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In-person or telemedicine at a free clinic? A natural experiment

Rachel O'Brien, Brian Florenzo, Marcel Eloy Durieux, Mohan Nadkharni

Introduction

The SARS-CoV-2 pandemic has broadly impacted healthcare, including free clinics. The need to limit interpersonal contact has forced many free clinics to close or transition to telehealth services.[1] The impact of such a COVID-19-induced shift to telemedicine has been investigated in regular primary care settings[2] but those findings may not apply to patients and providers in free clinics. The free clinic client population often has limited access to internet and up-to-date computer equipment, and may be challenged in using advanced communication technology.[2,3] On the other hand clients frequently work multiple jobs and taking time off work for in-person appointments might be a burden. It is conceivable that volunteer providers might have little interest in learning and practicing telemedicine, but that the decreased COVID-19 exposure risk and convenience of seeing patients from home could be attractive. Understanding these attitudes toward and experiences with telemedicine of both free clinic clients and providers is essential, as telemedicine services likely will be utilized beyond the end of the pandemic. The task then will be to identify which appointments would be most usefully done remotely, and which would require in-person visits. However, such an assessment of free clinic patient and provider perspectives on the switch to has not been done. To be most useful, such an assessment should be of participants who have experienced both in-person and remote models of care.

In March 2020 essentially all in-person visits at the Charlottesville Free Clinic (CFC) were stopped and telemedicine appointments were offered instead, an option never available before. This complete switch constituted an unusual natural experiment. Clients and providers experienced both care delivery models and could assess and evaluate their preferences. We decided therefore to elucidate the impact of this switch to telemedicine on both groups. We anticipated a rich and complex array of responses to this shift, and for that reason chose a qualitative research approach to investigate the issue. Specifically, we wished to identify the main perceived positive and negative aspects of the switch for both patient and providers. We hypothesized that in each group we would identify a mix of benefits and drawbacks. The expected large-scale use of telemedicine beyond the SARS-CoV-2 pandemic make our findings particularly

relevant for the coming age of virtual medicine that free clinics and the field of medicine in general will likely experience.

Methods

CFC has provided general primary and specialty care (including orthopedics, psychiatry, gynecology, dermatology, neurology, and endocrinology) to underserved populations since 1992. It serves more than 2500 medical and dental adult patients through more than 8000 annual outpatient visits. Patients with medical needs are seen either by a salaried nurse practitioner during day times, or by volunteer generalist and specialist physicians and nurse practitioners during three evening clinics per week. An average of 5 providers with support staff would be present during an evening clinic, treating between 20 and 30 patients. An on-site pharmacy dispenses medications during the same hours.

After March 2020, essentially all appointments were through telemedicine. The main exception was an occasional daytime in-person visit offered by a nurse practitioner for cases where a physical examination was deemed essential. Doxy.me (https://doxy.me/) was used as the primary telehealth video platform; telephone calls were made if patients were unable or unwilling to use video. On-site training in Doxy.me was offered to providers as needed.

Between August and October 2020, when the telemedicine model had been in use for at least 4 months, we conducted interviews with clients and providers to elucidate perspectives on their telemedicine experiences at CFC. A semi-structured interview outline (see Appendix) was created based on literature review. These semi-structured interviews were designed to explore the benefits and challenges of the telemedicine program as compared with the in-person model, and to identify tangible ways to improve care experiences for our patient population. Patients were recruited in a purposive manner, aiming at diversity in gender, age, race, income, and visit type. All recruitment was done by telephone; all interviews were conducted by one person (ROB) either by phone or via Doxy.me. In addition, three Doxy.me interviews were held with physician volunteer providers who had conducted telemedicine at the clinic. Recruitment continued until thematic data saturation was attained as determined by the interviewer/coder.

Interviews ranged from 15 to 45 minutes in length. They were audio recorded, transcribed verbatim by the interviewer, and then coded and analyzed for emerging themes in the qualitative research software Dedoose (SocioCultural Research Consultants, Manhattan Beach, CA). A sequential coding process was utilized, where interim analysis informed subsequent interviews. Categories were derived inductively and more specific themes were developed within categories to identify central ideas and patterns in the data.[4]

The protocol was reviewed by the Institutional Review Board (IRB) at the University of Virginia and was designated as not requiring IRB oversight. Participants were assured their data and comments would be confidential and any direct quotations would be de-identified; all provided consent.

Results

A total of 14 patients and 3 providers were interviewed.

Patient perspectives

Communication

Patient-provider communication was a key element identified as hindered by telemedicine visits. Many patients felt it more difficult to convey information to the provider over a video or phone call. Telemedicine lacked the extra layer of communication, through facial expression and body language, that face-to-face interaction provides. Phone visits were perceived to be worse in this respect. In-person communication was found to be more comprehensive, and therefore more effective.

"I think that a doctor can read your body language better if you're there in person … I think there's a whole psychological dynamic that happens".

"You can explain maybe a little more in person than you would on the phone because you don't always think about everything at that time."

"If you're not face to face in the room with someone, it's much easier to leave things out."

In addition, many patients felt more comfortable communicating with their provider in-person.

"I prefer the in-person just because I like to do a true life face-to-face and kind of explain actually what's going on…I just feel a lot more comfortable."

Some patients felt communication with their provider was unaffected by telemedicine, reporting that their telemedicine provider was extremely thorough, caring, and patient. They felt their visits were in-depth and that they were able to get all their questions answered.

"I think on a phone call especially, you could feel like they could sort of do it quicker for some reason. But it wasn't that way at all - it was quite thorough I thought."

Time

Most patients stated that remote visits saved them at least some time, and for many, a significant amount of time. This included travel time, waiting time at the clinic, and in a few cases the actual visit time.

"It's definitely a time saver for sure. I mean that took me all of a half hour and going to the clinic probably involves about 2 hours, with waiting and coming back home."

The total time saved ranged from about 30 minutes to 3 hours; multiple patients reported it took them over an hour just to travel to the clinic. For many, the amount of time they saved with telemedicine was the central to their preference for telemedicine visits.

Appointment Location

Another benefit reported was the ability to do appointments from anywhere, most often home or work. For patients with young children this offered a particular benefit because they did not have to coordinate childcare.

"I don't have to drop [my son] somewhere or have somebody watch over [him] so that way it's more convenient."

Patients with demanding work schedules also appreciated the flexibility of telemedicine.

However, the clinic environment was considered more comfortable and with fewer outside distractions.

"When the phone rings, stuff like that, it interferes… whereas, if you're going in the office or going in somewhere, you'd just be able to turn your phone off."

Transportation

Not surprisingly, telemedicine was considered particularly beneficial by patients who lacked reliable transportation. Patients who cited this as a benefit either were unable to drive or did not have a car.

"Making it to the free clinic can sometimes be difficult because I don't have a car, so getting a cab or riding the bus – you just have to catch it at the right time. Or else, if you miss it, then you're walking."

Physical Exam and Vital Signs

Many patients missed the physical exam included with an in-person appointment. Interestingly, this at times decreased trust in the provider or in the outcome of the visit. Some felt the provider was more likely to "take a guess" regarding their diagnosis without the physical exam.

"I don't know that a doctor can get a really good idea of what's happening unless he or she sees the person."

"They [couldn't] actually see what I was showing them… I don't think it [was] as good as in person."

Not having vital signs taken also was associated with decreased confidence in the appointment.

"It leaves you very anxious as to whether you're actually just self-diagnosing or if the doctor's actually able to tell what's going on."

Some patients with hypertension had blood pressure machines at home, but still reported they did not feel entirely comfortable relying on their own readings. This is an area where education can be beneficial, given that home readings lack the "white coat" effect associated with office readings.[3]

However, other patients with blood pressure machines at home were comfortable taking their own readings. For these patients, the ability to check blood pressure at home and during the remote visit seemed to contribute significantly to an overall positive telemedicine experience.

"I have a blood pressure machine and all that stuff here, so I was able to give her the information that she needed and answer the questions."

Technology

Telemedicine is inherently linked with technology. Most patients interviewed reported no issues regarding the logistics of their telemedicine experience, either video or phone call. With regards to the video call experience, one patient said:

"It's very simple. I mean [the provider] sets it up and I'm just logging in."

However, several patients did express a preference for phone call over video call. Reasons given included better audio connection over the phone, discomfort with video call, or lack of access to video call technology. Many of these patients were more comfortable with the phone call because they had never used the video call feature on their phone, tablet, or computer, and were not sure how to work it.

"They asked me if I wanted to do a video, and I was looking at my phone and I was thinking I can hardly figure out how to figure out my keyboard and stuff, let alone do a video chat."

In some cases, patients reported they did not have access to the technology required for a video call. These patients either only had a landline phone, did not have internet at home, or had a cell phone without the video call function. Overall, 13 patients interviewed had a cell phone, 7 had a laptop or computer, 4 had a tablet, and 11 had home internet access.

Future of Telemedicine and Visit Preference

About one third of the patients interviewed expressed a general preference for telemedicine visits due to the increased convenience of remote appointments, and indicated that they would like to do all possible future visits via phone or video call, as long as a physical examination or in-person diagnostic testing is not required.

"Whatever I can do over the phone, I would like to do that over the phone."

The other two thirds of the patients interviewed expressed a general preference for in-person visits. The main reasons for this preference were lack of the physical exam/vital signs, hindered patient-provider communication, overall decreased comfort level with telemedicine, or a combination of these factors.

A great majority (10 of 14) of patients would like to continue to have the option of telemedicine in the future; this included some patients who expressed a general preference for in-person visits. Many, while

generally preferring in-person visits, said it "would be nice to have the option" of telemedicine for certain things, such as medication refills and quick follow-up visits.

"If you've been into the office and had a check-up or something recently and you just have a follow up question, it's kind of nice to just do it on video or just phone."

Provider perspectives

Communication

One common communication issue shared between patients and providers was the increased number of interruptions and distractions with telemedicine. This included environmental sources as well as connectivity issues.

"If there are crying babies and dogs barking and the garbage truck is picking up garbage outside there could be more distractions than if you have them isolated in the office."

However, other providers felt that other than the occasional audio connection issues, communication was generally unaffected.

"I've actually been pleasantly surprised that it's not as much as I would have thought, unless there is a bad telephone or video connection, and that happens every once in a while."

Personal Connection

Providers felt their personal connection with a patient was at least somewhat affected in the virtual format of telemedicine. For some, it was due to the lack of the physical and face-to-face contact, a factor also mentioned by many patients.

"Well I mean part of being a physician is that contact with the patient, sort of just laying on your hands - and I think that sort of forms a bond between the physician and patient."

The connection over video call was felt to be better than via phone call.

The provider-patient connection may be better if there is a previously established provider-patient relationship from either prior in-person or telemedicine visits. New patient visits via telemedicine seem to be more challenging with respect to establishing a connection.

"They're not sure how much to divulge."

Flexibility of Appointment Location

When patients have appointments from home, providers can view the patient in their home environment. Some providers noted they appreciated this insight into a patient's life.

"The thing that makes it actually better in some way is that you are now jumping into the location where the patient is instead of the patient coming to you. So even though it's not a home visit, you get at least a little glimpse of what people's environment looks like, which is helpful."

Patients often did their telemedicine appointments from work, their car, or even outside. This seemed to affect the encounter somewhat negatively from a provider perspective. Inside cars, connectivity often seemed worse, disrupting communication. Visits with patients at work raised concerns regarding privacy.

"I mean you talk about confidentiality trying to have a private conversation with somebody in the stockroom at Lowe's – it's a little challenging to say the least."

Physical Exam and Diagnostic Testing

Providers identified the lack of a physical exam to be the main limitation of telemedicine (although some targeted telemedicine physical examination systems have been developed[5]). This limitation was reported to be particularly pronounced in cases of musculoskeletal and skin complaints.

"The issue is, what are you going to do next if you have an incomplete physical exam of the patient? Because the options are limited and none of them are really good."

Another important issue was the inability to perform rapid diagnostic tests, such as urine dipstick, hemoglobin A1c, EKG, and pregnancy tests. As with the physical exam, providers felt their diagnostic abilities were somewhat limited without access to these diagnostic tools via telemedicine.

"Those are really common things that you need, and it's really helpful to say, just wait for a second or go pee and give us some urine and we'll get an answer to you in a minute."

Technology

Overall, providers reported they felt very comfortable with telemedicine technology and had not personally experienced any issues when using it. Most providers felt that patients seemed to be fairly comfortable with the technology.

One provider mused about the potential effects of how the provider looks on screen.

"We ought to think about the actual cinematic presentation that we're bringing to this – being in a place that has a relaxing ambience makes a difference, having a platform on which the computer is held so that you're looking face to face with somebody [makes a difference]."

In addition to camera angle, provider position in relation to the camera might also affect the overall interaction.

"I wonder if I had [the camera] further away…if you were able to catch my full gesticulations and all of that whether that would be better than just being a talking head."

Personal Impact on Provider

Telemedicine is a novel form of care delivery for providers at CFC, and this change has impacted providers on a personal level. A common theme identified was that providers miss the social and professional interpersonal interactions that come with being at the clinic.

"What suffers a lot socially is my social interactions as part of the clinic. I mean, the free clinic is a tremendously social place… so that actually I really miss that".

On the other hand, providers acknowledged some ease associated with working from home, with one provider remarking that it is

"…incredibly comfortable doing things from home."

Future of Telemedicine

While recognizing telemedicine's limitations, providers consistently expressed they did see a place for it in the future of CFC. A shared consensus was that telemedicine offers benefits particularly for certain visit types that tend to be quick and straightforward, including medication refills, chronic disease follow-up visits, and discussion of imaging or lab results.

For patients with hypertension, providers felt that telemedicine could be improved if all of them had a blood pressure machine at home. This would allow for patients to provide real time blood pressure readings during their visits. Otherwise, providers do not feel they can appropriately assess how these patients are doing.

Discussion

The main finding of our study is that for free clinic clients a switch to telemedicine can have positive and negative aspects, and that both may affect the same patient. These findings support our hypothesis. Overall, about half of patients shared very positive feedback on their telemedicine visits, and most would prefer to continue doing at least some visits via telemedicine. The reason most commonly mentioned was the reduced time requirement compared with an in-person visit, an issue of great importance to this population, which often has time-consuming work and family responsibilities.

Perspectives on telemedicine of both patients and providers in regular clinics have been evaluated in previous studies. Casares et al. reported findings from an epilepsy telehealth clinic[6] that mirrored those observed in our study with respect to transportation, flexibility, concerns over personal connection, diagnostic testing and exams, ease of technology use, as well as an overall tendency to prefer telemedicine as a continued option. A recent systematic review identified ease of use, lower cost (less time off work, transportation), improved communication with their provider, decreased travel time, and improved self-management as the main satisfaction drivers for telemedicine.[7] These findings support our findings with regards to the convenience of telemedicine (such as less time off work and no need for transportation/travel), but offer a contrast in terms of improved communication and self-management. Our

study did not identify the latter as major themes. Provider perspectives were assessed by Samples et al. at the Seattle Veterans Affairs Primary Care Clinic.[8] Most physicians preferred to use telemedicine for chronic disease management but realized that telemedicine has inherent social and diagnostic limitations. This is similar to the provider attitudes expressed in our study about technology, personal connection, communication, and diagnostic capacity. A survey of general clinic patient perspectives on telemedicine before and after the pandemic struck has been reported as well,[9] with largely similar findings.

Major differences with regular primary care clinics make it essential to assess separately the perspectives of free clinic patients and providers. Very few studies have so far been reported, and to our knowledge none have focused primarily on experiences in patients and providers who had experienced both telemedicine and in-person care. However, the limited data available support our results. Castillo et al. reported the challenges of implementing a student-run telemedicine program for medication provision in patients with opioid use disorder.[10] Based on 31 counseling appointments they reported great satisfaction of both providers and patients, but importantly this telehealth effort was only possible due to the removal of triage screening protocols (e.g. urine and blood toxicology screenings) that will likely be reinstated when the pandemic ends. Phan et al. detailed rapid implementation of telehealth at a student-run clinic.[11] Importantly, they recorded a significant drop in no-show appointments, which they attributed to the increased convenience of telemedicine (i.e. transportation, time, less financial burden), findings similar to ours. Falicov et al. reported transitioning to telemedicine a free clinic providing mental health services to immigrants.[12] The most notable benefits from the providers' perspective was the increased emotional and physical insight that these home video chats and phone calls gave them into their patients' lives. Family dynamics, stressors, and lifestyle clues were more readily available to the providers, which in turn led to a perception of more tailored care and contributed to solidifying patient relationships. This finding echoes similar thoughts expressed by some CFC providers that a telemedicine visit can offer a version of a "21st century home visit" with both benefits and distractions. From the patient perspective, the increased scheduling flexibility of the clinic led to the removal of longstanding barriers to treatment, such as transportation limitations, narrow hours of operation, and work-health conflicts. Again, these findings mirror ours.

Limitations of our study should be considered. We investigated one single clinic in one town. Our sample was purposive. Whereas this provides the greatest likelihood of identifying most of the important themes, we cannot make any statements about the relative importance of these themes within a more general patient population. This is particularly true since patients uncomfortable with technology may have been less likely to agree to participate. Therefore, using this data to implement decisions on long-term telehealth use at a free clinic should preferentially be done only after the incidence of the main themes has been assessed in the specific population (e.g. through a survey). Also, because of practical reasons coding was done by one person. A process where two people would have separately coded the data would have strengthened our study. Finally, whereas identification of these perspectives is important and may be used to guide implementation of long-term telehealth programs for this population, it is critical to know if telehealth leads to similar medical outcomes as in-person visits. The limited literature in free clinic settings suggests outcomes are comparable. As examples, virtual diabetes self-management was shown to improve hemoglobin A1c values in 3 free clinics,[13] and teledermatology over mobile phones in 2 rural free clinics in the Philippines was found to be noninferior to face visits.[14] Although outcomes assessment

remains important after any switch to telehealth, it seems likely that similar outcomes can be obtained with telehealth in this population.

Our data can inform decisions on how to continue telemedicine beyond the pandemic. Most patients stated a preference to continue the option of telemedicine in the future, including some patients who generally preferred in-person visits. The most popular visit type that patients would like to continue via telemedicine was medication refills. In addition, many said they would like the option of doing quick follow up visits via telemedicine. Some indicated they would like to do all possible visits via video/phone call moving forward. Many of this group were followed for various chronic health conditions. Providers similarly saw a future for telemedicine, but it is important to note that in this natural experiment of a sudden switch to the technology many noted how they missed the social interactions, not only with patients, but also with colleagues in the clinic. This could possibly contribute to a faster rate of burnout if free clinic volunteers were to practice mostly telemedicine in the future.

In summary, our data show a complex array of perceptions to telehealth in free clinic clients and providers. The positive aspects, however, are particularly significant in this population, and most patients would like to be able to continue accessing their healthcare providers in this manner after COVID-19 is controlled.

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Appendix - Interview guides

Interview guide - Patient

Welcome and Introduction

The goal of this study is to look at the patient experience with telemedicine at the free clinic, so we can better understand how this change has impacted our patients, what components of our telemedicine program are working, and which parts may need improvement. We plan to use the data collected through these interviews to determine how we can adjust our telemedicine program to best fit our patients' needs.

Informed Consent

This interview will be audio recorded for the purposes of transcription and analysis. Following analysis, all transcriptions and recordings will be deleted. Are you okay with me recording this? All identifying information will be removed, so what you say in this interview will remain anonymous. Do you have any questions for me before we get started? Are you able to see and hear me?

Interview: for patients who have done at least one telemedicine visit:

1) How many telemedicine visits have you participated in at the free clinic since the switch? What types of visits were they – video/phone; chronic disease management / follow up, medication refill/adjustment, new complaint, COVID concerns

2) What are your feelings about the switch to telemedicine at the free clinic?

3) **Tell me about your experience with telemedicine at the free clinic**

   a. In your opinion, what are the benefits of telemedicine/what are the drawbacks

   b. What challenges have you encountered in your experience with telemedicine

   c. Do you feel like you can **communicate** well with your provider/your provider understands you well

   d. How do you feel telemedicine affects your **relationship with your provider**

   e. **Have you seen any of your telemedicine providers before in person?**

4) Tell me about your experience using **the technology** associated with telemedicine

   a. How comfortable are you with using the Doxy.me

b. Have you experienced any technical difficulties when setting up for or during your telemedicine visits (visual, audio etc)

c. Would it be helpful to be given technological help or support with future telemedicine visits

5) Have you been satisfied with the **quality of care** you have received over telemedicine? What do you think could be improved upon

6) How **comfortable** are you with telemedicine? What aspects are you uncomfortable with, how could we make you more comfortable

7) Once we resume in-person visits, would you like to continue to have the option of telemedicine? What types of visits would you like to do via telemedicine (medication refill, lifestyle recommendations, follow ups, discussing lab results, other)

8) How can we make the telemedicine experience better for you?

9) Think about your last in-person visit at CFC and the various steps included – registration, intake, visit with the provider, pharmacy, and exit. Which components of the in-person visit do you feel went well, and which parts could be improved? How does the in-person experience compare with the telemedicine experience?

10) Is there anything else about your telemedicine experience that you would like to share?

Interview Guide – Provider

Welcome and Introduction

The goal of this study is to look at the patient and provider experience with telemedicine at the free clinic, in order to better understand how this change has impacted our patient care, what components of our telemedicine program are working, and which parts may need improvement. We plan to use the data collected through these interviews to determine how we can optimize our telemedicine program to best serve our patients.

Informed Consent

This interview will be audio recorded for the purposes of transcription and analysis. Following analysis, all transcriptions and recordings will be deleted. All identifying information will be removed, so what you say in this interview will remain anonymous. Do you have any questions for me before we get started? Are you able to see and hear me clearly?

1) Tell me about your experience conducting telemedicine visits with your patients at the free clinic

a. In your opinion, what are the benefits of telemedicine

b. What challenges have you encountered when conducting telemedicine

c. Do you feel like you can **communicate** well with your patient/your patient understands you well

d. How do you feel telemedicine affects your **relationship** with your patients

2) Tell me about your experience using the technology associated with telemedicine

a. **How comfortable** are you with using the Doxy software

b. Have you experienced any **technical difficulties** when setting up for or during your telemedicine visits (visual, audio etc)

c. Would it be helpful to be given technological **help or support** with future telemedicine visits/Do you think it would be helpful for your patients to receive help with this

d. What do you think could be **improved** regarding the technical side of telemedicine

3) Have you been satisfied with the **quality of care** you are able to provide over telemedicine?

a. What challenges have you encountered

b. What do you think could be improved upon and how

4) How **comfortable** are you with providing care via telemedicine? What aspects are you uncomfortable with, how could they be improved

5) Once we resume in-person visits, would you like patients to continue to have the option of telemedicine? Would you personally like to continue conducting some visits this way? What types of visits do you think work best via telemedicine (medication refill, lifestyle recommendations, follow ups, discussing lab results, other)

6) How do you think the switch to telemedicine has **impacted your patients** and their health? Based on your interactions, how would you say your patients feel about telemedicine

7) How has the switch to telemedicine impacted you as a **provider?**

8) Other than what you have already said, how can we make the telemedicine experience better for you and your patients?

9) How do you feel the telemedicine visits compare to the in-person visits you have with your patients at CFC?

10) Is there anything else about your telemedicine experience that you would like to share?