Provider Perceptions of Virtual Care During the Coronavirus Disease 2019 Pandemic

A Multispecialty Survey Study

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Background: The coronavirus disease 2019 (COVID-19) pandemic has led to a dramatic increase in virtual care (VC) across outpatient specialties, but little is known regarding provider acceptance of VC.

Objective: The objective of this study was to assess provider perceptions of the quality, efficiency, and challenges of VC versus in-person care with masks.

Design: This was a voluntary survey.

Participants: Mental health (MH), primary care, medical specialty, and surgical specialty providers across the 8 VA New England Healthcare System medical centers.

Measures: Provider ratings of: (1) quality and efficiency of VC (phone and video telehealth) compared with in-person care with masks; (2) challenges of VC; and (3) percentage of patients that providers are comfortable seeing via VC in the future.

Results: The sample included 998 respondents (49.8% MH, 20.6% primary care, 20.4% medical specialty, 9.1% surgical specialty; 61% response rate). Most providers rated VC as equivalent to or higher in quality and efficiency compared with in-person care with masks. Quality ratings were significantly higher for video versus phone ($\chi^2 = 61.4$, $P < 0.0001$), but efficiency ratings did not differ significantly. Ratings varied across specialties (highest in MH, lowest in SS; all χ^2s > 24.1, Ps < 0.001). Inability to conduct a physical examination and patient technical difficulties were significant challenges. MH providers were comfortable seeing a larger proportion of patients virtually compared with the other specialties (all χ^2s > 12.2, Ps < 0.01).

Conclusions: Broad provider support for VC was stratified across specialties, with the highest ratings in MH and lowest ratings in SS. Findings will inform the improvement of VC processes and the planning of health care delivery during the COVID-19 pandemic and beyond.

Key Words: virtual care, telehealth, telemedicine, COVID-19

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The coronavirus disease 2019 (COVID-19) pandemic led to an abrupt and dramatic increase in virtual care (VC) in response to large-scale restrictions on in-person care across outpatient specialties.[1–3] VC allowed for continuity of care via phone and video telehealth while protecting patients and providers from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. Rarely has such a massive transformation in health care delivery occurred so rapidly across both private and public health care systems.

Health care systems must now consider how to sustain high levels of VC, both to reduce SARS-CoV-2 transmission and to provide care to patients who fear coming to medical centers. Hence, there is an urgent need to understand the barriers to and facilitators of the provision of VC in the COVID-19 era. Critical among these are provider perceptions regarding the quality, efficiency, and challenges of VC in comparison to in-person care delivered with both patient and provider wearing personal protective equipment. Focusing on provider attitudes is essential, as they are often considered the gatekeepers of VC, in that their attitudes and beliefs influence the care modalities that are offered to patients.[4]

Although previous work has found that providers generally prefer in-person visits to VC when given the choice,[5–7] these preferences must be reexamined in light of the COVID-19 pandemic, as in-person care can increase the risk of SARS-CoV-2 infection. Providers' perceptions of VC during COVID-19 might also vary across specialties given differences in the provision of care. Before COVID-19, studies reported high acceptability of VC among mental health (MH) providers,[5] but there is considerably less literature examining perceptions of VC among primary and specialty care providers.[6–9] Because MH care does not require

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physical examination, VC might more closely approximate in-person care as compared with medical (MS) and surgical specialties (SS). Furthermore, video sessions could provide an added benefit of improving communication and interpretation of facial expressions without the hindrance of masks. However, for non-MH providers, the perceived advantages of conducting an in-person physical examination may at times outweigh the benefits of virtual visits. Recent qualitative work found that primary care (PC) providers often doubted their ability to conduct adequate virtual physical examinations[10]; such concerns might be more pronounced among MS and SS providers.

Despite the safety, convenience, and fiscal advantages of VC, technical issues can pose significant challenges. Video appointments require that patients and providers own the necessary equipment, feel comfortable navigating technology, and have the required bandwidth for video streaming.[5,10,11] Even if these requirements are met, poor audio and video connectivity can significantly degrade the quality of video visits. Barriers may be particularly pronounced in rural areas, where broadband access is poorer and residents are less likely to own a smartphone, tablet, or home computer as compared with suburban or urban-dwelling Americans.[12,13] As such, ease of use and familiarity for providers and patients may make phone visits preferable to video visits.[14,15] The relative advantages and challenges of in-person, video, and phone visits may also vary as a function of specialty and context, such as treating new versus established patients. These variables have not been examined across specialties and are critical in understanding providers' overall perceptions of VC during the COVID-19 pandemic.

To better understand how to sustain VC during the reopening of outpatient clinics, we sought to learn how MH, PC, and MS and SS providers perceived the quality, efficiency, and challenges of phone and video telehealth visits following the onset of the COVID-19 pandemic as well as their comfort providing VC to their patients in the coming months. Here we report the results of a survey of attitudes towards VC completed by nearly 1000 providers from the Department of Veterans Affairs (VA), the largest health care system in the United States.

METHODS

Study Sample

A voluntary and anonymous electronic survey was distributed to MH, PC, MS, and SS providers (physicians, psychologists, social workers, nurse practitioners, pharmacists, physician assistants, and podiatrists; see Supplemental Digital Content 1 for full sample definitions, http://links.lww.com/MLR/C240) across 8 medical centers comprising the VA New England Healthcare System, a 6-state regional health care system serving ~260,000 Veterans annually. Four medical centers are in urban or suburban locations and 4 are rural (see Supplemental Digital Content 2 for included medical centers, http://links.lww.com/MLR/C241).

Questionnaire Design and Data Collection

The shift to VC occurred during the week of March 16, 2020, with the rapid cessation of all nonurgent outpatient visits. A survey link was distributed by medical center chiefs of staff through clinical service chiefs to providers; the first invitation was sent on May 18, with frequent email reminders until the close of the survey on June 12, 2020. Multiple choice questions assessed provider perceptions of VC (phone and video telehealth) during the past month (ie, 2–3 mo after the shift to VC). Questions assessed experience with VC, perceptions of the quality and efficiency of care, challenges of using VC, and comfort seeing patients virtually in the coming months. The first author developed an initial draft of survey questions that was informed by prior research and reviews of the literature examining provider attitudes towards telehealth.[5–8] Questions were edited and refined via an iterative process involving input from all co-authors. Response-driven branch logic was used with a maximum of 30 questions per respondent and an average completion time of ~7 minutes (see Supplemental Digital Content 3 for full survey, http://links.lww.com/MLR/C242).

Data Synthesis and Analysis

Descriptive statistics, χ^2 tests, and Student t tests were conducted using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY). Data collection plans were reviewed by the VA Boston Research and Development Committee; the project was classified as quality improvement and was therefore exempt from IRB review.

RESULTS

During the month covered by this survey, the VA New England Healthcare System recorded 293,351 outpatient visits (as obtained from administrative datasets), representing an 11% reduction from the same month 1 year prior (329,632). A 60.6% decrease in in-person visits (from 250,693 to 98,854) was largely replaced by a 146.4% increase in VC visits [110.1% increase in phone (from 77,863 to 163,600), 2771.5% increase in video (from 1076 to 30,897)]. The transition from in-person to VC was accomplished over ~1 week's time. This rapid change was facilitated by the implementation of a telehealth infrastructure well before the onset of COVID-19.[2]

There were 1028 survey respondents across the included specialties (61% approximate response rate; see Supplemental Digital Content 4 for calculations, http://links.lww.com/MLR/C243). Thirty reported no VC appointments in the past month and were excluded from subsequent analyses, resulting in a final sample of 998 providers (49.8% MH, 20.6% PC, 20.4% MS, 9.1% SS; Occupations: 43.6% physicians, 22.1% psychologists, 13.4% social workers, 12.0% nurse practitioners, 3.9% pharmacists, 3.3% physician assistants, 1.6% podiatrists; 28.9% rural, see Table 1 for additional characteristics). During the month before being surveyed, 98.5% of providers reported having conducted a phone appointment and 80.6% reported having conducted a video telehealth appointment. MH and PC providers had significantly higher rates of video experience (87.5% and 89.3%, respectively) compared with MS and SS providers (58.8% and 71.4%, $\chi^2 = 91.9$, $P < 0.001$, Table 2).

Among providers with VC experience, the majority rated video and phone visits as equivalent to or higher in quality and efficiency than in-person care with masks (Video

TABLE 1. Characteristics of Survey Respondents

Characteristics	Overall Respondents (Total N = 998) (%)	Respondents in Specialty (%)
Mental health (n = 497)	49.8	
Psychologist		44.5
Social worker		27.0
Physician		20.5
Nurse practitioner		6.4
Pharmacist		1.2
Physician assistant		0.4
Primary care (n = 206)	20.6	
Physician		62.6
Nurse practitioner		18.9
Pharmacist		12.6
Physician assistant		5.8
Medical specialties (n = 204)	20.4	
Physician		75.0
Nurse practitioner		19.1
Pharmacist		3.4
Physician assistant		2.5
Surgical specialties (n = 91)	9.1	
Physician		56.0
Podiatrist		17.6
Physician assistant		15.4
Nurse practitioner		11.0

See Supplemental Digital Content 1 for specialty definitions (http://links.lww.com/MLR/C240).

quality endorsement = 75.8% of providers, efficiency = 79.9%; phone quality endorsement = 62.8% of providers, efficiency = 79.7%, Figs. 1A, B). These quality ratings were significantly higher for video than for phone ($\chi^2 = 61.4$, $P < 0.0001$), but efficiency ratings were not significantly different ($\chi^2 = 1.4$, $P > 0.05$). Phone and video quality and efficiency ratings were significantly different across specialties with MH having the highest and SS having the lowest ratings (all χ^2s > 24.1, Ps < 0.001, Figs. 1A, B). Among providers with both phone and video experience (n = 789), 56.5% reported generally preferring video visits over phone visits (35.9% preferred phone, 7.6% "other," with common write-in responses being no preference or patient's preference, Table 2). MH providers were more likely to prefer video visits compared with the other specialties ($\chi^2 = 60.23$, $P < 0.001$), and a greater percentage of PC and SS providers preferred phone visits over video visits.

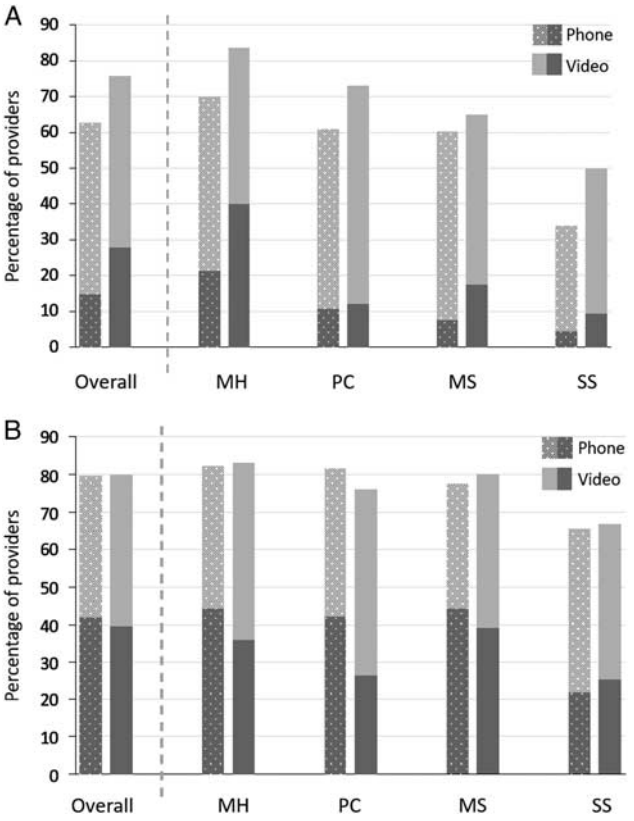

FIGURE 1. A, Quality of virtual care versus in-person care with masks. B, Efficiency of virtual care versus in-person care with masks. Provider perceptions of virtual care versus in-person care with masks. Percentage of providers (providers with phone experience, n = 971; video experience, n = 796) that found phone or video care equivalent (lighter shading) or higher (darker shading) in quality and efficiency as compared with in-person care. Quality ratings were significantly higher for video than for phone ($\chi^2 = 61.4$, $P < 0.0001$), but there were no differences in efficiency ratings between the 2 modalities ($\chi^2 = 1.4$, $P > 0.05$). Phone and video ratings were significantly different across specialties with MH having the highest and SS having the lowest ratings (all χ^2s > 24.1, Ps < 0.001). MH indicates mental health; MS, medical specialty; PC, primary care; SS, surgical specialty.

TABLE 2. Provider Virtual Care Experience and Preferences

	Respondents (%)				
Characteristics	Overall	MH	PC	MS	SS
Phone experience in past month	98.5	97.4	100	99.5	98.9
Video experience in past month	80.6	87.5	89.3	58.8	71.4
Virtual care preference*					
Video over phone	56.5	67.1	42.8	46.2	44.1
Phone over video	35.9	23.8	53.6	43.3	52.5
Other (eg, no preference, defer to patient's preference)	7.6	9.1	3.6	10.6	3.4

*Only includes providers with both video and phone experience. MH, n = 386; PC, n = 166; MS, n = 104; SS, n = 59.

MH indicates mental health; MS, medical specialty; PC, primary care; SS, surgical specialty.

Inability to conduct a physical examination was the most frequently identified challenge of conducting phone appointments (34.2% endorsement), particularly among PC, MS, and SS providers. Additional challenges of phone visits included receiving full workload credit (24.7%) and inability to assess physical health status (17%, Table 3). For video visits, frequent challenges included patient difficulty using their device and/or telehealth platform (30.1% endorsement), lack of technical support and training for patients (24.7%), and inadequate patient internet access (23.6%). PC, MS, and SS providers were more likely to endorse patient technical challenges (difficulty using their device and lack of technical support) as compared with MH providers (all χ^2s > 12.4,

TABLE 3. Provider Endorsement of Virtual Care Challenges

Virtual Care Challenges	Percent of Providers Endorsing as a Significant Challenge				
	Overall	**MH**	**PC**	**MS**	**SS**
Phone challenges (N = 161)†					
Inability to conduct a physical examination to the degree required	34.2***	10	37.5	42.9	59.1
Receiving full workload credit for appointments	24.7*	24	12.5	34.3	4.5
Assessing physical health status	17	11.8	18.8	15.7	31.8
Poor communication/support from leadership	8.2	2	12.5	10	13.6
Establishing rapport with the patient	3.1	0	6.3	4.3	4.5
Patient hearing provider adequately	1.9	2	0	2.9	0
Hearing the patient adequately	1.2	2	0	0	4.2
Ensuring patient's safety and confidentiality	0	0	0	0	0
Video telehealth challenges (N = 753)					
Patient having difficulty using their device and/or video telehealth platform	30.1**	24.9	33.5	40.2	37.3
Lack of technical support/training for patients	24.7**	19.7	29.3	30.1	35.6
Patient having access to adequate internet connection	23.6	22.5	23.8	28.2	22
Inability to conduct a physical examination to the degree required	18.6***	2.5	29.9	41.2	55.9
Scheduling procedures	14.7	11.6	19.6	17.5	16.9
Assessing physical health status	8.6***	3.8	15.6	14.7	10.2
Lack of technical support/training for providers	8.4*	6.1	12.6	11.7	6.8
Patient hearing provider adequately	7.4	6.8	8.9	8.7	5.1
Seeing the patient adequately	7	5.3	7.8	11.7	8.3
Receiving full workload credit for appointments	6.7	6.4	8.4	4.9	6.9
Provider having access to adequate internet connection	6.5	5	9	4.9	11.9
Poor communication/support from leadership	5.9	4.5	6	10.7	6.8
Provider difficulty using device and/or video telehealth platform	5.7	5.1	6.5	2.9	11.9
Patient seeing provider adequately	5.4	5.8	7.2	2	3.4
Hearing the patient adequately	4.4	5.3	4.1	2	3.3
Inappropriate or distracting patient behavior	4.3**	6.8	0.6	1	3.4
Establishing rapport with the patient	2.1	1.5	2.4	2	5.1
Ensuring patient's safety and confidentiality	1.4	2	0.6	1	0

†To reduce respondent burden, phone challenge items were only asked of respondents who reported conducting no video appointments in the past month. Video challenge items were asked of providers with video experience.

MH indicates mental health; MS, medical specialty; PC, primary care; SS, surgical specialty.

Asterisks denote significant specialty (MH, PC, MS, SS) differences in percent reported as a significant challenge via χ^2 tests:

*$P < 0.05$.

**$P < 0.01$.

***$P < 0.001$.

*P*s < 0.01). Inability to conduct a physical examination was again reported as a challenge for PC, MS, and SS providers (> 29.9% endorsement). The overwhelming majority (> 96%) of providers did not encounter significant difficulties establishing rapport or ensuring patient safety and confidentiality during phone or video appointments. Providers reported experiencing a technical issue during 11.4% of their phone appointments and 35.2% of their video appointments on average during the prior month. There were no differences in endorsement of technical challenges or frequency of technical issues between providers at rural versus urban sites (all χ^2s < 3.00, $t = 1.73$, *P*s > 0.05).

The majority of providers with phone experience (57.5%) were comfortable seeing most *established* patients via phone in the coming months, but fewer (34.5%) were comfortable seeing most *new* patients via phone. The majority of providers with video experience (67.4%) were comfortable seeing most of their *established* patients via video, but MH providers were the only group in which the majority (74.8%) felt comfortable seeing most of their *new* patients via video. Overall, MH providers were comfortable seeing a larger proportion of patients virtually compared with the other specialties (all χ^2s > 12.2, *P*s < 0.01, Figs. 2A, B).

DISCUSSION

VA providers across a range of specialties conveyed broad overall support for VC during the COVID-19 pandemic. Most providers rated the quality and efficiency of care delivered via phone and video telehealth as equivalent to or higher than in-person care with masks. Importantly, establishing rapport with patients via VC did not emerge as a challenge, and providers reported feeling comfortable delivering a considerable portion of their care virtually in the months following survey completion.

Significant differences were observed across specialties. MH providers consistently demonstrated more positive perceptions of VC than PC, MS, and SS providers. Abundant literature supports the effectiveness and overall acceptance of virtual MH care, which does not require an in-person physical examination.[5,16,17] Furthermore, during COVID-19, video appointments circumvent the barriers that masks impose on patients and providers in communicating and interpreting facial expressions, which are core components of effective MH care. In contrast, 30% to 60% of PC, MS, and SS providers viewed the inability to conduct a physical examination as a significant drawback of VC. In keeping with this finding, a minority of PC, MS, and SS providers were comfortable

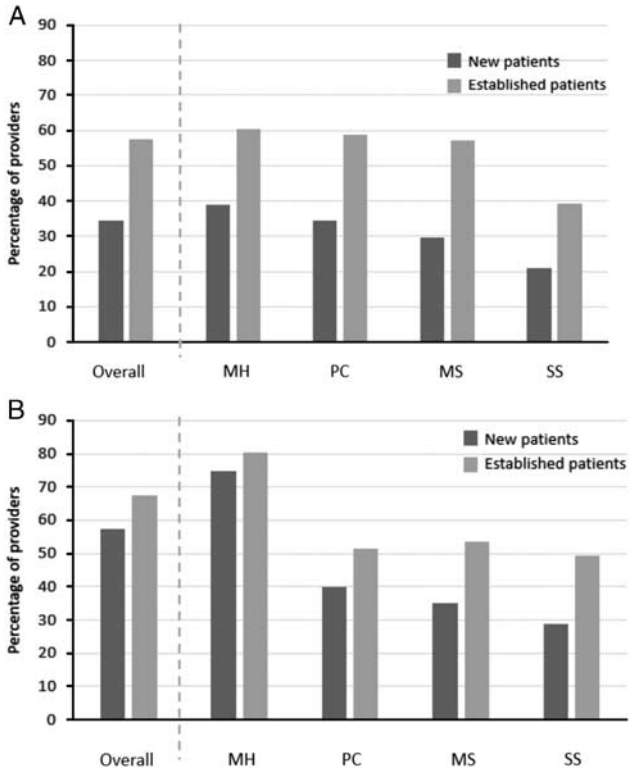

FIGURE 2. Percentage of providers comfortable seeing > 50% of their future patients via phone (A) and via video (B). Percentage of providers (providers with phone experience, n = 891; video experience, n = 727) who reported being comfortable seeing at least half of their new/established patients via phone/video in the future. Percentages were significantly different across specialties for both phone and video appointments, with MH having the highest values and SS having the lowest (all χ^2s > 12.2, *P*s < 0.01). MH indicates mental health; MS, medical specialty; PC, primary care; SS, surgical specialties.

seeing at least half of their new patients virtually in the coming months, although numbers increased when considering established patients. These findings highlight significant specialty-specific differences in the perceived quality of care that can be provided virtually and emphasize the need for innovation and training in virtual physical examination, including enhanced use of technology to assess health status remotely.[18,19]

Consistent with prior work, patient difficulties navigating video telehealth technology were viewed as a significant challenge across specialties.[5,6,11] Simplification of patient-facing technology and intensified patient education and technical support in the use of video telehealth will be critical to improve VC experiences. Surprisingly, endorsement of technical challenges did not differ between providers working at rural versus urban sites, which conflicts with well-established findings of poorer broadband connectivity and access to video-enabled devices among rural populations.[12,13] It is possible that a more granular measure of patient rurality would have revealed significant differences within our sample; for example, the catchment areas of some providers working at urban sites might have included a significant number of rural patients. It will also be important to assess this question from the patient perspective to determine whether there are differences in barriers reported by patients in urban versus rural settings.[20] It is worth noting that rurality findings may differ in non-VA populations. The VA was able to expand the use of telehealth across all facilities regardless of location well before the pandemic[2]; in contrast, Medicare and the private sector only reimbursed telehealth services for patients residing in rural locations before COVID-19.[21]

Providers reported more technical difficulties during video appointments versus phone appointments, and a greater percentage of PC and SS providers preferred phone visits as compared with video. PC, MS, and SS providers were more likely to endorse patient technical challenges during video appointments as compared with MH providers, indicating that increased support may be needed to improve perceptions and utilization among these specialties. Indeed, reports of medical providers defaulting to phone visits over video because of ease of use are increasingly common during COVID-19.[14,15] Findings suggest that the effort required to overcome the technological hurdles of video visits may seem more worthwhile in certain clinical scenarios or for certain specialties. It is important to note that video visits may indeed have clinical advantages over phone appointments: the increased information provided via video has been shown to improve provider diagnostic accuracy and decision-making and reduce medication errors as compared with phone visits.[22] This finding underscores the need to improve telehealth technologies, streamline video integration into clinical workflows, and prioritize provider education to increase uptake. Furthermore, phone visits have historically been reimbursed at lower rates than video or in-person care,[23] and receiving full workload credit was described as a significant challenge of phone appointments in the current survey. Although phone visit reimbursement has since increased due to COVID-19 billing expansions,[23,24] these changes may not be permanent, further emphasizing the need to increase acceptability of video visits as an alternative.[25]

Despite the endorsement of VC challenges, most providers across specialties reported that phone and video care were as efficient or more efficient than in-person care with masks. VC eliminates the need to don and doff personal protective equipment or disinfect examination rooms between patients, and patients may be more punctual without having to negotiate traffic and parking. In addition, a recent meta-analysis found that MH visits conducted by phone are significantly shorter than in-person appointments, suggesting that VC modalities may lend themselves to more efficient patient interactions.[26] Similar provider reports of increased efficiency have been observed within PC.[27,28]

Rates of video experience were significantly lower among MS and SS providers as compared with MH and PC providers. This is consistent with VA having implemented national goals to increase MH and PC video use before COVID-19,[2] as well as reports of very low pre-COVID use of telehealth within private sector specialty care due to reimbursement barriers.[29] Both public and private sector health care systems will need to adjust incentives to sustain high

rates of VC. Given that provider attitudes towards VC have been found to improve with experience,[5] it will be important to track potential changes in provider perceptions across specialties as their VC utilization increases.

Limitations of this work include its restriction to a regional sample of VA providers. As with all voluntary surveys, there is a possibility of response bias in that the providers who chose to complete the survey may differ from those who opted out. The disproportionate representation of MH providers (49.8%) may have introduced an additional bias, although the sample size was sufficiently large to reveal the perspectives of non-MH providers. As detailed in Supplemental Digital Content 4 (http://links.lww.com/MLR/C243), our sampling methodology prevented us from calculating an exact survey response rate, as the total number of eligible providers reached by the survey invitation is unknown; therefore we approximated the response rate based on the number of active VA providers at the time of survey administration. The survey questions assessing providers' perceptions of quality and efficiency of care have not been validated, and definitions of quality and efficiency were not included within these items, raising the possibility that different providers interpreted the meanings of quality and efficiency of care differently.[30]

The survey also did not assess whether providers had telehealth experience before the onset of COVID-19; this could have impacted attitudes, given findings that providers' opinions of telehealth tend to improve with experience.[5] VA had encouraged use of telehealth before the pandemic, particularly within MH and PC[2]; indeed, working at a VA was found to be one of the most significant predictors of having pre-COVID telehealth experience within a national sample of psychologists.[31] However, despite having higher rates of telehealth use than the private sector, rates of pre-COVID telehealth usage within VA were still relatively low (eg, ~9% of all MH appointments), in part due to provider and patient hesitance and difficulties integrating telehealth appointments into workflows (eg, scheduling procedures).[32,33] This suggests that previous provider experience likely does not significantly bias the current findings.

Qualitative data is needed to better understand specialty-level differences in provider perceptions of VC; important work in this area has already been initiated during COVID-19 by other research groups.[10] There is also a need to examine differences in provider perceptions based on provider type (eg, psychologists, physicians, nurse practitioners). Attitudes may vary based on factors such as caseload size, appointment length, nature of clinical care, and the frequency that providers see their patients; we plan to explore potential provider type differences within the current survey in forthcoming secondary analyses. Patient perspectives were not captured in this survey and will be critical to examine. Prior work reports high patient satisfaction with VC[34] and suggests that patients may have more positive perceptions of VC than providers, particularly due to the convenience of not having to travel to an appointment[5,35]; concerns about exposure to SARS-CoV-2 will likely only increase these positive views of VC.[36] Health care systems must also address disparities in access to video-enabled devices, particularly among older, rural, and low-income patients, to ensure equitable access to VC.[37,38] Indeed, work within VA has demonstrated the positive effects of distributing tablets to patients without access to a device.[2,39] Finally, further research assessing clinical processes and outcomes is necessary to assess the true efficacy of VC.[22]

To our knowledge, this is the first reported survey that compares provider attitudes towards VC across a wide range of specialties during the COVID-19 pandemic. Providers demonstrated both broad overall support for VC as well as striking specialty-specific differences in the perceived need for in-person patient visits. Our findings emphasize the need for improvements in VC technology and connectivity, increased patient and provider training, and more streamlined integration of video telehealth into clinical workflows to sustain high levels of VC across specialties during the COVID-19 pandemic and beyond.

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