Telemedicine Visits: A Look into Improving Patient Access

for Appointments and Patient Satisfaction

By

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Abstract

Background: Patients want and need to be seen in a timely fashion. Due to a lack of availability for patient appointments, there can be waits of upwards of three or more weeks for an appointment for an acute healthcare problem. Due to this growing demand for access, visit types such as telemedicine must be researched and implemented to allow for better access for patients.

Objective: The purpose of this scholarly project was to implement a telemedicine platform for physician use and analyze patient satisfaction of the telemedicine platform.

Methods: Patient satisfaction data was obtained over a 3-week period through the use of an anonymous survey via SurveyMonkey.

Results: 45 surveys were obtained during the given timeframe.   The mean score of the overall satisfaction with the appointment was 3.7 (SD 1.2). The mean score of the overall satisfaction with the treatment received during the appointment was 4.2 (SD 1.0). The mean score of the overall satisfaction of the software used for the appointment was 3.2 (SD 1.3). The mean score regarding if the patient would prefer this type of appointment for routine medical issues in the future was 3.1 (SD 1.3).

Conclusion: Each question yielded at least a somewhat positive response regarding telemedicine visits. These results show that this telemedicine platform can be used (especially in a time like the pandemic) to see patients when in-person patient visits are not required.

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for Appointments and Patient Satisfaction

Chapter I: Introduction

The world is an ever changing and diversifying place. With that being stated, it is

important to note that this change and diversification also includes the healthcare industry. As

the patient population continues to increase in size (albeit slowly) and overall age, it will be of

the utmost importance to offer as many services and increased access for these growing demands

(Garza, 2016; Roser et al., 2019). Increased access can be an issue when some providers are

booked out for weeks, and a patient wants to schedule a follow-up appointment. When there is

no room in the schedule for patient appointments, what is the next best alternative? Usually,

patients will either wait for those few weeks in some sort of discomfort, or patients may present

to an Urgent Care or Emergency Room where it is possible symptomatic treatment will occur (in

some cases) (O'Neill Hayes, 2018). There are also times when a patient may need to return for a

visit for a simple vitals recheck or status recheck after implementing a new medication.

Although the visit has to be done, in many instances, providers have these patients present for

rechecks and office visits physically. Patients will, in most cases, follow through with these

rechecks, but there are times where extenuating circumstances make these visits difficult to keep.

Telemedicine visits could be the solution for the providers and patients to allow for more

convenience for both parties. Providers won't be using some of their allocated but finite office

time, and patients can utilize these types of appointments from the convenience of wherever they

may be located.

Telemedicine visits are not a new concept, but new technological advances pertaining to

telemedicine allow for more access points for patients and subsequently providers (Mahar et al.,

2018). Being that video-messaging is constantly being upgraded, screen resolution is becoming more defined, and more features are being built into these messaging platforms, this allows for a greater opportunity to implement visits via telemedicine (Chiron Health, 2019). Telemedicine visits allow for easier convenience for patients and providers. With all of that being stated, however, this new technology still needs to be monitored and amended closely. Because this is a burgeoning area of healthcare, there will still be issues and obstacles that need to be overcome. Patient education that the platform exists, when to use telemedicine, reimbursement, and even the cost of devices and equipment needed will all have to be addressed (Varshneya, 2018).

This scholarly project will address why a platform is needed to provide telemedicine access, how that platform will be implemented, and how this platform will (or won't) improve patient access to care, and improve patient satisfaction. This scholarly project will improve patient access to care and evaluate patient satisfaction of the telemedicine experience.

Background and Significance

This project is important because adding another access point for patients to connect with providers is crucial to help alleviate growing demands in healthcare. Sadly, there are not enough resources (i.e. providers and appointments) to handle all of these needs in a timely and efficient manner. According to the Association of American Medical Colleges (AAMC) (2019), the United States could see a shortage of physicians of up to 120,000 by the year 2030. Currently, many patients have to wait upwards of three or more weeks to possibly see a provider, whether it is a specialist or a primary (Rege, 2017). This leads to issues where patients may be told to return to a clinic within one to two weeks for a recheck of the symptoms presented, but a provider may not have any availability if the schedule is booked out for three weeks. This can either lead to late results, or possible complications if the patient's symptoms have not improved.

As an auxiliary consequence to the presented, if a patient is able to make an appointment for a follow-up and recheck within the timeframe recommended by the provider, this takes away a timeslot for a possible appointment for a different patient may have an acute problem.

Currently, telemedicine is being implemented around the country and world with larger corporations (Siwicki, 2017). The idea for these corporations is to reduce or maintain costs by replacing high-cost encounters of emergency rooms and urgent cares with telemedicine visits (Siwicki, 2017). For example, telemedicine visits can help diagnose acute upper respiratory infections (URIs) and other seasonal issues so the patients don't have to leave their homes and possibly contaminate others or contract another illness by being exposed (Chiron Health, 2019). Although this may not be the most accurate of ways to diagnose a patient (i.e. no physical assessment), the idea behind these kinds of visits is sound. Telemedicine visits allow the patient to stay home and "be seen" through a virtual house call. This saves the patient time and money while also providing the provider a more concise visit while also still being able to bill for his/her work. Patients can be seen whenever they need to be, they are saving money by not presenting to a more acute oriented clinic, and providers are able to keep their in-office appointment slots regimented towards situations that require the patient to be present. At the end of this project, the goal is that a telemedicine platform will be implemented into a private practice that will increase patient access opportunities to be seen for certain visit types, and subsequently it will increase patient satisfaction based on the availability and outcomes of the treatment plans proposed from these visits. During this process, the type of visit that will be utilized with this technology (i.e. medication refill, medication follow-up) will be determined through the project committee.

Needs Assessment

Currently, telemedicine is a growing subsection in the healthcare field. There is some research on its implementation, its efficacy, and its overall usefulness. There is very little information regarding how patients perceive this platform, and there is very little known regarding how providers are accepting and utilizing this platform. The goal of this scholarly project is to help address the lack of information on the issues stated previously. This scholarly project looks to provide another access point for patients and their provider(s). With this type of visit, the goal is to provide patients and providers a means of access to improve accessibility and improve convenience in scheduling follow-up appointments. Hopefully, the end result from this increased accessibility in terms of convenience and appointments is that patient satisfaction regarding care, respect for the patient's time, and respect for the patient's finances related to cost of care improves. The patient's satisfaction with a telemedicine visit will be determined through a custom questionnaire (See Appendix A) in which the patients rank these topics.

A SWOT analysis (See Appendix B) was completed to identify the strengths, weaknesses, opportunities, and threats to implementing a telemedicine platform into the organization. The SWOT analysis did show that there may be some threats with introducing a telemedicine platform into the clinic. For example, there may be provider or patient pushback to not actually being seen in person in the office. There would need to be education of the provider and future providers of this practice and patients that this platform is not for more in-depth cases, new patients, or any patient that requires a physical examination. Although not covered in the SWOT analysis, another factor that will need to be accounted for is technological access. This type of visit will require a consistent, fast internet speed to allow for reliability and clarity while these appointments take place.   Over time, this scholarly project looks to decrease areas of

possible complications and streamline the beneficial aspects of telemedicine visits. The office and overseeing physician's goal is that telemedicine visits become the norm for the organization between providers and patients when applicable.

Problem Statement

Due to a finite amount of in-person office visits due to time, there is a lack of appointment access for certain patients due to booked provider schedules causing a delay in patient care and subsequently possible treatment. Patients constantly rank provider availability for appointments as below average on organizational surveys (Heath, 2018). Researching and implementing a telemedicine platform that would allow certain follow-up visits for these patients from the comfort of their own environments can alleviate this.

Project Aim or Purpose

The purpose of this project is to implement a telemedicine platform for the physician use and analyze patient satisfaction of the telemedicine platform. This scholarly project will involve researching the different telemedicine platforms that can be built into or integrate with the necessary electronic medical record (EMR). Once this step is completed, there will be a trial period with the lead provider and his patients offering appointments through the selected platform. By the end of the scholarly project, selected patients will utilize the selected platform to schedule certain follow-up visit appointment types, and while providing overall satisfaction with appointment availability. Objectives for this scholarly project include researching and implementing a telemedicine platform for organizational use within one month of starting the scholarly project, and patient access and satisfaction will rate as satisfactory or higher based on patient survey data from the custom questionnaire within one month of implementation.

Clinical Question/PICOT

The clinical question was made in PICOT form. The clinical question for this scholarly project is the following. In ambulatory, outpatient clinics, how does virtual ambulatory telemedicine visits compared to in-office visits affect patient appointment availability and visit satisfaction numbers within one year of implementation?

Congruence with Organizational Strategic Plan

This project aligns with the organizational strategic plan in that it will help create more opportunities and avenues for patients to be seen. The plan is for the overseeing provider to utilize telemedicine appointments for his established patients. Once the opportunity for growth presents, the overseeing provider plans on making telemedicine appointments a requirement for all future providers that join the organization. The organization is a new practice where the overseeing provider is willing to implement this feature for convenience for patients and future providers alike. Being that this is a possible technological feature that will reduce costs for patients and provide easier access for both patients and providers, this project aligns with the organization's strategic plan. The platform could provide another access point for appointments with the overseeing physician that is easy to use, and patients would not only tolerate, but also prefer to use for certain visits.

Synthesis of Evidence

The literature search strategy took place over two different databases, Google Scholar and Pubmed. Each database had the search filter refined down to articles and studies that were performed from the year 2015 to 2019 to filter out older studies. For each database, a combination of keywords and phrases were used to return results. Those keywords and phrases consisted of "telemedicine", "satisfaction", "cost", "specialty", and "implementation". These

words were used in combination to create searches to yield the necessary articles. Each database

would return numerous results (Google Scholar yielded over 17,300 results alone). From there,

the articles on the first several results pages were reviewed and analyzed for possible inclusion

based on subject, methodology, and pertinent results. Numerous articles were not included based

on the fact that they were not relevant to the proposal at hand. There were over 20 articles that

were included from the searches because they all show that primitive research into telemedicine

has taken place, but there has not been a large, substantial look into how telemedicine is

perceived or used by patients and providers. Patient satisfaction and missed appointment results

were rudimentary in these studies. With that being stated, the following is what was found

during this review.

The first advantage and issue that is apparent from the literature review for telemedicine

is that it is being implemented in many different specialties and practices to try and fit needs of

different clinics to see patients virtually (Fortney et al., 2015; Sood et al., 2017; Narasimha et al.,

2017; Piga et al., 2017; Sechrist et al., 2018; Portnoy, Waller, Lurgio, & Dinakar, 2016; Jacobs,

Ekkelboom, Jacobs, Van der Molen, & Sanderman, 2016). When reviewing these articles, each

set of authors had their own way of analyzing and determining if their respective patients' needs

and satisfaction were met; there was no one universal survey that was used to make these

determinations. For the sake of this project, there was only one study that centered on a pain

clinic and spinal cord injuries (Sechrist et al., 2018). Although the physical medicine clinic

where this project will be implemented will be similar, it is hard to differentiate the exact work

that was being done.

The next aspect that was prevalent was that there were very few Randomized Controlled

Trials (Fortney et al., 2015; Muller, Alstadhaug, & Bekkelund, 2017; Buvik, Bugge, Knutsen,

Småbrekke, & Wilsgaard, 2018; Sood et al., 2017). Most of the research was some sort of

review, cross-sectional study, qualitative review, or even the author's experiential account of

other research (Kahn, 2015; Stumpf, Zalunardo, & Chen, 2002; Hanson et al., 2017; Martinez et

al., 2018; Garcia, Olayele, & Han, 2017; Kruse et al., 2017; Garcia & Olayele, 2017; Narasimha

et al., 2017; Piga et al., 2017; Sechrist et al., 2018; & Jacobs et al., 2016); this shows that there is

a lack of randomness to these studies, which can create problems in the sense that biases can be

introduced. When surveys were sent to patients who were willing participants to try

telemedicine visits, those patients are already in a frame of mind in that they are open to this new

concept. This can create a bias in the sense that the patients may already be in favor of this new

visit type. Also, none of these studies took into account that the patients and providers may have

already had a strong patient-physician relationship. This bias towards the patient-provider

relationship may not have been taken into account when patients were asked to fill out the survey

on their experiences with their telemedicine visits.

The next area of concern was that most of these articles had a very small sample size

(less than 100) if any sample at all (Kahn, 2015; Flodgren et al., 2015; Stumpf et al., 2002; Mair

et al., 2012; Hanson et al., 2017; Kruse et al., 2017; Hanna et al., 2016; Narasimha et al., 2017;

Piga et al., 2017; & Sechrist et al., 2018). This is a concern in that the larger the sample size, the

more indicative it is of the greater population in general. This allows for more movement

towards the norm over time. Being that this field in healthcare is relatively new, these results

need to be prudently utilized until a larger population can be sampled.

Some of the articles did look into location and telemedicine viability. There were times

when telemedicine made the choice to be seen easier for the patients (Martinez et al., 2018).

Almost 70% of the patients stated they would have either done nothing for their issue or gone to

the Urgent Care or ER, which demonstrates that telemedicine does have a place for certain issues. With the advent of virtual and digital stethoscopes and otoscopes in some telemedicine platforms, these visit types are constantly expanding to what can be seen virtually (Portnoy et al., 2016).

Many of the articles did look into patient outcomes (results from treatment) to determine if telemedicine was appropriate. All of the articles that were analyzed showed that patient outcomes from the telemedicine visits were equal to outcomes in-office, and that provider satisfaction with patient outcomes was equal between the two as well (Fortney et al., 2015; Flodgren et al., 2015; Hanson et al., 2017; Martinez et al., 2018; Muller, Alstadhaug, & Bekkelund, 2017; Hanna et al., 2016; Buvik et al., 2018; Sood et al., 2017; Narasimha et al., 2017; Piga et al., 2017; Sechrist et al., 2018; Portnoy et al., 2016; Jacobs et al., 2016). It should be noted that some patients were not willing to try telemedicine visits.

Finally, there was very little in the way of the "outside aspects" of telemedicine. For example, there was little research on the cost of implementation, the cost to the providers, the cost (or savings) to the patients, the legality of these visits, how these types of visits affect accessibility for the patient, how these types of visits effect accessibility for the providers, or any standards/protocols that need to come with these visits. A few of the articles did mention these types of scenarios, but each concluded that much more research is needed (Kahn, 2015; Flodgren et al., 2015; & Stumpf et al., 2002), and none of the research looked into patient "no-show" rates.

With all of that being stated, there are areas where telemedicine research needs to be done. There needs to be an increase in randomized clinical trials to leave out any possible biases that can be introduced through familiarity. Also, there needs to be more research into if this

accessibility correlates to less missed appointments, and overall greater satisfaction for the patients and, in turn, the providers.

Conceptual or Theoretical Framework

For this scholarly project to work, there must be areas of clinical practice that are modified to help support this new area. For example, providers who will be utilizing this technology will need to learn how and when to offer a telemedicine visit. These providers will also have to incorporate education into their practice for their patients regarding the benefits and drawbacks to this technology. At the start of this project, there is only one provider who must adapt this to his practice. When the practice grows, it will be expected that the new providers also implement these visits. Also, there must be education for the patients on the technological needs for this type of appointment. Patients will require a computer or tablet that has a camera and audio to allow for "face-to-face" interaction between the provider and patient.

The Donabedian model will be used to guide this project. The Donabedian model is a conceptual framework for a project that focuses on the three main categories: structure, process, and outcome (Moran, Burson, & Conrad, 2020). The project structure is identified by the setting in which the project will be implemented and who will be involved in the project; the process involves what will be done during the project and how the project will be delivered, and the outcome is the piece of the project that will be measured, reviewed, and/or assessed (Moran, Burson, & Conrad, 2020).

This model was chosen because it flows from the structure of where it will be implemented (and who will be involved) to the process of how it will be implemented (what will be done to implement it and how will it be achieved), and ends at the outcome of the project of what will be measured, reviewed, and assessed. This model makes the most sense for this

project because it lays out a general step-by-step framework from the beginning of

implementation to the end results with the returned data from the patients. This model

specifically relates to this scholarly project because the Donabedian model emphasizes a focus

on identifying upstream issues at a specific location (i.e. technology incompatibility),

implementing a new process of telemedicine visits at this location, and evaluating the outcome

from the process implementation.

Chapter II: Methodology

Project Design

The design of this scholarly project is a quality improvement project, which is focused around choosing the best telemedicine platform to meet the needs of the clinic and patients. The goal is for patient satisfaction regarding care from these visits.

Setting

This scholarly project is being implemented at a private physical medicine clinic where patients are experiencing back, spine, and neck issues. The clinic is located in a suburb of Chicago where patients come from a wide range of different occupations, education levels, income levels, and cultural backgrounds. The clinic is currently run by the founding physician, and this scholarly project has full support from him and his staff. Telemedicine visit implementation has been a priority for setup in this practice to help increase availability for patients and provider alike. To help facilitate telemedicine visits and the follow-up surveys, the Registered Medical Assistant on staff will also be assisting in promoting and educating the patients under the physician's direction.

Population/Sample

The population for this scholarly project is all patients scheduling follow-up appointments who participate in a telemedicine appointment and complete the survey presented at the end of the appointment. There will be no age limit to the patients other than the age limit of the practice, which is 18 years and older. Due to COVID-19, there are no in-office appointments being completed at this time to account for patient and provider/staff health. Only virtual visits are being completed by the provider and patients to ensure proper social distancing and safety. No new patients are being seen via virtual appointments at this time. All established

patients who agree to a virtual visit will be asked by the scheduling staff to complete the

anonymous survey regarding their satisfaction after their appointment by the appointment

scheduling staff. All patients who agree to participate will have an annotation in their

appointment note stating the patient has consented to participate in the survey. If a patient has

more than one telemedicine visit, the patient will be offered to take the survey again to update

their ratings. There will be no limit as to how many surveys are offered, but a minimum of 35

completed surveys is the goal. Patients who have not utilized the telemedicine platform will not

be able to complete the survey.

Tools and/or Instruments

The tools that will be used for this scholarly project are the telemedicine platform,

satisfaction survey, and a budgeting worksheet. The program doxy.me is the telemedicine

platform of choice (at this time) as decided by the DNP student and overseeing physician.

According to the doxy.me website (2020), the platform is a HIPAA compliant and secure

platform that is safe, easy to use, and cost-effective; it is free to use for providers.

The satisfaction survey (See Appendix A) completed by the patients following their

virtual visit is a survey containing questions about satisfaction of the telemedicine platform,

appointment outcome, and overall satisfaction with the appointment. This survey was created

specifically for this scholarly project. Participants will be asked to rate satisfaction using a 5-

point Likert Scale with scores ranging from 1 (extremely dissatisfied) to 5 (extremely satisfied)

for questions 1-3; patients will be asked to rate preference of telemedicine visits from a range of

1 (definitely do not prefer) to 5 (definitely prefer) for question 4. The Likert Scale will be used

because this type of scale allows for the respondent to account for degrees of opinion as opposed

to a firm 'yes' or 'no' answer (McLeod, 2019). This degree of opinion can then be quantified for

easier analysis. Also, Likert scales allow for anonymity due to the self-administered nature of the survey, which will reduce possible bias (McLeod, 2019). No identifying patient information will be collected. The satisfaction surveys will be delivered via Survey Monkey

An Excel budgeting worksheet will also be used to help track expenses and revenue. With the aid of the office's general ledger, this spreadsheet will be filled out with the office's capital expenses, monthly expenses, salaries, and income. This documentation will help determine if the telemedicine visits are profitable, and where any modifications may need to take place to help increase overall clinic revenue.

Project Plan

The overall plan and timeline (See Appendix C) for this scholarly project is to implement a software platform that utilizes telemedicine appointments. An assessment of the current state has been completed, and the problem has been diagnosed. From that point, a planning stage will then be initiated to make sure the step-by-step framework has been determined. After the proposed schedule is agreed upon, implementation of the plan will begin. Finally, evaluation of the plan will be conducted to compile the patient feedback on the telemedicine system via the feedback left through the surveys.

Assessment

A needs assessment was completed with the scholarly project team consisting of the DNP student and overseeing physician to determine that a telemedicine visit platform was needed for certain follow-up patients. These patients are needed to be seen, but do not require an in-person visit. It was determined that a convenient visit option for patients and providers alike is needed to allow these patients to be seen in a timely manner without having to utilize an in-office appointment slot that could be used by other patients that require an in-office appointment.

Diagnosis

As stated previously, there is a finite amount of time that a provider can be in the office and see patients. Although most patients require a follow-up of some sort, each patient has a different level of acuity pertaining to their health care concerns. This level of acuity is not being accounted for in follow-up visit appointments, which is creating scenarios where a patient who has a lower acuity issue (and is a candidate to be seen with a telemedicine appointment) might be scheduling an in-office return appointment that is taking a possible follow-up appointment slot from a patient with a higher acuity health care concern.

Planning

Research into different telemedicine platforms is currently underway to provide appropriate patients with a means of follow-up that will also increase the convenience level of being seen from the comfort of their homes while also producing quality care. Telemedicine visits will allow patients to be seen in a timely manner while not having to participate in in-office visits. Telemedicine visits may also help reduce costs for patients by saving personal time and money on expenses like gas. Also, telemedicine visits will save provider costs in that no in-office resources will have to be used other than a communication device and utilities.

Once the platform is chosen, it will be implemented into practice in congruence with the office EMR. Telemedicine appointments will then be offered to certain patients that qualify (i.e. medication follow-ups, refills, etc). After the telemedicine appointment is completed, these patients will be offered the opportunity to complete the post-appointment survey to convey their overall satisfaction and experience with their visits. This data will be used to quantify the patients' opinions with these visits.

Implementation

As stated previously, the telemedicine platform will be chosen and implemented into practice. Once this is complete, telemedicine visits will be offered to eligible patients for visit follow-ups. Instructions on how to use this platform will be provided before the patient leaves their previous in-office appointment. On the day of the telemedicine appointment, the patient will login to the platform via the instructions provided. After the telemedicine appointment is completed, patients will be offered the chance to complete a survey on their experiences. This data will be collected after a 1-month timeframe for evaluation. Once the timeframe has been met, the results will be compiled, analyzed, and evaluated to determine patient satisfaction of the telemedicine appointment.

Evaluation

The data will be compiled and analyzed after the set timeframe has been met. This data will be used to determine patient satisfaction with the telemedicine appointment, treatment received, and software needed with the telemedicine appointment. This data will be used to determine if the aim of this scholarly project has been met.

The overall clinic goal, outside of this scholarly project, is to have a continual increase in patient satisfaction with virtual visits with a one year period of implementation. Although the scholarly project is for a finite amount of time, the idea is to have the ability to create a recurring cycle in which the telemedicine platform and the associated visits are utilized and then modified based on continuous patient satisfaction and provider feedback regarding the platform, process, and workflow. This project will be the initial step to sustain telemedicine visits at this clinic, where this process will be refined to promote continual improvement in the years to come.

Overall the telemedicine platform, appointments, data, and critique of the platform will be discussed and addressed with the intention of improving any outstanding deficits in the process, workflow, availability, or software (if applicable).

Data Analysis

The first step that will be taken with the data is that the survey scores will be compiled. Each participant's answer for each question will be recorded into a spreadsheet. These data points will be checked and entered twice. The overseeing physician will then check the entered data for another point of accuracy. Once this is complete, a histogram of the response data will be made to test for normality with distribution. Once complete, descriptive analysis with measures of central tendency and variation of the data will be done. This will help determine the characteristics of the data. This information will then be used to evaluate the effectiveness and sustainability of the telemedicine platform.

Being that the Likert scale survey will be on a 1 to 5 scale, 3 will be the neutral point of the scale where participants do not feel negatively or positively regarding the question. With this in mind, the descriptive data analysis will then be used to determine if there is a strong indicator representative of patient satisfaction in a positive or negative fashion for each question by where the data falls on either end of the scale. The physical medicine clinic will aim for an average of a score of 3.5 or greater for each survey question to indicate a positive experience at minimum. From there, this analysis will allow for a quantitative value to represent where the telemedicine appointments are succeeding, and where these appointments can use work. Once this evaluation is complete, a sustainability plan will be discussed between the overseeing provider and myself to determine how to continually improve this visit type. This plan will use the results of the data to determine what portions of the telemedicine appointments need improvement based on the

analysis. Once these areas are identified, a collaborative effort between the provider and staff

will take place to help improve said areas. Further discussion will take place at the end of the

project to determine what resources and budget should and can be allocated to continually

improving the platform and patient experience.   This will be done, but is not limited to, research

of other organizations with successful use of telemedicine, continued patient feedback, focus

groups implemented for improvement, and trial-and-error of different approaches to improving

the platform. At that point, the next action plan for implementing these modifications will begin.

As a secondary form of analysis, "no-show" rates will also be compiled through the EMR

of the office after the completion of the scholarly project. This will be done via the reports that

are built into the EMR program. This data will be compiled to see if "no-show" rates (missed

appointments) decline with the use of telemedicine visits as a secondary result of easier access

for patients. Although this is not the main goal of this scholarly project, it would be useful to see

if these appointments allow for a bit more flexibility for patients in that the travelling variable is

removed, and it makes for easier access. The percentage of appointments that are missed will be

compared monthly from before and after the telemedicine appointments are made available.

Institutional Review Board/ Ethical Issues

The physical medicine clinic where this scholarly project will be implemented has no

institutional review board (IRB) and is not affiliated with a larger institution with an IRB that

would/could approve this project. Because of this, this scholarly project will be submitted to the

Committee on the Use of Human Subject in Research (CUHSR) through Bradley University for

approval (See Appendix E).

There will be a procedure in place for patient consent. Patients will be asked by the

appointment scheduling staff while they are making the appointment if the patients are willing to

participate in an anonymous survey. Once the patient agrees to complete the survey, a note will

be entered by the appointment scheduling staff in the appointment note on the EMR indicating

that the patient is willing to complete the survey after their telemedicine appointment. The

appointment scheduling staff will also make sure that the patient has the appropriate Internet,

webcam, and computer access for this type of appointment. At the completion of the

appointment, the provider will again ask the patient if they would like to participate in the

survey. The provider will also remind the patient that this survey is completely anonymous and

that no preferential treatment or compensation will be offered for completing this survey. When

agreed upon, the provider will then read the participatory statement to the patient (See Appendix

F). The link to the survey on Survey Monkey will then be emailed to the patient's preferred

email address. The email will then be deleted from the "sent outbox" after receipt to ensure

confidentiality. When opening the link, the patient will again have to read and "accept" the

participatory statement before completing the survey. There will be no data other than numbers

corresponding to the answers of the survey questions. Also, there will not be any incentives

offered to the patients for participating.

Chapter III: Organizational Assessment & Cost Effectiveness Analysis

Assessment of Organization

Readiness for Change

Because this organization is smaller in nature and privately owned, many of the changes needed are based on the managing physician's input and research via patient and staff feedback. With that being stated, telemedicine is one aspect of change that is being actively and seriously researched for implementation due to research of other organizations and patient feedback related to the viability of these appointments. More appointments and the convenience of telemedicine appointment availability has been a goal for the physical medicine clinic. A SWOT analysis was conducted and telemedicine appointments were determined to be the route decided upon to help bridge this change. Also, due to COVID-19, telemedicine is highly recommended to reduce person-to-person contact for appointments when applicable.

Barriers and Facilitators to Implementation

There are some anticipated barriers with implementation of this scholarly project. There is an assumption that some patients will not be aware of what or how telemedicine visits work, so there will need to be a discussion with all patients before the appointments will take place. Also, not every patient that is eligible for telemedicine visits will have the necessary and required technology to utilize these visits, therefore it is important to make sure that patients understand the technological specifications that will be needed to participate so there isn't a loss of an appointment due to technological insufficiencies. However, since this clinic is physician run and private, it is important that the provider and staff are also involved in making quality of life adjustments and improvements to the telemedicine appointment workflow based on their own feedback and patient feedback. To promote quality of care and patient satisfaction, it is vitally

important that the provider and staff offer feedback from their experiences with the platform, as well as constructive feedback from the patients' experiences with the platform. Patient satisfaction will be useful in the evaluation phase of the project when it is time to start looking at ways of improving the process, workflow, and platform for future use.

Cost Factors

Budgetary Needs

A budget excel worksheet will be kept of a few different areas (See Appendix D). First, the startup costs will be monitored. These costs will contain any cost needed for creation of an electronic survey as well. Next, capital costs will be monitored. Any additional electronic equipment (i.e. tablets, printers, computers) will be budgeted here. Operational costs of the utilities of the clinic will also be budgeted in this excel sheet. Finally, salaries/wages of the provider(s) and staff will be budgeted in a monthly fashion. Finally, revenue from telemedicine visits will be recorded and tabbed to discern how much is being made per visit and monthly total.

Cost Avoidance or Savings Associated with Implementation

The cost savings that is being sought after with telemedicine visits is in patient and provider time. By being able to quickly and conveniently initiate and complete an office visit in completely different locations, this will, in theory, save the patient and provider time. With that in mind, the provider will be able to see more people while needing fewer resources thus generating more revenue, and the patient will not have to carve a portion of time out of the day thus creating a more valuable experience in the visit.

Chapter IV: Results

Outcomes

Analysis of Implementation Process

Overall, the implementation process was very streamlined. Being that the process was planned out in advance, once approval from CUSHR was obtained, the implementation was quite fast. The team and provider were aware of each duty related to the role of the telemedicine visits. Because COVID-19 hastened the implementation of the telemedicine platform to allow for patients to continue being seen safely, each member of the project team was already familiar with the functionality and use of the system before data collection for the project started. This helped to streamline the appointments and data collection once project approval from CUSHR was obtained.

Subsequently, each week after approval for the project was obtained, a meeting was held with the provider to determine and discuss any feedback from him, the staff, and/or the patients on how to streamline the data collection process even more. Additional time working with the electronic systems reduced delays between the end of the appointments and sending of the Survey Monkey link to the patients.

Overall, the plan was mainly intact from pre-planning to implementation. The biggest difference was in how the telemedicine system was implemented before project approval due to the physical medicine clinic needing an avenue to see patients safely during the COVID-19 pandemic. Other than that, once approval was obtained, the data collection process was very efficient with minor changes that were completed through the three week process.

Analysis of Project Outcome Data

Forty-five patient surveys were returned and used for analysis. All four questions were answered on each survey. The data was transferred from Survey Monkey over to Microsoft Excel and analyzed using the function tools built into Excel. These results were also double-checked with manual calculation. As stated previously, the initial goal for each survey question was an average score of 3.5 or higher. Results of the survey are displayed in the following table.

Question Number	1	2	3	4
Mean	3.7	4.2	3.2	3.1
SD	1.2	1	1.3	1.3

Table 1. Survey Results

Overall, patients were satisfied with the telemedicine appointment (M = 3.7) and were satisfied with the treatment received (M = 4.2). Patients were neither satisfied nor dissatisfied with the software needed for the visit (M = 3.2) and preference for the telemedicine appointments in the future was not discernible (M = 3.1).

Chapter V: Discussion

Discussion

Findings

As stated previously, an average score of 3.5 was the goal for each question. This score was chosen based on team discussion in that an average score of 3.5 indicates a somewhat positive outcome since a score of 3 was neutral (neither satisfied nor dissatisfied). Based on the analysis of the data, the goal of an average score of 3.5 was obtained for questions 1 and 2. This shows that the patients were at least almost somewhat satisfied with their appointments and the treatments that they received. Questions 3 and 4 did not produce the satisfaction results that were sought as the average of these two questions was greater than 3.0 but less than 3.5. These results indicate that the patients' feelings regarding the software used for the appointment and wanting to utilize this appointment type again was slightly above a neutral response. Although the average score of 3.5 was not met with these questions, the average score was above 3.0, but not quite as high (or positive) as the first two questions.

The standard deviation for each question was approximately a value of 1. With that being stated, this shows that there was a relatively higher amount of variation in patient feedback related satisfaction (Roberts, n.d.). Questions 1, 3, and 4 had standard deviations of 1.2, 1.3, and 1.3 respectively. With these values being above 1, this shows that there was more variation in the patient responses. For instance, even though responses to question 1 have a mean score of 3.7, it had a standard deviation of 1.2 indicating that patients may have felt more strongly about this question resulting in each singular response being farther from the neutral point of 3. The same thought process could be utilized for questions 3 and 4 with their higher standard deviation.

This helps to show that for these questions, patients either were dissatisfied with the software and type of visit, or patients were satisfied with the software and visit type.

Question 2 had the highest average score (4.2) and the lowest standard deviation (1.0). This showed that patients were somewhat satisfied with the treatment that was given, and this did not vary as much as the previous questions per response for each patient. This result, however, is not necessarily indicative of the telemedicine visit itself. The patients, in general, could have been just as satisfied with their treatment had it been face-to-face. The results reflect that quality treatment can be obtained via telemedicine, however. This type of satisfaction could ultimately lead to more telemedicine visits in the future since patients were satisfied with treatment.

Limitations or Deviations from Project Plan

A sample size was still a limitation to this project plan. Although 35 surveys was the goal of this scholarly project and 45 surveys were completed in the timeframe, it would have been better to have more than 45 surveys answered. As with any project, the more data that is available makes the results more representative of a larger population. In the future, more time can be utilized to increase the number of participants, thus giving a larger scope of representation from the general population seen at this clinic.

As stated previously, the main deviation that occurred with this project was the fact that the telemedicine platform was implemented into practice before this project was CUSHR approved. Early implementation was out of necessity for the physical medicine clinic to see patients in a safe manner while also following the national recommendations on how to prevent the spread of COVID-19. This factor could have led to altered survey results since the only option for patients to be seen was via telemedicine appointment. This deviation did allow more practice with the doxy.me telemedicine platform, however.

Implications

For the physical medicine clinic, this project has demonstrated that the telemedicine visit can and will be used/ integrated into every day practice. This type of visit is even more relevant because of the current pandemic status that the country and world is under. However, with restrictions lifting, it would be wise for the clinic to implement a combination of in-person visits and telemedicine visits. This combination of visit type will allow the patient to decide which method of visit is best suited for his/her personal preference. With this change in allowing the patient to choose how to be seen, it would be wise to ask feedback from patients. However, as stated earlier, it would be imperative to add a comments section to the surveys for patients to share their opinions regarding what can be improved with telemedicine visits and how the patient thinks this improvement can be implemented. Finally, for the clinic, it is quite evident that transferability of telemedicine visits for future providers is very possible and highly encouraged. There is enough of a cornerstone with this project that all future providers who are brought into this clinic can immediately have this functionality in his/her practice allowing for the option to be available from the beginning. This allows patients the ability to choose, when appropriate, what type of visit is most convenient for him/her in the future.

For future research, it is recommended for more collaboration to take place now that a cornerstone of telemedicine visits have been established in the clinic. This collaboration could be useful in other areas that the clinic is associated with (i.e. outpatient injection procedures at the local hospital). Telemedicine appointments in these associated areas could again allow patients the flexibility on how to be seen giving them more convenience with his/her appointment. It would be useful to speak to the associated clinics and gauge the interest with which those units might have for telemedicine related appointments.

In addition to branching out to associated areas, this practice has already decided to take these results and start modifying the questions and asking a larger number of patients for feedback on the telemedicine visit. As stated previously, it is recommended that a section of the survey include an area where patients can type in what they liked and/or would change about the visit. This additional data could be used to improve these visits, thus resulting in increased patient satisfaction.

Although telemedicine visits was utilized by one physician during this project, there are some large implications for nursing as well. For instance, when patients present for certain nurse visits in which the provider is not utilized, this type of visit can be used to help the nurses and patients meet face-to-face while also having the convenience of the appointment being virtual. With that being stated, it is also recommended that Advanced Practice Nurses (APN) utilize telemedicine visits in their practice when possible. As stated previously, it would be useful to ask the patients if they would prefer telemedicine visits (if possible based on the chief complaint). Telemedicine visits, when appropriate, allow for greater convenience for the providers and patients.

One aspect that does need to be addressed concerning telemedicine visits is the reimbursement and coverage policies from the insurance companies. During the pandemic, most insurance companies were willing to cover telemedicine visits based on the fact that these were the only type of visits in which most patients could be seen safely. Now that restrictions regarding social distancing are being lifted, it is recommended that insurance coverage and reimbursement be closely monitored for any changes to how these visits will be reimbursed. If insurance companies reduce reimbursement for telemedicine visits, it could be quite the nuisance for practices and patients in determining how these visits can be used and paid for. This, in

theory, would automatically decrease satisfaction on both sides resulting in less of a want to use

this platform.

Chapter VI: Conclusion

Conclusion

Value of the Project

This project showed that telemedicine visits can be used with success in patients for certain complaints that do not require in-person assessment. With some modification, patients and providers alike will/can be satisfied with these telemedicine visits to provide increased of accessibility for patient appointments. Also, due to changes in societal norms because of COVID-19, these visit types allow for a safer visit as they are virtual and not face-to-face, thus completely eliminating any chance of spreading the virus. By being able to modify implementation on a per practice basis, telemedicine visits are a viable option for some patient visits in the future.

DNP Essentials

DNP Essentials II, IV, VI, and VII were met when this project was implemented and completed. Essential II was met in that the practice with which the project took place evaluated care delivery approaches that would meet the current and future needs of the practice for the patients and provider alike. Essential IV was met in that the care delivery approach that was decided upon was a technological platform for telemedicine, which helped transform how the care was delivered. Essential VI was met in that multiple team members of different background and scope of practice collaborated on how to best implement the project plan. This collaboration led to constructive feedback from front desk staff, clinical staff, provider, and project manager on how to best go about streamlining implementing a telemedicine platform and obtaining data for review and practice modification. Essential VII was met in the latter stages of the project in that COVID-19 required research into how to best keep staff, patients, and the provider safe

during a pandemic. It was necessary to monitor local and federal guidelines on how to best

approach what patients could be seen in-person while others could be seen via the telemedicine

platform to help reduce the chance of spreading the virus. Although Essential VII was not

initially a part of this project, it was quickly adapted into the project plan and implementation

when the landscape of healthcare changed so suddenly.

Plan for Dissemination

This project and its results will be disseminated via a PowerPoint presentation webinar to

all applicable Bradley faculty and approval board, and the practice staff and provider. A copy of

this scholarly paper will also be submitted to the Bradley University e-repository.

Attainment of Goals

Through this project, I was able to achieve my personal goal of leading an

intracollaborative team in implementing a telemedicine platform into a physical medicine clinic.

I am excited to see where this platform goes, not only for the clinic, but for my professional

practice as well. I believe that now more than ever, telemedicine is part of the future of

healthcare. Results from this scholarly project demonstrate that some patients are satisfied with

these types of visits. I am happy to state that once I graduate, I will be looking forward to

finding a position where I can use telemedicine to help better serve my patients and practice

where I will work.

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Appendix A

Survey Questions

1) Overall, how satisfied were you with your telemedicine appointment?

□ 1- Extremely dissatisfied □ 2- Somewhat dissatisfied □ 3- Neither dissatisfied nor satisfied □ 4-

Somewhat satisfied □ 5- Extremely satisfied

2) Overall, how satisfied were you with the treatment you received with your telemedicine visit?

□ 1- Extremely dissatisfied □ 2- Somewhat dissatisfied □ 3- Neither dissatisfied nor satisfied □ 4-

Somewhat satisfied □ 5- Extremely satisfied

3) Overall, how satisfied were you with the software needed for the telemedicine visit?

□ 1- Extremely dissatisfied □ 2- Somewhat dissatisfied □ 3- Neither dissatisfied nor satisfied □ 4-

Somewhat satisfied □ 5- Extremely satisfied

4) Overall, would you prefer this type of visit for routine medical issues in the future?

□ 1- Definitely do not prefer □ 2- Somewhat do not prefer □ 3- Undecided □ 4- Somewhat prefer □ 5-

Definitely prefer

Appendix B

SWOT Analysis

Objective:
Implement a telemedicine platform into the organization's EMR for additional visit types.

Internal Factors	
Strengths (+)	Weaknesses (-)
1. Plenty of funding by organization 2. Willingness to implement is evident by organization 3. Many of the technologically savvy providers are interested in utilization. 4. Saves time for patient and provider	1. Organization's implementation process takes quite some time. 2. Some roadblocks will be evident that need to be overcome while learning to use new technology. 3. Initial implementation will have to be modified over time as more experience and expertise are acquired with this technology.

External Factors	
Opportunities (+)	Threats (-)
1. Increased visit opportunities 2. Patient satisfier in terms of convenience. 3. Decreased costs for each visit for patient and organization 4. No travel time required for patient or provider.	1. Possible patient reluctance due to unknown nature of visit type. 2. Possible follow-up complications 3. Possible decreased satisfaction due to the lack of in-office contact. 4. Unknown patient satisfaction response with visit type.

Appendix C

Project Timeline:

PICOT question: In ambulatory, outpatient clinics, how does virtual ambulatory telemedicine visits compared to in-office visits affect patient appointment availability and satisfaction numbers within 1 year of implementation?

Assessment: Scholarly Project team completed a needs assessment and discussion of how more appointments could be implemented to increase appointment availability. This assessment was over the course of 1 semester.

Planning: Research was conducted over a 6 month period of different possible telemedicine platforms during the needs assessment period.

Implementation: The telemedicine platform was implemented before CUSHR approval due to COVID-19 creating a situation in which a safe environment was needed to see patients while maintaining appropriate social distancing. The implementation of the telemedicine system took 1 week total. CUSHR approval was obtained after about 5 months of application process.

Evaluation: Data was compiled from the surveys over a 3 week period after CUSHR approval of the project.

Data Analysis: The data was re-checked and analyzed over a 7 day period.

Dissemination: Project results dissemination will take place over 1 webinar at the finality of the scholarly project timeline.

	04/19	10/19	12/19	05/20	06/20	07/20	08/20
Assessment	■						
Planning	■	■					
Implement			■				
Evaluation				■	■		
Data Analysis					■	■	
Dissemination						■	■

Orange boxes represent timeframe each step was completed.

Appendix D

	Amount	Supply	Total
Capital Expenses			
Windows PC	$650	3	$1,950
iPad	$400	1	$400
Total			$2,350
Monthly Expenses			
Rent & Utilities	$5,000	1	$5,000
Cable/Internet	$90	1	$90
EMR Rental Fee	$333	1	$333
SurveyMonkey	$25	1	$25
Telemedicine Platform	$0	1	$0
Total/month			$5,448
Salaries			
Physician	$200/hr	1	$32,000
Medical Assistant	$22/hr	1	$3,520
Front Desk Scheduler	$20/hr	1	$3,200
Total/ month			$38,720
Income			
Level III appt	$75	120	$9,000
Level IV appt	$104	120	$12,480
Total/month			$21,480

Appendix E

DATE: 07 MAY 2020

TO: Jordan O'Barski, Maureen Hermann
FROM: Bradley University Committee on the Use of Human Subjects in Research

STUDY TITLE: Telemedicine visit and patient satisfaction
CUHSR #:   20-028-Q
SUBMISSION TYPE: Initial Review

ACTION: Approved
APPROVAL DATE: 07 MAY 2020
REVIEW TYPE: Quality Assurance

Thank you for the opportunity to review the above referenced proposal. The Bradley University Committee on the Use of Human Subject in Research has determined the proposal to be NOT HUMAN SUBJECTS RESEACH thus exempt from IRB review according to federal regulations.

The study has been found to be not human subject research pursuant to 45 CFR 46.102(i), not meeting the federal definition of research (not contributing to generalizable knowledge). Please note that it is unlawful to refer to your study as research. A waiver of <u>documentation</u> of consent is granted since you are using an anonymous survey.

Your study does meet general ethical requirements for human subject studies as follows:
1. Ethics training of project personal is documented.
2. The project involves no more than minimal risk and does not involve vulnerable population.
3. There is a consent process that:
   • Discloses the procedures
   • Discloses that participation is voluntary
   • Allows participants to withdraw
   • Discloses the name and contact information of the investigator
   • Provides a statement of agreement
4. Adequate provisions are made for the maintenance of privacy and protection of data.

Please submit a final status report when the study is completed. A form can be found on our website at https://www.bradley.edu/academic/cio/osp/studies/cuhsr/forms/. Please retain study records for three years from the conclusion of your study. Be aware that some professional standards may require the retention of records for longer than three years. If this study is regulated by the HIPAA privacy rule, retain the research records for at least 6 years.

Be aware that any future changes to the protocol must first be approved by the Committee on the Use of Human Subjects in Research (CUHSR) prior to implementation and that substantial changes may result in the need for further review. These changes include the addition of study personnel. Please submit a Request for Minor Modification of a Current Protocol form found at the CUHSR website at https://www.bradley.edu/academic/cio/osp/studies/cuhsr/forms/ should a need for a change arise. A list of the types of modifications can be found on this form.

While no untoward effects are anticipated, should they arise, please report any untoward effects to CUHSR immediately.

This email will serve as your written notice that the study is approved unless a more formal letter is needed. You can request a formal letter from the CUHSR secretary in the Office of Sponsored Programs.

Appendix F

Invitation to Participate:

"You are invited to participate in a quality improvement project by answering the questions of an anonymous survey. This survey is completely voluntary. There is no benefit or disadvantage to being or not being in this survey. Your participation or non-participation will not affect your status as a patient of this practice. At the conclusion of the project, the data will be destroyed via Survey Monkey's deletion process. Survey Monkey allows for the survey creator to set a time limit for how long the data is available for. Your anonymous answers will be deleted 60 days after response to allow for data analysis. After 60 days, your anonymous answers will no longer be available for use. The purpose of this project is to determine how satisfied patients are with the telemedicine visit that was just completed. This survey consists of electronically answering the questions of the survey via Survey Monkey related to satisfaction with the telemedicine appointment. The answers are on a 1 to 5 scale with each number representing your satisfaction or lack of satisfaction with each indicated topic in the question. Your participation in this survey will take no more than 2 minutes, and the collection of your answers is completely anonymous. There will be no identifiable factors to link your answers to your self. Data, including but not limited to, your name, age, address, telephone number, diagnosis, and/or treatment plan will not be saved and/or utilized in any way with this survey. You may choose not to take part, you may leave the project, or you can skip any questions at your discretion at any time. Questions about this project may be directed to the project leader, Jordan O'Barski at (219) 836 –0296. The project's faculty member is Dr. Maureen Hermann. You are voluntarily making a decision to participate in this project. Your completion of the survey means that you understand the information presented and have decided to participate. Your participation also means that all of your questions have been answered to your satisfaction. If you think of any additional questions, you should contact the project leader at the number listed previously."