked with self-reported socioeconomic data, presents preliminary findings that inequalities in telehealth use persist and require ongoing monitoring. Further research is warranted to understand the extent to which greater outreach, education, and infrastructure support are needed for older individuals, those residing in the South, and those residing in rural areas.

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Author Disclosure Statement

The authors declare that there are no conflicts of interest.

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Supplementary Material

Supplementary Table S1
Supplementary Table S2

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