

# Perspectives on Telemedicine from a National Study of Youth in the United States

Marika Elise Waselewski, MPH,<sup>1,i</sup> Eric Andrew Waselewski, MD,<sup>2</sup> Margaret Wasvary, BS,<sup>3</sup> Georgia Wood,<sup>4</sup> Keagan Pratt,<sup>5</sup> Tammy Chang, MD, MPH, MS,<sup>1,6</sup> and Aliya Courtney Hines, MD<sup>7</sup>

<sup>1</sup>Department of Family Medicine, University of Michigan Medical School, Ann Arbor, Michigan, USA.

<sup>2</sup>Department of Internal Medicine, Michigan Medicine, Ann Arbor, Michigan, USA.

<sup>3</sup>School of Medicine, Wayne State University, Detroit, Michigan, USA.

<sup>4</sup>College of Literature, Science, and the Arts, University of Michigan, Ann Arbor, Michigan, USA.

<sup>5</sup>College of Engineering, University of Michigan, Ann Arbor, Michigan, USA.

<sup>6</sup>Institute for Healthcare Policy and Innovation, University of Michigan, Ann Arbor, Michigan, USA.

<sup>7</sup>Department of Dermatology, School of Medicine, Wayne State University, Detroit, Michigan, USA.

<sup>i</sup>ORCID ID (<https://orcid.org/0000-0003-4332-1974>).

## Abstract

**Introduction:** Telemedicine is increasingly popular with the recent surge in use due to the COVID-19 pandemic. Despite youth status as “tech natives,” limited data are available on their perspectives on telemedicine. Our study seeks to understand youth telemedicine knowledge, prior experiences, preferences for use, and the impact of COVID-19 on these perspectives.

**Methods:** Participants in MyVoice, a national text message cohort of U.S. youth age 14–24, were sent five open-ended questions in October 2019 and October 2020. A codebook was iteratively developed by using inductive analysis. Responses were independently coded by two investigators, with discrepancies resolved by discussion or a third investigator.

**Results:** Sixty-five percent (836/1,283) and 77% (887/1,129) of participants responded to at least 1 question in 2019 and 2020, respectively. Most youth reported awareness of telemedicine and although many have not used it, COVID-19 has increased use. Further, many are willing to try telemedicine services. Most youth noted a preference for video rather than phone visits, but they believe both to be less ef-

fective than in person. Youth also reported varied preferences on services best suited for telemedicine, with COVID-19 positively impacting their views.

**Discussion:** Youth are aware of and willing to use telemedicine services, with many reporting use during the COVID-19 pandemic. Youth are willing to accept a wide variety of telemedicine services, though they still desire in-person options. Health systems and clinics should offer a wide range of services via telemedicine to fit the varying needs of youth both during and after the COVID-19 pandemic.

**Keywords:** youth, telemedicine, telehealth, COVID-19

## Introduction

Virtual health care, or telemedicine, is increasingly popular across multiple stakeholder groups. Patients, providers, health systems, and public health experts see telemedicine as a tool to help facilitate access in rural communities and reduce costs associated with health care.<sup>1–9</sup> Recently, the COVID-19 pandemic and subsequent guidelines for limited in-person contact have resulted in an unprecedented surge in telehealth use across the United States.<sup>4,10</sup>

Telemedicine is currently used in health care in a variety of ways, including concierge services, medication management, minor urgent care, chronic health management, mental health services, and follow-up care. Patient surveys demonstrate high levels of satisfaction with the use of telemedicine, as well as personal interest in future use of telemedicine due to convenience, faster service, and cost savings.<sup>5,6,11</sup> Compared with in-person health care, telemedicine is associated with improved or comparable health outcomes and increased connection to health care.<sup>12–14</sup>

Adolescents and young adults today are technologically savvy and online-oriented, with high rates of Internet and mobile device use.<sup>15</sup> Despite youth status as “tech natives,” limited data are available on their knowledge, use, and preferences related to telemedicine.<sup>16</sup> Existing data on this issue primarily focus on parent perspectives and outcomes rather than youth experiences.<sup>17–20</sup> In addition, there are a few guidelines or recommendations specific to adolescent and young adult telemedicine use.<sup>21</sup>

Our study seeks to understand youth perspectives of telemedicine, including knowledge, prior experiences, preferences for use, and the impact of COVID-19 on these perspectives. This work is important because by better understanding youth interest in telemedicine, strategies can be developed to optimize engagement of this population with virtual care, and potentially improve youth access to health care and overall health outcomes.

## Methods

Participants in this study were youth, age 14–24, who were enrolled in MyVoice, a longitudinal national text message survey of youth.<sup>22</sup> MyVoice participants are recruited via targeted social media advertisements and community events based on weighted demographic benchmarks of the American Community Survey. Once enrolled, participants are sent weekly surveys with three to five questions on salient health and health policy topics that impact youth. Demographic data are collected from participants at enrollment, including age, gender, race, ethnicity, educational status, and zip code. Online written consent was obtained per approval by the University of Michigan Institutional Review Board (HUM00119982) with a waiver of parental consent for minor participants to enable equitable enrollment of at-risk youth.

On October 18, 2019, MyVoice youth were asked five open-ended questions via text message aimed at understanding their knowledge, experience with, and opinions on telemedicine. Participants were then asked a second set of five questions on October 9, 2020. Although MyVoice was used for both sets, the individual participants may not be the same, as individuals could enroll, age out, or unenroll between sets. Questions were iteratively developed by a team of youth, methodologic experts, and adolescent health researchers, resulting in the following language:

### OCTOBER 2019 QUESTIONS

1. Telemedicine is when a doctor provides care for a patient when they are not physically together (like online, phone, or video). Have you ever heard of telemedicine?
2. Is telemedicine something you think you would use? Why or why not?
3. Have you or anyone you know ever used telemedicine? Tell us about it.
4. What kinds of health issues do you think telemedicine would be good for?
5. What kinds of health issues would you rather see a doctor in person for?

### OCTOBER 2020 QUESTIONS

1. Telemedicine is when a healthcare provider cares for a patient when they are not physically together (like online, phone, or video). Since the start of the COVID-19 pandemic, have you or anyone you know used telemedicine? Tell us about it.
2. If you were to use telemedicine to see a healthcare provider, would you prefer a phone call or video visit? Why?
3. How effective do you think telemedicine is compared with an in-person visit? Why do you say that?
4. What kinds of health issues do you think telemedicine would be good for? Why?
5. How has the COVID-19 pandemic changed your view on telemedicine, if at all?

Participants were given 1 week to respond to the text message survey, at which point their responses were downloaded and analyzed. A codebook was iteratively developed by the study team using inductive analysis, and responses were independently coded by two investigators. After coding was completed, discrepancies between coders were resolved by discussion or by a third individual. Descriptive statistics were used to calculate code frequencies and demographic data from participants.

Participants were assigned to metropolitan or non-metropolitan counties by using the National Center for Health Statistics six-level urban-rural classification scheme to categorize their self-reported zip codes.<sup>23</sup> Counties were considered metropolitan if they had an urban-rural classification of 1–4, and non-metropolitan counties had values of 5 or 6. Youth-reported knowledge and use of telemedicine was compared by age using *t*-tests and by gender, race, and ethnicity, and metropolitan versus non-metropolitan county status using chi-square tests.

## Results

Survey questions from October 2019 were sent to 1,283 MyVoice participants, of whom 836 responded to at least 1 question (65.2% response rate). In October 2020, 1,129 MyVoice participants were surveyed and 887 responded to at least one question (77.2% response rate). Participants from both timepoints were on average 19.0 years old, with most identifying as female, non-Hispanic white, and from metropolitan counties (*Table 1*). After thematic analysis of open-ended responses, several main themes emerged (*Tables 2 and 3*): (1) Youth are aware of telemedicine and although many have not used it, COVID-19 has increased use; (2) Many youth are willing to try telemedicine services primarily due to convenience; (3) Most youth noted a preference for video rather than phone

**Table 1. Respondent Demographic Characteristics**

DEMOGRAPHIC CHARACTERISTIC	OCTOBER 2019 RESPONDENTS (N= 836), <sup>a</sup> N (%) OR MEAN (STD)	OCTOBER 2020 RESPONDENTS (N= 887), N (%) OR MEAN (STD)
Age	19.0 (2.9)	19.0 (2.7)
Gender		
Male	315 (37.8)	396 (44.7)
Female	445 (53.4)	419 (47.3)
Other	74 (8.9)	71 (8.0)
Race and ethnicity		
Non-Hispanic White	475 (57.0)	509 (57.4)
Non-Hispanic Black	76 (9.1)	70 (7.9)
Hispanic	106 (12.7)	111 (12.5)
Non-Hispanic other	177 (21.2)	196 (22.1)
Education level		
Less than high school <sup>b</sup>	468 (56.1)	348 (39.3)
High school grad	72 (8.5)	128 (14.5)
Some college or tech school	193 (23.1)	265 (29.9)
Associate's degree or tech grad	24 (2.9)	29 (3.3)
Bachelor's degree or higher	77 (9.2)	115 (13.0)
Region		
Midwest	339 (40.8)	304 (34.4)
Northeast	126 (15.2)	142 (16.1)
South	199 (24.0)	249 (28.2)
West	166 (20.0)	189 (21.4)
Metropolitan county		
Yes	774 (93.3)	827 (93.7)
No	56 (6.7)	56 (6.3)
Received free or reduced lunch		
Yes	302 (36.5)	325 (36.9)
No	525 (63.5)	556 (63.1)

<sup>a</sup>Two respondents were missing all demographic data except age.

<sup>b</sup>Includes respondents still in high school.

STD, standard deviation.

**YOUTH ARE AWARE OF TELEMEDICINE AND ALTHOUGH MANY HAVE NOT USED IT, COVID-19 HAS INCREASED USE**

A majority of youth in our sample from October 2019 (522/825; 63.3%) reported, “I have heard of it. My insurance covers it.” However, only 20.0% (150/750) of those respondents noted that they or someone they know used telemedicine, and only half of this population (79/750; 10.5%) mentioned personal use of telemedicine; “yes i used it once when i had a bad cold.” Of respondents noting no prior use of telemedicine (590/750; 78.7%), reasons included sufficient access to in-person care or limited availability of telemedicine because “its not very widespread” as reasons for no prior use. By October 2020, months into the COVID-19 pandemic, more than half of youth respondents (443/865; 51.2%) reported that they or someone they know had used telemedicine, with 33.8% (292/865) reporting personal use: “Yes. I have used it and my mother has used it multiple times.”

In evaluating by demographic characteristics, participants who reported knowledge and use of telemedicine, at both timepoints, were older on average ( $p < 0.001$ ). Female and other gender identity individuals reported more use compared with males during the pandemic ( $p < 0.001$ ) but no differences in knowledge and pre-pandemic use were noted. Lastly, youth reported that knowledge and use of telemedicine was not statistically different based on race and ethnicity or the metropolitan categorization of their county.

At both timepoints, many reported having positive experiences using telemedicine (30.7% and 19.4% in 2019 and 2020, respectively), including that “it works well” and “It was fast and efficient. I didn’t even have to leave my dorm room.” A few participants did report negative experiences or perceptions (12.0% and 12.4%, respectively), noting it to be “not as good as in person but better than nothing,” “it’s different and weird,” or that “it’s cheaper for me to go in person.”

**MANY YOUTH ARE WILLING TO TRY TELEMEDICINE SERVICES PRIMARILY DUE TO CONVENIENCE**

Despite limited experience with telemedicine, in October 2019 most youth indicated they would (49.7%) or maybe would (16.1%) be willing to use telemedicine (Table 2). Youth willing to try telemedicine primarily noted interest “because it seems convenient” or “easy” (46.9%). Others noted more specific benefits related to transportation (20.7%): “it can be helpful in a situation where I’m not able to travel to them” or it “makes you not have to drive as much.”

At the same timepoint, not all youth were open to the idea of telemedicine, with 32.0% opposed to it. Those not interested in using telemedicine noted it to be impersonal (34.1%),

visits, but they believe both to be less effective than in person; (4) Youth have varied preferences on services best suited for telemedicine; and (5) The COVID-19 pandemic has positively influenced youth perspectives on telemedicine.

**Table 2. Youth Perspectives on Willingness to Use Telemedicine, Visit Type, and Effectiveness**

THEME, CODE	N (%) <sup>a</sup>	EXAMPLE QUOTE
Many youth are willing to try telemedicine services, primarily due to convenience (October 2019)		
Yes, willing	382 (49.7)	
Seems convenient	179 (46.9)	"Yes! I think it's a great use of technology to provide better accessibility" "Yes probably, it's a useful and efficient tool"
Less travel	79 (20.7)	"Yes. I don't have a car so it's hard to get to the doctor"
Lower cost	25 (6.5)	"Absolutely, it's usually way cheaper and saves a lot of time"
Maybe, willing	124 (16.1)	"Possibly, depends on the situation"
No, not willing	246 (32.0)	
Seems impersonal	84 (34.1)	"No, i wouldnt be comfortable if it werent in person" "No I'd much rather meet in person"
No physical exams	40 (16.3)	"No because they can't see me and see what's wrong"
Misdiagnosis concerns	24 (9.8)	"No, I don't trust that any diagnoses would be accurate, or that my privacy would be assured."
Most youth noted a preference for video rather than phone visits, but they believe both to be less effective than in person (October 2020)		
Video	568 (68.2)	
Attention/engagement	136 (23.9)	"Video visit because I like to know that they are looking at me when I'm speaking and paying attention" "Video because it helps me...know that they're listening to me"
More personal	121 (21.3)	"Video visit. The doctor is expensive and a very personal experience. I like being able to see them and have a more personal interaction than is available via phone"
Visuals	120 (21.1)	"A video visit. This way it is easier for a health care provider to visibly see symptoms and actions to better assess and evaluate."
Better communication	100 (17.6)	"video, because it is easier to communicate face to face. i would feel more comfortable, and less impersonal"
Natural/real	67 (11.8)	"Video visit just to make it seem as real as possible"
Phone	192 (23.0)	
Anxious/appearance	56 (29.2)	"A call. I don't like video calls, they make me incredibly anxious and on edge, and it's hard to communicate clearly when I feel that way"
Generally dislike video	44 (22.9)	"I would prefer a phone call I think because I have been in too many zoom meetings so I don't like video visits."
Easiest option	39 (20.3)	"Phone call because it much easier to use than video call"
Depends/either	48 (5.8)	"Phone call for regular doctor talks and visits, video for something more specialized to allow the doctor to get a better picture and build better rapport with me"
Neither	19 (2.3)	"Uh neither, I would rather go in person to see my doctor"
Very/similarly effective	160 (20.0)	"I think it's more effective because I won't need to sit in the waiting room for an hour" "Honestly it's no different. It feels the same regardless...The only difference is that you aren't going anywhere, just staying where you are and meeting up virtually"
Not as effective	393 (49.1)	"Not as effective but better than nothing. The video quality doesn't allow the doctor to truly see issues. It's hard to take vitals etc" "I think it's less effective since you can't actually get "checked out" and have the doctor see/hear what's wrong with you"
Not at all effective	84 (10.5)	"Nothing online will ever be close to as effective as in person activities, such as things in the doctor's office which really should be touched physically/seen in person" "I think it is not nearly as effective. How can a doctor feel you for conditions if they can't feel you. I do not trust telemedicine"
Depends on the situation	131 (16.4)	"Depends on what you are going for. Many things can be verbalized, but many are better if the doctor can take vitals and examine you physically"

<sup>a</sup>Data presented is from either October 2019 or October 2020 depending on when the questions were asked; refer to theme headers for the survey question date.

**Table 3. Youth Preferences on Services Best Suited for Telemedicine**

THEME, CODE	OCT 2019, N (%)	OCT 2020, N (%)	EXAMPLE QUOTE
Issues good for telemedicine			
Minor/common	205 (27.7)	215 (27.1)	"Small ailments and sicknesses" "Very simple things, like checkups. It is not good enough for serious things"
Mental health	190 (25.7)	267 (33.7)	"Mental health conditions where people don't necessarily want to/feel they cannot leave the house to receive therapy" "Therapy that is mostly talking based"
Cold/infections	178 (24.1)	133 (16.8)	"Common illnesses, viruses and infections" "Flu-like symptoms, UTIs, diarrhea, etc"
Chronic care	89 (12.0)	146 (18.4)	"Follow up of routine health issues, bp management, Weight loss" "Monitoring chronic conditions. Something new might be harder to figure out."
Triage care	67 (9.1)	57 (7.2)	"Simple diagnosis, determining if you should go in in person."
Prescriptions	58 (7.8)	92 (11.6)	"For things where people just need a prescription—like they know they have strep or pink eye and just need an order for the medicine"
Skin care	54 (7.3)	44 (5.6)	"Maybe a rash or something more visual"
Issues preferred in person			
Physical issues	227 (31.0)	Na	"Physical illness and bruises." "Internal health issues, broken bones, inflammation, really anything that requires physical intervention"
Major/severe	202 (27.6)	Na	"Serious issues or life threatening." "if you have a really bad illness or autoimmune issues"
Exams/testing	139 (19.0)	Na	"Anything that requires tests for a diagnosis"
Everything	101 (13.8)	Na	"Everything. I wouldn't ever really do telemedicine"
Chronic care	61 (8.3)	Na	"General sickness, aches, physicals, checkups ("invisible" illnesses)"
Colds/infections	59 (8.1)	Na	"Colds, flu, pain & test of any kind"

with no option for physical exams (16.3%), and the potential for misdiagnosis (9.8%). A few individuals also noted concerns about not trusting telemedicine or concerns of it being a scam.

**MOST YOUTH NOTED A PREFERENCE FOR VIDEO RATHER THAN PHONE VISITS, BUT THEY BELIEVE BOTH TO BE LESS EFFECTIVE THAN IN PERSON**

When prompted in October 2020 about the preferred type of telemedicine visit, phone call or video, most youth (68.2%) reported a preference for video (Table 2). Some noted that phone calls were preferred (23.0%), and others had no preference or said it depended on the situation (5.8%).

Reasons for preferring a video visit included “to physically see them and having their undivided attention” (23.9%), because it “seems more personal” (21.3%), a need for visual interaction to “show stuff to a doctor” (21.1%), “it’s easier to understand when

you can see facial expressions or hand gestures” (17.6%), and “so it feels more normal!” (11.8%). Preferences for phone calls most commonly included that respondents “get self conscious on video” or “because i dont want them to judge on my looks” (29.2%). Others noted a more general dislike of video (22.9%) or “because [a phone call] is just easiest” (20.3%).

When prompted further about the perceived effectiveness of telemedicine compared with in-person health care, youth most commonly reported telemedicine to be not as effective (49.1%). Some reported it to be similarly or more effective (20.0%), with a minority noting it to be not at all effective (10.5%). The remaining individuals noted that effectiveness would depend on the situation (16.4%) or were unsure (4.1%).

Some youth provided reasoning for these perceptions, primarily noting reduced effectiveness because “they can’t take vitals or do other physical exams” via telemedicine (33.5%) or

Downloaded by 73.212.218.165 from www.liebertpub.com at 10/05/21. For personal use only.

that “being with a doctor allows them to see context clues they wouldn’t otherwise see nor would you know to tell them” (13.2%). Several individuals noted more specific examples of situations where telemedicine would be effective (“For a mental health concern, refilling a prescription, etc. I think it can be totally effective”; 13.1%) as well as those where it would not be effective (“Take an ear infection as an example, the healthcare provider wouldn’t get much of a good close up through a video call”; 13.6%).

#### YOUTH HAVE VARIED PREFERENCES ON SERVICES BEST SUITED FOR TELEMEDICINE

At both timepoints when prompted about health issues best suited for telemedicine, youth most frequently mentioned “minor health problems” (27.7% in 2019 and 27.1% in 2020), mental health issues such as “anxiety/depression” (25.7% and 33.7%), and colds or infections including “Flu, earache, cold” (24.1% and 16.8%). Other participants reported potential use of telemedicine for chronic or follow-up care, triaging severity of health concerns, and prescription refills (Table 3). Other respondents in both surveys reported that telemedicine would be good for most situations except exams, major and emergent issues, or specific health conditions.

However, not all youth felt the same about the type of care best provided via telemedicine, and in fact many stated contradictory preferences. Although mental health was more commonly reported to be good for telemedicine, some youth mentioned they would prefer to get care for “sensitive topics like mental and sexual health” in person. Further, some health issues such as “Follow up of routine health issues,” “Anything that was urgent,” and “Almost all aspects of health” were noted by some as good for telemedicine and by others as better in person. Youth also reported contrasting opinions on the use of telemedicine for visually based complaints, with some indicating that telemedicine use was appropriate for “Things that can be assessed visually like rashes,” whereas others stated it was only good for issues “that don’t require visual attention/diagnosis.”

#### THE COVID-19 PANDEMIC HAS POSITIVELY INFLUENCED YOUTH PERSPECTIVES ON TELEMEDICINE

When youth participants were prompted to explicitly consider the impact of COVID-19 on their views of telemedicine in October 2020, many (362/769; 47.1%) reported an improved opinion. Others noted that there had been no change or they generally felt neutral (387/769; 50.3%), with very few noting a more negative view as a result (20/769; 2.6%). Many youth also noted that telemedicine was “much more necessary,” “it’s

more convenient now and helps avoid other infected people,” and “it’s more prevalent and...it might be more effective and useful than i thought.”

#### Discussion

Most youth in our sample were familiar with telemedicine but before the COVID-19 pandemic, very few had used it. Despite this limited use, many were open to using telemedicine due to perceived convenience and ease, and indeed telemedicine use increased in our second survey 1 year later. Preferences for type of visit strongly favored video over phone visits, though youth felt neither was as effective as in-person health care. Youth in our survey also noted a wide variety of services that they felt would be well suited to or effectively conducted via telemedicine and noted more positive views of telemedicine as a result of the pandemic.

Despite limited personal use before the pandemic, most youth in our sample demonstrated awareness of telemedicine, contrary to similar pre-pandemic research that noted that only 20% of people had ever heard of telemedicine.<sup>6</sup> We also noted a substantial increase in telemedicine use among youth compared with before the pandemic, similar to other recent data reporting a shift from 8% to 22% of consumers utilizing video visits.<sup>6,24</sup> Even with limited use before COVID-19, most youth in our survey were open to the idea of using telemedicine due to convenience, reduced travel, and lower costs, all which are consistent with prior research of adult perspectives on telemedicine.<sup>6</sup> Concerns about scams and misdiagnosis with care provided via telemedicine were much less commonly noted in youth compared with adults.<sup>25</sup> Because youth show high levels of acceptance of telemedicine as a health care delivery tool, clinics may be able to specifically target this population to receive a higher proportion of their care virtually, potentially increasing access, convenience, and decreasing costs.

To effectively implement and engage youth in telemedicine services, it is important to understand their preferences for visit type and perceptions of effectiveness. Our survey showed that the majority of youth would prefer to receive video-based telemedicine care, as it creates better inter-personal connections, improves communication, and has a more natural feel. This sentiment contrasts with data on recent telemedicine use, which shows that the majority of visits are conducted via telephone.<sup>26</sup> The discrepancy between preferences and current usage may indicate an opportunity for improvement in telemedicine implementation, especially since the majority of youth have access to smart phones that typically have video capabilities.<sup>27</sup> To best engage younger patients, health care

providers may need to shift the balance of their virtual visits toward video-based telemedicine visits, even for care that does not require a visual examination.

Youth reported a wide variety of health care concerns that could be well managed with telemedicine, including minor or common concerns, mental health, colds or infections, chronic or follow-up care, diagnosis or triaging, prescription refills or consultations, and dermatologic care. At the same time, mental health, chronic care, and visual health were identified by some respondents as concerns best addressed in person. These overlapping lists suggest that to best serve the needs of a diverse population, clinics should plan to have a large suite of services available both in person and via telemedicine. It also indicates that youth perspectives and preferences regarding telemedicine should be considered as clinics determine the types of services to be offered as they expand telemedicine services.

**LIMITATIONS**

Although the MyVoice cohort is a large diverse sample of youth across the United States, it is not representative of national demographics and therefore results may not be more broadly generalizable. Recruitment through social media platforms may also create bias in our sample. Lastly, although many of the same individuals were included in both survey timepoints, due to enrollment, unenrollment, and aging out, the cohort whom these questions were sent to is not exactly the same, which may have influenced the shift in perspectives observed.

**Conclusion**

Youth are aware of and willing to use telemedicine services, with many youth reporting the use of telemedicine during the COVID-19 pandemic. Our respondents are interested in using telemedicine for a wide variety of services, though youth still desire in-person options. Health systems and clinics should aim at offering a large suite of services both in person and via telemedicine to meet the needs of this population and specifically engage youth to seek health care via telemedicine as it fits their needs both during and after the COVID-19 pandemic.

**Authors' Contributions**

All co-authors have reviewed and approved of the article before submission.

M.E.W. contributed to conceptualization and design of study, analysis and interpretation of data, drafting of the article, and revision of the article.

E.A.W. contributed to analysis and interpretation of data, drafting of the article, and revision of the article.

M.W. contributed to analysis and interpretation of data, drafting of the article, and revision of the article.

G.W. contributed to analysis and interpretation of data and revision of the article.

K.P. contributed to analysis and interpretation of data and revision of the article.

T.C. contributed to conceptualization and design of study, analysis and interpretation of data, and revision of the article.

A.C.H. contributed to conceptualization and design of study, analysis and interpretation of data, and revision of the article.

**Acknowledgments**

The authors would like to thank the MyVoice participants for their continued participation and candor in sharing their experiences and perspectives.

**Disclosure Statement**

No competing financial interests exist.

**Funding Information**

This work was supported by the Michigan Institute for Clinical & Health Research, the University of Michigan MCubed program, and the University of Michigan Department of Family Medicine. These funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the article; and decision to submit the article for publication.

**REFERENCES**

1. American Academy of Family Physicians. Telemedicine. Published 2019. Available at [https://www.aafp.org/dam/AAFP/documents/advocacy/health\\_it/telehealth/BKG-Telemedicine.pdf](https://www.aafp.org/dam/AAFP/documents/advocacy/health_it/telehealth/BKG-Telemedicine.pdf) (last accessed February 17, 2021).
2. American Hospital Association. Fact Sheet: Telehealth. Published 2019. Available at <https://www.aha.org/factsheet/telehealth> (last accessed February 17, 2021).
3. 2019 Telemedicine and Locum Tenens Opportunities Study Measuring Physician Interest in Emerging Employment Areas. Doximity, San Francisco, CA, 2019.
4. American Medical Association. After COVID-19, \$250 billion in care could shift to telehealth. Published June 18, 2020. Available at <https://www.ama-assn.org/practice-management/digital/after-covid-19-250-billion-care-could-shift-telehealth> (last accessed February 17, 2021).
5. *The Rapid Transition to Telemedicine: Insights and Early Trends*. Press Ganey Associates LLC, South Bend, IN, 2020.
6. *Telehealth Index: 2019 Consumer Survey*. American Well, Boston, MA, 2019.
7. *Telehealth Index: 2019 Physician Survey*. American Well, Boston, MA, 2019.
8. Polinski JM, Barker T, Gagliano N, Sussman A, Brennan TA, Shrank WH. Patients' satisfaction with and preference for telehealth visits. *J Gen Intern Med* 2016;31:269-275.

Downloaded by 73.212.218.165 from www.liebertpub.com at 10/05/21. For personal use only.

9. Centers for Disease Control and Prevention. Telehealth and Telemedicine. 2020. Available at <https://www.cdc.gov/phlp/publications/topic/telehealth.html> (last accessed February 17, 2021).
10. Gelburd R. Telehealth Continues Rapid Growth Amid Coronavirus Pandemic. US News & World Report. Published July 13, 2020. Available at <https://www.usnews.com/news/healthiest-communities/articles/2020-07-13/telehealth-continues-rapid-growth-amid-coronavirus-pandemic> (last accessed February 17, 2021).
11. Orlando JF, Beard M, Kumar S. Systematic review of patient and caregivers' satisfaction with telehealth videoconferencing as a mode of service delivery in managing patients' health. *PLoS One* 2019;14:e0221848.
12. Mehrotra A, Paone S, Martich GD, Albert SM, Shevchik GJ. A comparison of care at E-visits and physician office visits for sinusitis and urinary tract infection. *JAMA Intern Med* 2013;173:72–74.
13. Lin MH, Yuan WL, Huang TC, Zhang HF, Mai JT, Wang JF. Clinical effectiveness of telemedicine for chronic heart failure: A systematic review and meta-analysis. *J Investig Med* 2017;65:899–911.
14. Gordon AS, Adamson WC, DeVries AR. Virtual visits for acute, nonurgent care: A claims analysis of episode-level utilization. *J Med Internet Res* 2017;19:e35.
15. Teens, Social Media & Technology Overview 2015. Pew Research Center. Published April 9, 2015. Available at <https://www.pewresearch.org/internet/2015/04/09/teens-social-media-technology-2015/> (last accessed February 17, 2021).
16. Sequeira GM, Kidd KM, Rankine J, et al. Gender-Diverse Youth's Experiences and Satisfaction with Telemedicine for Gender-Affirming Care During the COVID-19 Pandemic. *Transgend Health* March 2021. [Epub ahead of print]; DOI: 10.1089/trgh.2020.0148.
17. Ye X, Bapuji SB, Winters SE, et al. Effectiveness of internet-based interventions for children, youth, and young adults with anxiety and/or depression: A systematic review and meta-analysis. *BMC Health Serv Res* 2014;14:313.
18. Nelson EL, Patton S. Using videoconferencing to deliver individual therapy and pediatric psychology interventions with children and adolescents. *J Child Adolesc Psychopharmacol* 2016;26:212–220.
19. Anderson KE, Byrne CE, Crosby RD, Le Grange D. Utilizing Telehealth to deliver family-based treatment for adolescent anorexia nervosa. *Int J Eat Disord* 2017;50:1235–1238.
20. Ray KN, Ashcraft LE, Mehrotra A, Miller E, Kahn JM. Family perspectives on telemedicine for pediatric subspecialty care. *Telemed J E Health* 2017;23:852–862.
21. Barney A, Buckelew S, Mesheriakova V, Raymond-Flesch M, Barney A. The COVID-19 pandemic and rapid implementation of adolescent and young adult telemedicine: Challenges and opportunities for innovation. *J Adolesc Health* 2020;67:164–171.
22. DeJonckheere M, Nichols L, Moniz MH, et al. MyVoice national text message survey of youth aged 14 to 24 years: Study protocol. *JMIR Res Protoc* 2017;6:e247.
23. Centers for Disease Control and Prevention. NCHS Urban–Rural Classification Scheme for Counties. 2017. Available at [https://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm](https://www.cdc.gov/nchs/data_access/urban_rural.htm) (last accessed February 17, 2021).
24. *From Virtual Care to Hybrid Care: COVID-19 and the Future of Telehealth Insights from the 2020 Amwell Physician and Consumer Survey*. American Well, Boston, MA, 2020.
25. American Telemedicine Association. One in 10 Americans Use Telehealth, But Nearly 75% Lack Awareness or Access, J.D. Power Finds—ATA. Published August 1, 2019. Available at <https://www.americantelemed.org/industry-news/one-in-10-americans-use-telehealth-but-nearly-75-lack-awareness-or-access-j-d-power-finds/> (last accessed February 17, 2021).
26. Reed ME, Huang J, Graetz I, et al. Patient characteristics associated with choosing a telemedicine visit vs office visit with the same primary care clinicians. *JAMA Netw open* 2020;3:e205873.
27. Rideout V, Robb M. *The Common Sense Census: Media Use by Tweens and Teens 2019*. Common Sense Media, San Francisco, CA, 2019.

Address correspondence to:  
**Marika Elise Waselewski, MPH**  
 Department of Family Medicine  
 University of Michigan Medical School  
 2800 Plymouth Road  
 Building 14–Room G128  
 Ann Arbor, MI 48109-0624  
 USA

E-mail: marikag@med.umich.edu

Received: March 9, 2021

Revised: April 30, 2021

Accepted: May 4, 2021

Online Publication Date: August 6, 2021