

Patient and Provider Factors Associated With Successfully Addressing Medical Needs Using Telehealth: A Cross-Sectional Survey

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ABSTRACT

Few data exist that highlight areas where telemedicine shines or struggles from the patient perspective. We conducted a retrospective analysis of patient experience data from 19,465 visits using a logistic regression to model the odds a virtual visit addressed a patient's medical needs. Patient age (80 years: OR 0.58; 95% CI, 0.50-0.67 vs 40-64 years), race (Black: 0.68; 95% CI, 0.60-0.76 vs White), and connection (telephone conversion: OR 0.59; 95% CI, 0.53-0.66 vs video success) were associated with a lower likelihood of addressing medical needs; results varied modestly across specialties. These data suggest that while telehealth is generally well accepted by patients, differences are seen among patient factors and specialty.

BACKGROUND

During the initial phase of COVID-19, clinicians and patients rapidly adopted telehealth across specialties and use cases.¹ While telehealth provides access and convenience, challenges such as limited physical examination may restrict its utility.² Identifying where telehealth adequately addresses patient needs will help calibrate telehealth usage. As telehealth recedes from its pandemic peak, patients, clinicians, and systems are ascertaining where and how to use video and telephone-based services. Payors also are determining how they will cover telehealth after

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the public health emergency. Telehealth has proven itself as a viable option, with up to 76% of Americans wishing to continue using virtual services,³ yet few data exist to highlight areas where telehealth shines or struggles from the patient perspective.

In this report, we provide data about how well telehealth services meet patients' needs, looking at patient demographics, modality (video or telephone), and clinical specialty.

METHODS

We retrospectively evaluated patients' experiences with telehealth from March 4, 2020, through December 31, 2020. All adult patients who completed a virtual visit at Froedtert & Medical College of Wisconsin, an academic-community health network, were invited to respond to a survey. All visits associated with the survey were completed through insurance. While Froedtert & Medical College of Wisconsin does offer cash pay, on-demand visits, clients using these services were asked to complete a different survey regarding their experience. In examining insurance-based visits, our focus was on ascertaining where virtual visits fit and what the outlook may be in the realm of more traditional scheduled care services. Because of their relatively small number within the health network and the heterogeneity of respondents (parents, adolescents), we excluded pediatric visits.

Our survey prompted patients to respond to the statement "The provider did a good job addressing my medical concerns" using a 5-point Likert scale (strongly agree to strongly disagree). Results were dichotomized to "top box" (strongly agree) or not. Visit information was extracted from the electronic medical record, including patient demographics, specialty, and modality

Table 1. Descriptive Information About Participating Patients

Characteristic	N = 17,685
Age	
18–39	2,914 (16%)
40–64	8,085 (46%)
65–79	5,954 (34%)
80+	732 (4.1%)
Race	
White or Caucasian	15,733 (89%)
American Indian or Alaska Native	51 (0.3%)
Asian	253 (1.4%)
Black or African American	1,244 (7.0%)
Native Hawaiian or other Pacific Islander	9 (<0.1%)
Other	395 (2.2%)
Insurance	
Managed care	8,935 (51%)
Commercial	185 (1.0%)
Global	24 (0.1%)
Medicaid	784 (4.4%)
Medicare	7,515 (42%)
Others	89 (0.5%)
Missing	153 (0.9%)
Household median income	
<\$9,500	2,357 (13%)
\$9,501–\$45,000	7,360 (42%)
\$45,001–\$75,000	4,691 (27%)
\$75,001–\$213,000+	3,277 (19%)

(ie, failed video visits converted to telephone). We then used a mixed-effects logistic regression to estimate the odds of having a “top box” assessment of meeting needs, while accounting for the compound symmetric correlation within the same provider. The final adjusted logistic regression model includes only statistically significant ($P < 0.05$) univariate factors, including patient race, patient age, video visit success, and specialty. STROBE (STrengthening the Reporting of OBservational studies in Epidemiology) guidelines for cross-sectional studies were followed.⁴ The Medical College of Wisconsin Institutional Review Board provided approval.

RESULTS

Out of a total of 143,419 virtual visits, 17,685 unique patients (response rate 12%) accounting for 19,465 visits (14% of total virtual visits) responded to the survey. Of the 19,465 visits, 17,969 (92%) were successful visits, while 1,496 (8%) were converted to telephone. Patient demographic information is summarized in Table 1. Overall, 82% of patients either agreed or strongly agreed that the virtual visit addressed their medical needs (67% top box). Older patients were less likely to perceive telehealth as sufficiently meeting their medical concern (80+ vs 40–65: OR 0.58; 95% CI, 0.50–0.67) (Table 2). Non-White patients had lower odds of top-box satisfaction of their medical concerns being addressed, compared with White patients (Black/African American vs White: OR 0.68; 95% CI, 0.60–

Table 2. Mixed-Effects Logistic Regression Modeling “Top Box” Satisfaction with the Visit Addressing Clinical Needs

Characteristic	OR	95% CI	P value
Age			
18–39	0.91	0.83–1.00	0.039
40–64	Ref	—	
65–79	0.87	0.81–0.93	<0.001
80+	0.58	0.50–0.67	<0.001
Race			
White or Caucasian	Ref	—	
Asian	0.62	0.48–0.80	<0.001
Black or African American	0.68	0.60–0.76	<0.001
Other	0.78	0.64–0.94	0.009
Video visit success			
Video success	Ref	—	
Telephone conversion	0.59	0.53–0.66	<0.001
Specialty			
Primary care	Ref	—	
Behavioral health	0.90	0.72–1.12	0.3
Dermatology	1.01	0.76–1.33	>0.9
Gynecology	1.31	1.05–1.64	0.016
Internal medicine subspecialty	0.96	0.87–1.05	0.3
Neurology	0.71	0.60–0.83	<0.001
Surgery	0.82	0.73–0.92	<0.001

0.76; Asian vs White: OR 0.62; 95% CI, 0.48–0.80; Other vs White: OR 0.78; 95% CI, 0.64–0.94). Compared with internal medicine, visits in neurology and surgery (OR 0.71; 95% CI, 0.60–0.83 and OR 0.82; 95% CI, 0.73–0.92, respectively) were less likely to be rated top box for addressing medical concerns, while obstetrics/gynecology was slightly higher (OR 1.31; 95% CI, 1.05–1.64). We also saw lower odds of a virtual visit adequately meeting patient needs during instances of virtual visit failure (telephone conversion) (OR 0.59; 95% CI, 0.53–0.66).

DISCUSSION

Overall, the majority of patients viewed virtual visits as a helpful avenue of health care delivery. An overwhelming majority of respondents reported that their visit sufficiently addressed their needs across a range of clinical domains. We did, however, identify differences across specialties, a finding that merits further research. Our data also show that telephone calls are not equivalent to video visits in terms of meeting patient needs—a finding with policy and health equity implications.

We identified several demographic factors—namely age and race—that were associated with perceiving telehealth as meeting patient needs. Comfort with technology and trust in both their clinician and in telehealth itself as an appropriate care modality may explain, in part, these findings. Research has shown that a gap exists in video visit adoption when comparing non-White patients to White patients, findings partially but incompletely explained by socioeconomic differences.^{5,6} This digital divide is one reason that can explain the varying outlook on telemedicine’s

ability to sufficiently meet one's health care needs. Compounding this, COVID-19 has caused both patients and clinicians to revisit the legacy of mistrust that exists between minorities and the US health care system. Additionally, despite the continued rise of technology adoption among older patients, many still report having low confidence in using electronic devices for online tasks.⁷

Beyond patient factors, we identified that modality (conversion to telephone) and specialty also affected likelihood of addressing patients' medical concerns. Regarding specialty, it is possible that physical examination may play a role, though confirmation and explanatory reasons require further investigation. Intriguingly, results showed that obstetrics/gynecology (OB/GYN)—a specialty where physical exams and procedures such as ultrasound are integral) experienced an increased likelihood of patient satisfaction. A possible explanation is that OB/GYN visits also serve as a primary care basis for women in the realm of topics that could be discussed virtually, such as contraception, changing birth control, and fertility consultation. Moreover, surveys show that, compared to men, women were more likely to take action in altering their routines to minimize chances of contracting COVID-19.⁸

Regarding modality, it is notable that patients were less likely to feel their medical concerns were addressed by telephone versus video visits. Further research is needed to identify explanatory factors, such as inability for examination, lack of nonverbal communication, or simply frustration of technology and internet connectivity issues. While telephone visits were less likely to meet patient needs than video, they may still be a lifeline for many patients.⁹

Limitations

The response rate of this single-institution patient survey, upon which the outcome was based, was modest, and response bias is possible. Based on demographics, younger patients (≤ 65) and non-White patients were less likely to respond and may be underrepresented; visit success or telephone conversion were not different between respondents and nonrespondents, nor were socioeconomic status or specialty. The duration of the visits was not recorded, and it is possible that troubleshooting video connections took time away from visits—an unmeasured factor that could affect how well the visit addressed medical needs. Further limitations include utilizing a top-box approach for our statistical analysis. Responses may be subject to personal biases, resulting in an avoidance of extreme responses to survey questions reported across some demographic groups.¹⁰

CONCLUSIONS

These data suggest that virtual video visits are generally well accepted by patients, but differences are seen due to patient factors and specialty. As telehealth moves into the mainstream as a care delivery modality, further exploration about where and

when it works well compared with where and when it does not is warranted; building off these findings would help operational teams and payors move forward.

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