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Original Article

The impact of telemedicine on racial and ethnic disparities in oncologic care during the COVID-19 pandemic

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Abstract: Codification of COVID-19-era use of telemedicine as a permanent feature of US healthcare has been discussed as it may increase accessibility and equity. This study assesses whether telemedicine is associated with improved differential access to cancer care for racial and ethnic minorities. We conducted a cross-sectional analysis of the National Health Interview Survey from July 2020 to December 2021 and estimated prevalence of telemedicine utilization in both the study population (N=46,799) and in a subgroup of cancer patients (N=7,784). Complex survey-weighted multivariable Poisson regression identified patient-level predictors and estimated risk ratios (RR) for telemedicine receipt. Two-way interaction between cancer type and race and ethnicity assessed effect modification. Telemedicine prevalence was 35.5% [95% CI: 34.8%-36.2%] for the overall study population and 48.7% [95% CI: 47.0%-50.4%] for cancer patients. Weighted multivariable Poisson regression revealed that non-Hispanic Black (NHB) and non-Hispanic Asian (NHA) individuals had lower receipt compared to non-Hispanic White (NHB RR: 0.87, 95% CI: [0.83-0.92], P<0.01; NHA RR: 0.8, 95% CI: [0.74-0.86], P<0.01). This racial and ethnic disparity disappeared among cancer patients. Adjusted risk difference (ARD) analysis indicated no difference in decreased telemedicine utilization by cancer type except for breast cancer (NHB ARD: -0.16, 95% CI: [-0.27-(-0.05)], P=0.01) and lymphoma (Other ARD: -0.36, 95% CI: [-0.72-(-0.01)], P=0.05). Racial and ethnic disparities in telemedicine utilization decreased for cancer patients compared to the overall population. While racial and ethnic disparities persisted in two oncologic subgroups, telemedicine overall improved access and may increase equity in oncologic care.

Keywords: Telemedicine, clinical oncology, health care disparities, access to health care, health policy

Introduction

The COVID-19 public health emergency necessitated a rapid expansion of telemedicine care, driven by concerns for patient and provider safety [1]. Facilitated by state and federal policy changes surrounding licensure law for advanced practice providers, public and private investment in telehealth, and payment parity comparable to in-person visits built into telehealth flexibility waivers [2], the number of telehealth visits grew substantially [1]. Recent advances in both regulatory changes and digital communications technology, coupled with the backlog of cancer care resulting from the COVID-19 pandemic, has prompted unprecedented expansion to telemedicine access. As the public health emergency ends, legislation will be required to codify telemedicine expansion permanently to improve access to care for patients [3].

Recent studies indicate that telehealth could serve as a means of delivering high-quality and accessible care, particularly for patients with cancer [4-7]. However, telemedicine could exacerbate existing disparities and further limit access for racial and ethnic minorities through the “digital divide [8-11]”. Insights into relative utilization between racial and ethnic groups

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could help identify trends and target areas for further investigation.

We analyzed the CDC's National Health Interview Survey (NHIS) over the course of eighteen months during the height of the COVID-19 public health emergency to explore the utilization of telemedicine during the COVID-19 era, hypothesizing that telemedicine utilization would not be significantly different by race and ethnicity among cancer patients.

Materials and methods

We conducted a cross-sectional study using a nationally representative data from the CDC's NHIS administered between July 2020 to December 2021.

Study population and variables

Our study included all patients who responded to the telemedicine and cancer history section of the NHIS. A subgroup of cancer patients was identified using the question *"Have you EVER been told by a doctor or other health professional that you had Cancer or a malignancy of any kind?"*. Participants who responded to telemedicine component of the NHIS were identified using the question *"In the past 12 months, have you had an appointment with a doctor, nurse, or other health professional by video or by phone?"*.

From the survey, we collected the following patient-level demographic and clinical variables: survey period (coded in 6-month blocks), cancer type, immunocompromised status, age, self-reported gender, educational attainment, race and ethnicity, self-reported general health status, ratio of family income to poverty threshold for the survey answerer's family, type of insurance coverage, and urban-rural residence classification.

Statistical analyses

Descriptive statistics were performed with applied national weights to estimate the national prevalence of telemedicine utilization. Complex weighted multivariable Poisson regression modeling allowed for population-weighted estimations of the patient-level variables studied. First, Model 1 was created to calculate the adjusted relative risk (RR) for the outcome of telemedicine receipt for each race and ethnic category for the whole study population. Consequently, Model 2 was created from a subpopulation of cancer patients to calculate the adjusted RR for the outcome of telemedicine receipt for each race and ethnic category. Both models were adjusted by the previously collected patient-level demographic and clinical variables. For both models, the adjusted Wald test looked for significant differences between the adjusted RR of telemedicine receipt for each race and ethnicity category.

A two-way interaction analysis between race and ethnicity and the type of cancer tested for a modification effect within each model. Subsequently, we calculated the adjusted risk differences (ARD) between the marginal predicted probability of telemedicine receipt for each cancer type stratified by race and ethnicity category to identify significant differences and directionality of the effect, using non-Hispanic Whites as the reference group. In the context of our study, ARD helps us understand the difference in the likelihood of using telemedicine services between different racial and ethnic groups, after adjusting for factors like age, gender, type of cancer, and other health characteristics. This adjustment ensures that the differences we observe are more likely to be due to the racial and ethnic group itself, rather than these other variables.

All analyses were carried out using Stata statistical software (StataCorp, LLC., College Station, TX). Statistical significance was defined by $P<0.05$.

Results

A total of 46,799 participants who affirmatively answered the telemedicine questionnaire were included in this study, representing an estimated 185.9 million (M) U.S. citizens. Of the included participants, 7,784 reported ever being diagnosed with cancer, representing a weighted population of 18.0M people. The prevalence of telemedicine utilization during our study period was 35.5% [95% CI: 34.8%-36.2%] and 48.7% [95% CI: 47.0%-50.4%] for the study population and for cancer patients, respectively. Additional descriptive statistics were recorded (**Table 1** and Supplementary Table 1).

Adjusted RR of receipt of telemedicine care stratified by race and ethnicity for both the entire study population (Model 1) and for can-

Table 1. Nationally weighted descriptive study population demographics with nationally represented proportions and the estimated corresponding U.S. population numbers with numbers and national estimated prevalence of Telemedicine receipt in the National Health Interview Survey between July 2020 and December 2021

	All Cohort		Recipient of Telemedicine		Prevalence [95% CI]	*P*-value
	N (Weighted%)	Est population in Millions	N (Weighted%)	Est population in Millions		
Survey period						
July-December, 2020	17582 (35%)	64.78	6402 (32%)	21.06	0.33 [0.32, 0.33]	<0.01
January-June, 2021	14186 (33%)	60.48	5676 (35%)	22.94	0.38 [0.37, 0.39]	
July-December, 2021	15031 (33%)	60.64	5708 (33%)	21.89	0.36 [0.35, 0.37]	
Total	46799 (100%)	185.9	17786 (100%)	65.89	0.35 [0.35, 0.36]	
Type of cancer diagnosis						
No cancer history	40786 (90%)	167.69	14836 (87%)	57.02	0.34 [0.33, 0.35]	<0.01
Breast cancer	873 (1%)	2.52	402 (2%)	1.14	0.45 [0.41, 0.49]	
Colorectal cancer	201 (0%)	0.66	87 (0%)	0.28	0.42 [0.34, 0.52]	
Cervical/ovarian/uterine cancer	415 (1%)	1.44	209 (1%)	0.73	0.5 [0.45, 0.56]	
Lung cancer	125 (0%)	0.37	67 (0%)	0.19	0.52 [0.42, 0.62]	
Lymphoma cancer	137 (0%)	0.44	74 (0%)	0.24	0.54 [0.44, 0.64]	
Thyroid cancer	141 (0%)	0.52	91 (1%)	0.34	0.66 [0.55, 0.75]	
Skin cancer (including melanoma)	1906 (3%)	5.64	858 (4%)	2.44	0.43 [0.40, 0.46]	
Prostate cancer	537 (1%)	1.62	256 (1%)	0.8	0.49 [0.44, 0.54]	
Other Cancers	1678 (3%)	5	906 (4%)	2.71	0.54 [0.51, 0.57]	
Total	46799 (100%)	185.9	17786 (100%)	65.89	0.35 [0.35, 0.36]	
Being told to have weak immunity						
No	44519 (96%)	177.7	16339 (93%)	60.83	0.34 [0.34, 0.35]	<0.01
Yes	2090 (4%)	7.53	1343 (7%)	4.7	0.62 [0.60, 0.65]	
Total	46609 (100%)	185.23	17682 (100%)	65.53	0.35 [0.35, 0.36]	
Gender						
Female	25433 (52%)	96.17	10740 (59%)	38.63	0.4 [0.39, 0.41]	<0.01
Male	21363 (48%)	89.72	7046 (41%)	27.27	0.3 [0.30, 0.31]	
Total	46796 (100%)	185.89	17786 (100%)	65.89	0.35 [0.35, 0.36]	
Educational attainment						
Highschool or less	15041 (39%)	71.4	4696 (32%)	20.82	0.29 [0.28, 0.30]	<0.01
Bachelor's or less	24289 (49%)	90.18	9746 (53%)	34.44	0.38 [0.37, 0.39]	
Masters	5405 (9%)	17.39	2453 (12%)	7.73	0.44 [0.43, 0.46]	
Doctoral degree	1844 (3%)	5.78	821 (4%)	2.56	0.44 [0.42, 0.47]	
Total	46579 (100%)	184.76	17716 (100%)	65.54	0.35 [0.35, 0.36]	

Race/Ethnicity						
NH White	31939 (63%)	116.88	12511 (66%)	43.71	0.37 [0.37, 0.38]	<0.01
NH Black	4849 (12%)	21.67	1788 (11%)	7.1	0.33 [0.31, 0.35]	
Hispanics	6126 (17%)	31.4	2117 (15%)	9.75	0.31 [0.30, 0.33]	
NH Asians	2693 (6%)	10.99	896 (5%)	3.49	0.32 [0.29, 0.34]	
Others	1192 (3%)	4.96	474 (3%)	1.84	0.37 [0.34, 0.41]	
Total	46799 (100%)	185.9	17786 (100%)	65.89	0.35 [0.35, 0.36]	
General Health Status						
Poor	1569 (3%)	5.6	922 (5%)	3.26	0.58 [0.55, 0.61]	<0.01
Fair	5161 (10%)	19.41	2618 (15%)	9.58	0.49 [0.48, 0.51]	
Good	13311 (28%)	52.18	5485 (31%)	20.25	0.39 [0.38, 0.40]	
Very Good	16137 (34%)	63.06	5787 (32%)	21.01	0.33 [0.32, 0.34]	
Excellent	10598 (25%)	45.58	2961 (18%)	11.76	0.26 [0.25, 0.27]	
Total	46776 (100%)	185.84	17773 (100%)	65.85	0.35 [0.35, 0.36]	
Ratio of family income to poverty threshold for SA's family						
0.00-0.49	1110 (3%)	4.83	384 (2%)	1.5	0.31 [0.28, 0.34]	<0.01
0.50-0.74	1270 (3%)	5.31	466 (3%)	1.73	0.33 [0.29, 0.36]	
0.75-0.99	2053 (5%)	8.57	745 (4%)	2.76	0.32 [0.30, 0.35]	
1.00-1.24	1776 (4%)	7.25	639 (4%)	2.41	0.33 [0.31, 0.36]	
1.25-1.49	2254 (5%)	9.46	779 (5%)	3	0.32 [0.29, 0.34]	
1.50-1.74	1775 (4%)	7.14	613 (3%)	2.22	0.31 [0.28, 0.34]	
1.75-1.99	2127 (5%)	9.14	763 (4%)	2.96	0.32 [0.30, 0.35]	
2.00-2.49	3820 (8%)	15.49	1377 (8%)	5.05	0.33 [0.31, 0.35]	
2.50-2.99	3691 (8%)	15.41	1331 (8%)	5.21	0.34 [0.32, 0.36]	
3.00-3.49	3038 (6%)	11.93	1152 (7%)	4.29	0.36 [0.34, 0.38]	
3.50-3.99	3058 (7%)	12.66	1149 (7%)	4.5	0.36 [0.34, 0.38]	
4.00-4.49	2830 (6%)	10.71	1069 (6%)	3.68	0.34 [0.32, 0.37]	
4.50-4.99	2635 (6%)	10.53	1002 (6%)	3.88	0.37 [0.35, 0.39]	
5.00 or greater	15362 (31%)	57.48	6317 (34%)	22.7	0.39 [0.38, 0.41]	
Total	46799 (100%)	185.9	17786 (100%)	65.89	0.35 [0.35, 0.36]	
Health Coverage						
No	3592 (10%)	19.27	531 (4%)	2.65	0.14 [0.12, 0.15]	<0.01
Yes	43086 (90%)	165.94	17227 (96%)	63.11	0.38 [0.37, 0.39]	
Total	46678 (100%)	185.21	17758 (100%)	65.76	0.36 [0.35, 0.36]	
Urban-Rural Classification						
Nonmetropolitan	6938 (14%)	25.2	2044 (11%)	7.01	0.28 [0.26, 0.30]	<0.01
Medium and small metro	14886 (31%)	57.14	5393 (29%)	19.11	0.33 [0.32, 0.35]	
Large fringe metro	10945 (24%)	45.09	4469 (26%)	16.99	0.38 [0.36, 0.39]	
Large central metro	14030 (31%)	58.48	5880 (35%)	22.79	0.39 [0.38, 0.40]	
Total	46799 (100%)	185.9	17786 (100%)	65.89	0.35 [0.35, 0.36]	

cer patients (Model 2) were recorded (**Table 2**). Telemedicine utilization was statistically different by race and ethnicity (adjusted Wald test between RR of non-Hispanic White (NHW), non-Hispanic Black (NHB), Hispanics, non-Hispanic Asians (NHA), and Others: P<0.001). NHB and NHA identity significantly predicted lower risk of telemedicine receipt compared to NHW [(NHB RR: 0.87, 95% CI: [0.83-0.92], P<0.01), (NHA RR: 0.8, 95% CI: [0.74-0.86], P<0.01)] (**Table 2**). However, when describing telemedicine utilization in the subgroup of 7,784 patients who reported ever being diagnosed with cancer, race and ethnicity categories were not statistically different (adjusted Wald test between RR of NHW, NHB, Hispanic, NHA, and Others: P=0.83). Additionally, no specific race or ethnicity category was identified as a significant predictor of telemedicine receipt in this subpopulation of cancer patients when performing multivariable Poisson regression (**Table 2** and Supplementary Table 2).

Two-way interaction between type of cancer diagnosis and race and ethnicity was statistically significant (P_{int}<0.01) in both the overall population and the cancer subgroup, suggesting that the effect of race and ethnicity on telemedicine receipt differs by the reported type of cancer diagnosed.

Marginal adjusted predicted probability based off Model 1 with indicated significant ARDs were recorded (**Figure 1**). Our ARD analysis indicated that there is no statistical difference in telemedicine utilization by cancer type except for breast cancer (NHB ADR: -0.16, 95% CI: [-0.27-(-0.05)], P=0.01), lung cancer (Hispanic ARD: 0.35, 95% CI: [0.19-0.51], P<0.01), prostate cancer (Hispanic ARD: 0.19, 95% CI: [0.01-0.37], P=0.04), skin cancer including melanoma (NHA ARD: 0.36, 95% CI: [0.31-0.41], P<0.01), lymphoma (Other ARD: -0.36, 95% CI: [-0.72-(-0.01)], P=0.05). Of note, only breast cancer in non-Hispanic Black patients and lymphoma in patients identifying as Other race and ethnicity were the only two cancer subgroups that demonstrated decreased utilization of telemedicine relative to non-Hispanic White patients.

Discussion

When examining relative telemedicine utilization during the COVID-19 pandemic, our findings reveal a nuanced pattern in telemedicine receipt across racial and ethnic groups. Notably, disparities in telemedicine use were evident within the general population, where non-Hispanic Black (NHB) and non-Hispanic Asian (NHA) patients were less likely to receive telemedicine services compared to non-Hispanic White (NHW) patients. Among most cancer patients stratified by subtype, these disparities in telemedicine utilization were not statistically significant, suggesting that telemedicine could mitigate racial and ethnic access disparities. While disparities were largely absent for most cancer types, there were two major exceptions including breast cancer among non-Hispanic Black patients and lymphoma among patients who identified as Other race and ethnicity. These results combined highlight the importance of context-specific approaches to telemedicine implementation for oncologic care.

One possible explanation for this finding could include the standardization of best practices by oncologists. Providers may have prioritized cancer patients for access to care delivery during the pandemic. Another explanation could be that oncologists developed effective telemedicine practices, leading to more equitable care for their patients compared to the general population. Oncology practices might have created systematic ways to ensure all their patients received care in an equitable fashion. Without additional data on the reasons and nature of telemedicine interactions, these hypotheses remain speculative. However, they highlight the need for future studies on oncologic telemedicine best practices to sustain equitable care delivery.

Due to the massive expansion of telemedicine during the height of COVID-19, several published studies examined how telemedicine could bolster access to high-quality care. In one systematic review examining 11 studies consisting of 3369 patients with 8 different cancer subtypes, the authors found that virtual visits were as safe as in-person visits, as measured by recurrence and readmission [12]. In another retrospective cohort study at a major cancer center, the delivery of post-operative visits via telemedicine had comparable rates of readmission to in-person visits following inpatient oncologic surgery [13]. Further, according to one nationally representative

Table 2. Complex weighted multivariable poisson regression for the outcome of telemedicine receipt in whole study population (Model 1), and within the subpopulation of cancer patients (Model 2)

	Model 1		Model 2	
	IRR [95% CI]	P>t	IRR [95% CI]	P>t
Survey period				
July-December, 2020	1		1	
January-June, 2021	1.15 [1.12-1.19]	<0.01	1.14 [1.06-1.23]	<0.01
July-December, 2021	1.09 [1.05-1.13]	<0.01	1.06 [0.99-1.14]	0.09
Type of cancer diagnosis				
No cancer history	1 [0-0]		-	-
Breast cancer	0.94 [0.86-1.03]	0.19	1	
Colorectal cancer	1.01 [0.82-1.24]	0.92	1 [0.8-1.26]	1
Cervical/ovarian/uterine cancer	1.15 [1.03-1.28]	0.01	1.19 [1.04-1.37]	0.01
Lung cancer	1.05 [0.88-1.25]	0.57	1.11 [0.92-1.33]	0.26
Lymphoma cancer	1.24 [1.03-1.5]	0.02	1.21 [0.99-1.48]	0.07
Thyroid cancer	1.51 [1.3-1.76]	<0.01	1.41 [1.2-1.67]	<0.01
Skin cancer (including melanoma)	1.07 [1-1.14]	0.06	1.05 [0.94-1.18]	0.42
Prostate cancer	1.28 [1.16-1.42]	<0.01	1.16 [1-1.36]	0.05
Other Cancers	1.18 [1.11-1.25]	<0.01	1.2 [1.08-1.34]	<0.01
Age (continuous)	1 [1-1]	<0.01	1 [1-1]	0.28
Gender				
Female	1 [0-0]		1	
Male	0.77 [0.75-0.79]	<0.01	0.91 [0.85-0.98]	0.02
Educational attainment				
Highschool or less	1 [0-0]		1	
Bachelor's or less	1.27 [1.22-1.32]	<0.01	1.29 [1.19-1.4]	<0.01
Masters	1.45 [1.37-1.53]	<0.01	1.44 [1.29-1.6]	<0.01
Doctoral degree	1.47 [1.37-1.58]	<0.01	1.51 [1.32-1.73]	<0.01
Race/Ethnicity				
NH White	1 [0-0]		1	
NH Black	0.87 [0.83-0.92]	<0.01	1 [0.89-1.13]	0.97
Hispanics	0.97 [0.92-1.02]	0.19	1.08 [0.94-1.23]	0.29
NH Asians	0.8 [0.74-0.86]	<0.01	0.96 [0.79-1.18]	0.71
Others	1.08 [0.98-1.18]	0.12	1.03 [0.83-1.28]	0.76
Being told to have weak immunity				
No	1 [0-0]		1	
Yes	1.38 [1.32-1.45]	<0.01	1.16 [1.06-1.27]	<0.01
General Health Status				
Poor	1 [0-0]		1	
Fair	0.88 [0.82-0.93]	<0.01	0.93 [0.84-1.03]	0.17
Good	0.68 [0.64-0.73]	<0.01	0.75 [0.68-0.83]	<0.01
Very Good	0.55 [0.52-0.59]	<0.01	0.68 [0.61-0.75]	<0.01
Excellent	0.44 [0.41-0.48]	<0.01	0.52 [0.45-0.6]	<0.01
Ratio of family income to poverty threshold for SA's family				
0.00-0.49	1 [0-0]		1	
0.50-0.74	1.02 [0.88-1.17]	0.83	1.15 [0.8-1.65]	0.44
0.75-0.99	0.99 [0.87-1.12]	0.84	1.42 [1.03-1.96]	0.03
1.00-1.24	1.04 [0.92-1.18]	0.53	1.36 [0.97-1.9]	0.07
1.25-1.49	1.01 [0.89-1.15]	0.86	1.28 [0.93-1.77]	0.13
1.50-1.74	0.98 [0.85-1.12]	0.75	1.12 [0.8-1.58]	0.51
1.75-1.99	1.01 [0.9-1.14]	0.88	1.31 [0.94-1.81]	0.11
2.00-2.49	1 [0.89-1.12]	0.99	1.3 [0.96-1.77]	0.1
2.50-2.99	1.04 [0.92-1.17]	0.57	1.34 [0.98-1.82]	0.07

3.00-3.49	1.07 [0.96-1.2]	0.22	1.24 [0.91-1.7]	0.17
3.50-3.99	1.05 [0.94-1.18]	0.36	1.36 [0.98-1.87]	0.06
4.00-4.49	1 [0.88-1.14]	0.97	1.32 [0.97-1.79]	0.08
4.50-4.99	1.08 [0.96-1.22]	0.18	1.29 [0.94-1.77]	0.12
5.00 or greater	1.11 [0.99-1.24]	0.06	1.31 [0.97-1.76]	0.08
Health Coverage				
No	1 [0-0]		1	
Yes	2.29 [2.06-2.53]	<0.01	3.08 [1.95-4.86]	<0.01
Urban-Rural Classification				
Nonmetropolitan	1 [0-0]		1	
Medium and small metro	1.23 [1.15-1.32]	<0.01	1.08 [0.97-1.21]	0.17
Large fringe metro	1.38 [1.29-1.48]	<0.01	1.26 [1.13-1.41]	<0.01
Large central metro	1.49 [1.4-1.6]	<0.01	1.35 [1.21-1.51]	<0.01
Interaction				
Race/Ethnicity & Type of cancer diagnosed	<0.01		<0.01	

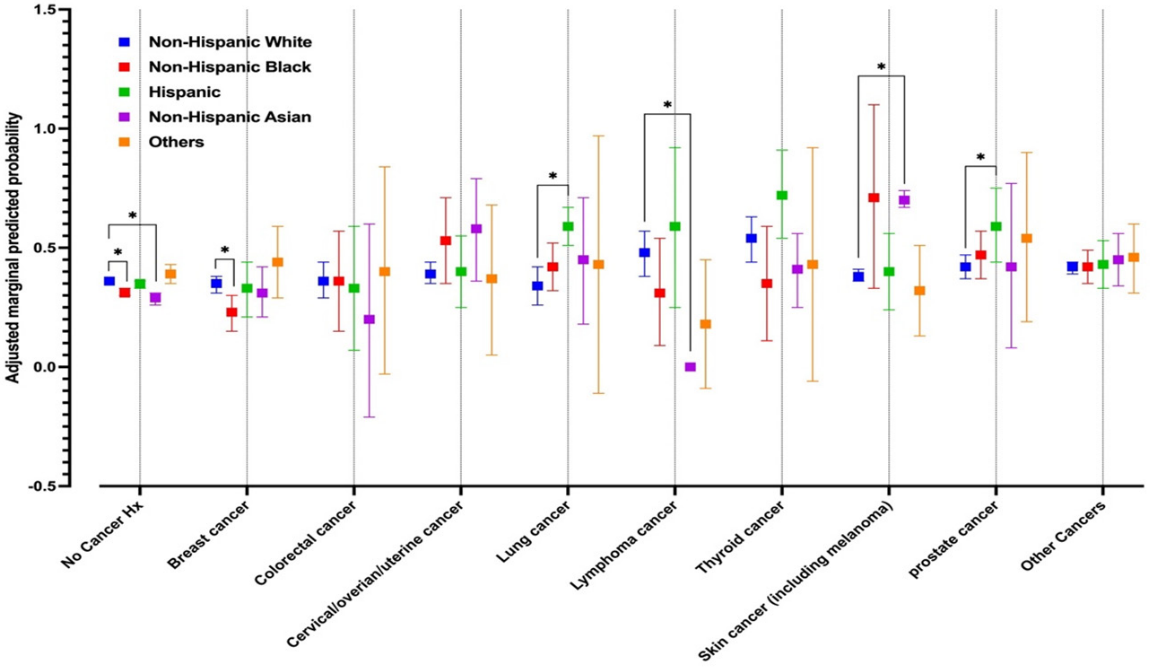

Figure 1. Marginal predicted probability of telemedicine receipt for each cancer type by race and ethnicity, with statistically significant adjusted risk difference indicated in the in the graph.

cross-sectional analysis examining the Health Information National Trends Survey (HINTS 6) data, 75% of participants reported feeling that their telehealth visits were comparable to in-person [14], with similar results reported in multiple oncologic treatment settings including surgical [15-17], radiation [10, 18], and medical oncology [18, 19]. As telemedicine eased state-based licensing restrictions for delivery of care, the presence of telemedicine appointments increased access, decreased costs, and maintained a high-level of satisfaction for rural-residing cancer patients [16].

Telemedicine is not without its drawbacks. It has the potential to exacerbate access disparities through the worsening of the "digital divide", which is reference to the fact that populations who historically had poor access to (e.g., rural populations) or comfort with digitally delivered care (e.g., seniors, patients with auditory or visual disabilities) may be left behind [4-7].

For example, patients residing in rural areas who have decreased access to high-speed broadband may benefit only marginally compared to their suburban and urban counterparts [6, 20]. Additionally, there have been documented concerns among seniors who, on average, may lack the technological literacy to engage with providers in a virtual setting [21, 22]. One recent cross-sectional analysis of fee-for-service Medicare enrollees from March 2020 to February 2022 found that although during the COVID-19 pandemic Black and Hispanic individuals received more telemedicine visits per capita, Black and Hispanic individuals received proportionally less telemedicine compared to White individuals even after controlling for several confounders [23]. Even further, as replicated by our primary analysis, disparities in telemedicine receipt exist in racial and ethnic minorities for specific cancers [24, 25]. Understanding these disparities, but more importantly, incorporating health policy efforts to address equity within telemedicine is a critical requirement for forthcoming legislation.

Several professional societies invested in enhancing the quality of telemedicine care for oncology patients have come out with statements or research supporting telemedicine expansion. The American Society of Clinical Oncology (ASCO) put out a position statement that supported the flexibility waivers that the Centers for Medicare & Medicaid Services introduced and described its recommendations for what the long-term future of tele-oncology could look like [26]. ASCO's position includes supporting the flexibility that CMS has implemented to ensure telemedicine is widely available to patients and practitioners, encouraging states to participate in the Interstate Medical Licensure Compact, encouraging passage of state and federal policy to permit telemedicine crossing state lines if the doctor-patient relationship had been established prior to any telemedicine service, and Federal Trade Commission oversight to discourage potentially anticompetitive or unfair methods of competition [26].

Further, a survey by the National Comprehensive Cancer Network (NCCN) HER Oncology Advisory Group conducted a survey of over 1,000 providers during the summer of 2020, finding 93% of respondents reporting that adverse outcomes attributable to telemedicine visits never or rarely occurred. However, establishing a personal connection was reportedly difficult with only 24% finding video calls and 7% finding phone calls comparable or better than in-person [27]. The main challenges identified included patients' lack of access to audio-visual technology, inadequate workflow infrastructure, and uncertainty about long-term reimbursement [27]. If the telehealth waivers ensuring payment parity and expanded provider eligibility expire without being codified into law, it could harm patients and exacerbate disparities in quality, accessibility, and equity of telemedicine services.

Telemedicine adoption surged following the onset of the COVID-19 public health emergency in spring 2020 [1]. Alongside this meteoric rise, new flexibilities regarding payment parity and reimbursement comparable to in-person visits were introduced. However, nearly four years later, the telehealth flexibility waivers, extended by the Consolidated Appropriations Act of 2023 (H.R.2617) through December 31, 2024, are about to expire. Without legislation to codify these changes, the expiration will jeopardize Medicare patients' ability to use telehealth services from home, access audio-only services, and consult an expanded list of eligible providers.

Our study not only shows how cancer patients benefited from increased access during the height of COVID-19, but also highlights how disparities in access to telemedicine services could be potentially mitigated in patients with specific oncologic subtypes. Patients, providers, and their practices could directly benefit from increased telemedicine flexibilities, possibly influencing policymakers who continue to debate extension or permanent codification of these telemedicine flexibility waivers.

Our study has several limitations. First, the cross-sectional design is hypothesis-generating, preventing us from establishing causality regarding telemedicine utilization. The absence of detailed health services data provided via telemedicine prevents us from determining if services were specifically related to the cancer diagnoses. Additionally, we lack data on the quality of telemedicine visits, which could further obscure disparities. Next, the survey question, "In the past 12 months, have you had an appointment with a doctor, nurse, or other health professional by video or by phone?", could be misinterpreted by patients who communicated with healthcare professionals via digital means outside formal telemedicine appointments, and the question, "Have you EVER been told by a doctor or other health professional that you had Cancer or a malignancy of any kind?", might include cancer patients who received care unrelated to their diagnosis. Despite these limitations, the National Health Interview Survey provides a robust and nationally representative dataset to estimate health service usage rates, including telemedicine, among the US population.

Our analysis examined the impact of telemedicine on health equity during the COVID-19 pandemic. As the public health emergency ends and in-person visits return to pre-pandemic levels, it is crucial to monitor these potential health equity gains. Future research should evaluate the quality of telemedicine interactions, potentially through patient-reported outcomes, to ensure expanded access is equitable. Additionally, identifying best practices in oncologic telemedicine could provide insights to reduce racial and ethnic disparities in other disease areas.

Conclusions

This study offers a comprehensive, nationally representative analysis of telemedicine use from the National Health Interview Survey (NHIS) during July 2020 to December 2021, amidst the COVID-19 pandemic. Our findings suggest that racial and ethnic disparities in telemedicine access were mitigated for many cancer patients compared to the overall population. Despite some study limitations, our results suggest telemedicine, if used effectively, could help lessen racial and ethnic disparities in cancer care. Therefore, it is crucial for patients, providers, and policymakers to explore how telemedicine can be optimized to enhance equity in healthcare outcomes.

Disclosure of conflict of interest

None.

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