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## Quality Improvement Project Integrating Telemedicine to Reduce Patient No-Shows

Ferdinand Akoko  
*Arkansas State University - Jonesboro*

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**Quality Improvement Project**

**Integrating Telemedicine to Reduce Patient No-Shows**

Ferdinand Akoko

Arkansas State University

NURS 8263

Dr. Sandy King

Dr. Carmen Smith

July 29, 2024

### **Abstract**

No-show among psychiatric outpatient clinic patients is a major problem due to disrupted clinical flow, reduced productivity, and financial losses. This quality improvement project implemented telehealth services to decrease the no-show rates in an outpatient psychiatric clinic in Texas. This project employed quantitative methods to compare the no-show rates pre- and post-intervention for 90 days. The quantitative data were analyzed by paired t-tests. A total of 1,790 appointments were sampled during the implementation period. The obtained results are statistically significant in decreasing the rates of no-shows for all adult appointments from 18% to 13% ( $p \approx 0.0067$ ). New appointment no-shows decreased from 29% to 25%, while no-shows for follow-up appointments decreased from 16% to 12.9%. The project concluded that integrating telehealth into a psychiatric outpatient setting reduces no-show rates, increases patient engagement, and facilitates access to mental health care. It recommended that continued implementation and expansion of telehealth services in outpatient psychiatric settings be warranted.

**Keywords:** telemedicine, patient no-show, outpatient psychiatric clinic, chart review

### **Acknowledgment**

I want to extend my most profound appreciation to all individuals who have helped, supported and encouraged me through the DNP project journey. First, I want to thank my advisors, Dr. Lisa Drake, Dr. Carmen Smith, and Dr. Sandy King, for their continuous support while working on this project. Their expertise and feedback shaped this project. I would also like to thank my practice partner, Dr. Obasanya Adebukola, and the staff. I would also like to extend my deepest gratitude to my family and friends, who have been very supportive and understanding. Their encouragement and patience kept me going throughout the journey and gave me the push I needed. Special thanks go to the administration and staff of the outpatient clinic who cooperated in this project, without which the present work would not have been possible. Therefore, their contributions and willingness to engage in this study were significant. Lastly, I would like to thank all my colleagues and mentors who helped me and supported this idea. Their sharing of knowledge and experience was one key driving force that kept me going on the completion of this project. Thanks very much to everyone for your contributions and support.

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## **Integrating Telemedicine to Reduce Patient No-Shows**

### **SECTION I: INTRODUCTION**

Patient no-shows are very common in most outpatient settings. They lead to poor patient outcomes, disruptions of clinical flow, loss of revenues, and low productivity. Finding a solution to this problem can be challenging, even though several clinics face it. One way to help reduce patient no-shows is to integrate telehealth into traditional outpatient clinics. The integration of telemedicine in patient care has reshaped the dynamics of the relationships between patients and doctors. Telemedicine uses electronic health information to offer clinical services to patients through video/audio-assisted technology. Healthcare providers use visual means and electronic audio to administer clinical services to their patients (Thomas, 2023). The technology allows long-distance contact between clinicians and psychiatric patients, which helps in remote admissions. The technology helps administer all services, such as diagnostic, medical, and treatment-related services.

Patient no-show incidences are hazardous in delivering quality services in the healthcare system, resulting in financial strain and inefficiencies in healthcare facilities (Thomas, 2023). The outpatient seamless treatment is disrupted when patients do not attend their sessions, delaying treatment and diagnosis. The evolution of telemedicine offers a solution to this challenge of patients with its ability to provide virtual patient consultation and healthcare delivery. This project aimed to demonstrate how telemedicine reduces barriers that contribute to missed appointments, such as transportation challenges, work-related conflicts, and other logistical issues, through integrating technology to facilitate medical consultations from the comfort of patients' homes. Notably, the PICO question that resonates with the project topic is

"In an outpatient psychiatry clinic, how does the integration of telemedicine, compared to traditional clinic appointments, affect no-show rates within 90 days?" By encouraging the use of this technology in healthcare facilities, telemedicine aims to enhance adherence to appointments and patient engagement with their healthcare providers. The purpose of this project was to outline the impact of the use of telemedicine in psychiatric outpatient clinics in reducing no-shows for patients over 90 days.

### **Background of the Problem**

Telemedicine is the use of communication technologies and electronic information to support healthcare providers when distance is a barrier for the patient to get treatment. For more than 30 years, healthcare providers have been investigating the impact of using computer technologies and telecommunications to improve healthcare, especially among psychiatric patients. Telemedicine allows healthcare providers to offer robust directions by receiving tactile and visual information from a distant site (Qin et al., 2022). By offering psychiatric services using this approach, psychiatrists can perform more services accurately. Telemedicine has been integrated into psychiatric outpatient clinics to reduce the likelihood of missed appointments, improve access to care, and offer remote healthcare services, which pose significant problems in many psychiatric clinics.

One of the main components of telemedicine and the need among outpatient psychiatric patients is teleconsultation. This involves the communication of patients at a distance. For example, a patient could have medical consultations with healthcare providers from home. Video and audio convey information and consultation sessions between patients and healthcare providers (Franciosi et al., 2021). In addition, by teleconsultations, patients can explain their

health conditions to health providers, discuss symptoms, and receive medical advice without needing to travel to a physical clinic.

There is an increased need for remote monitoring, effectively addressing the challenge of patient no-shows. Healthcare providers use technology to monitor and track patient health from a distance. Devices such as smartwatches and wearable sensors help collect real-time data concerning the patient's health conditions, enabling caregivers to make appropriate decisions on how to treat the patient. Remote monitoring usually benefits patients suffering from chronic health conditions and those requiring close monitoring. In case of any changes in their health conditions, the devices send signals to health providers who can now travel, assess the patient's condition physically, and administer any treatment.

### **Review and summary of the relevant literature**

Telemedicine in healthcare facilities has seen an increase in reduction in the number of no-show rates in healthcare facilities, unlike in traditional clinical appointments. Based on the project topic, the target population (P) is outpatients in a psychiatric clinic, intervention (I) is the integration of telemedicine, comparison (C) is traditional clinic appointment, outcome (O) is the reduction of no-show rates, and the time (T) is the 90 days. The search strategy focused on medical-based databases, especially those related to the psychiatric and mental health disciplines. Some of the critical databases utilized in this study project were "PubMed," "Embase," "Google Scholar," "PsycINFO" and "CINAHL." Understanding the effect of integrating telemedicine in patient no-shows in a psychiatric outpatient clinic requires utilizing evidence-based studies, hence the need for inclusion and exclusion criteria. In such cases, the inclusion criteria in this study were focused on psychiatric disorders, utilizing participants aged 18 years and above with telemedicine consent and articles published within the last five years. On the other hand, the

exclusion criteria were participants under 18 years old, a lack of psychiatric diagnosis and basic telemedicine knowledge, and all articles not published within the last five years. Critical terms for the literature search included patient, no-show, outpatient, telemedicine, telehealth, traditional, and face-to-face appointments.

Muppavarapu et al. (2022) outlined that telemedicine offers suitable conditions to psychiatric patients, reducing suffering associated with getting to hospital facilities. Some patients mainly give an excuse for difficulty accessing healthcare facilities due to their distance. However, the integration of telemedicine has ensured that this is not an issue to be addressed. Barriers such as time constraints and transportation barriers are eliminated through psychiatric offices accessing clients from the comfort of their homes. Psychiatric patients who have previously missed traditional appointments can now comfortably engage in virtual consultations. In this platform, the clients can seek advice from healthcare providers, and their health evaluation can be done. Telemedicine has been most helpful to individuals living in rural areas where traveling to health facilities seems challenging. The technology comprises an at-home interactive audio and video telecommunication system that allows real-time connection between the client, doctors, and nurses. During the early stages of the COVID outbreak, technology became helpful in caring for patients with severe mental health conditions, given that minimal interactions were required (Franciosi et al., 2021). Many psychiatric clinics at the time adopted and started to appreciate telemedicine, an aspect that reduced the number of appointments missed by the patients. Because it is convenient for most people, integrating telemedicine in outpatient facilities has decreased the number of no-shows.

Telemedicine has helped reduce the financial burdens on psychiatric clinics. Increased missed appointments result in reduced quality of care administered to patients due to financial

overburdens until the health facilities are not in a position to offer good care. Sumarsono et al. (2023) have revealed that a missed patient appointment costs the health system about \$260, totaling millions of dollars annually of lost revenue. As a result of these incidences, telemedicine offers a permanent solution to reduce losses in the healthcare system by introducing interventions such as text message reminders on the patients' phones and cost-sharing transportation services to minimize patient appointment rates. Therefore, telemedicine has helped reduce financial losses to healthcare facilities' resources, which are now directed to better use and improve the quality of services offered.

Telehealth helps alleviate the barriers faced by populations from low-income earning families. When patients use telemedicine, there is a cut cost, including transportation, gas fees, parking, and lower time commitment, thus effectively addressing patients' no-shows (Bhaskar et al., 2020). Therefore, most people from these communities spend little time in appointments and do not seek days off from their places of work while using telemedicine. Low-income communities face many challenges that increase their risk of missing an appointment, translating to increased patient no-shows. Most reasons for missing appointments include transportation barriers, forgetting appointments, and family care obligations. Integrating telemedicine in psychiatric outpatient care for such populations helps reduce the rate of missing appointments set by healthcare providers, consequently improving the quality of services delivered.

Additionally, telemedicine allows psychiatric officers to provide flexible scheduling options for patients with busy schedules. With the technology, patients can set appointments at times that are convenient to them. This ensures patients do not have to take time off their travel and work to get to a healthcare facility for examination, an integral component of traditional appointments. This flexibility helps to favor individuals from rural areas who experience barriers

to transportation. Also, flexibility helps create a more patient-centered approach that aligns with contemporary healthcare consumers' changing needs and desires. Patients may be more likely to keep their appointments if they can schedule virtual visits on the weekends or evenings. Virtual appointments also help to serve people working in offices as they do not have to take a day off to seek a physical appointment (Muppavarapu et al., 2022). Healthcare providers can evaluate the patient's health conditions before making a physical booking.

Telemedicine enhances patient engagement through virtual health platforms and remote monitoring, an element missing in traditional clinical appointments. This is vital as it allows patients with chronic psychiatric conditions to benefit from continuous assessment in real time. In addition, using telehealth technology, healthcare providers can manage their caseloads efficiently and reach more patients (Haleem et al., 2021). Such actions help improve efficiency within the healthcare system since overcrowding is reduced and allows for the effective allocation of resources. Telemedicine also gives patients and health providers a sense of connectivity, which fosters a sense of accountability from the patients and makes it difficult for them to miss appointments, thereby reducing the no-show incidences in outpatient healthcare services.

By reaching underprivileged populations, the integration of telemedicine also addresses disparities in healthcare access. The technology holds great promise, especially for people in remote areas with scarce healthcare facilities. However, to ensure that the technology effectively serves the populations within this area, doctors and patients must have access to technology and the hardware to help keep accurate medical histories and allow both parties to communicate (Cline et al., 2022). Also, most underserved populations suffer from language barriers, and they are, therefore, not able to effectively interact with their health providers. By using telemedicine,

vulnerable communities can now obtain healthcare virtually, eliminating the need to visit a clinic physically. These communities include those with restricted mobility and low income. Apart from video conferencing, populations from underserved areas may use web-based platforms to interact with their nurses and doctors and share their health conditions. Promoting inclusivity makes the healthcare system more equitable and can lessen the underlying socioeconomic causes of no-shows.

In addition, telemedicine can simplify administrative procedures, lessening the workload of medical personnel and lowering the possibility of scheduling mistakes. Telemedicine technology can automate tasks, which helps reduce errors in patient administration and save time. Through the automation of administrative tasks, the technology helps improve the satisfaction of healthcare providers by 40%, saving nearly three hours of their working time (Qin et al., 2022). Technology can reduce the likelihood of psychiatric patients missing appointments due to forgetfulness or misunderstanding. Telehealth can improve communication between healthcare providers and patients through automated appointment reminders and seamless rescheduling options. Also, the technology helps create a seamless workflow between various departments in a healthcare setting. Healthcare providers from different departments can use the technology to deliver quality patient care.

Psychiatric patients are more likely to receive consistent and continuous care through telemedicine integration. The technology ensures continuous communication between healthcare providers and patients. Constant communication provides a safe environment for patients to raise treatment concerns (Zilnicki & Licausi, 2022). The continuity of care from health providers helps win patients' trust. This way, the patient can be more open with their clinician, which results in improved care. Also, when the patients are more open to their clinicians, medical errors are



reduced as patients can share their medical history and the proper treatment is selected. This results in patient's satisfaction with their treatment, which results in fewer no-shows; patients are more committed to the appointments since they are satisfied.

Providing adequate insurance coverage and reimbursement for telemedicine services is crucial in encouraging patients to choose virtual consultations to mitigate the no-show rates in conventional healthcare environments. The success of telemedicine depends on the alignment of patient and provider financial incentives as it becomes more popular. The adequate insurance coverage for patients using the telemedicine platforms ensures that they do not suffer from financial barriers, reducing the incidences of no-shows (Cline et al., 2022). Enabling cost-effective healthcare delivery and insurance support for telemedicine encourages patients to embrace this mode of care and helps healthcare providers sustain their practices. Reducing the financial burden for patients using telemedicine encourages them to attend appointments with their healthcare providers.

Despite the positive impact of telemedicine in the health sector, its use raises various security concerns that discourage patients from making it to their appointments with their healthcare providers using the technology, thus increasing patient no-show rates. Telemedicine technology is vulnerable to cyber-attacks like any other system, which can compromise patient data. Cyber security risks are a challenge that comes with telehealth, and it is crucial to establish safeguards at a system level to help reduce the risks of cyber-attacks by malicious people (Cline et al., 2022). It is risky when malicious people access patients' data as it can be used for blackmail. Due to a lack of informed information, patients may need to be made aware of the associated risks. Psychiatric patients may still be concerned about virtual consultations' privacy despite efforts to provide encrypted and secure communication channels. Privacy risks involve the

inability to control data collection, sharing, and use. For example, a home telehealth device that detects falls may transmit data such as abuse of drugs that they intended to keep private to the entire household. Also, many cases have been reported where malicious people access patients' data. Some people may be discouraged from participating in telemedicine appointments due to fear of data breaches, which could increase no-show rates. The fear of personal information getting into the wrong hands may increase the number of missed appointments using the technology. Therefore, telemedicine could increase the number of patient no-shows based on the fear of personal data breaches.

Trusting relationship quality is one major factor that affects how well patients and providers get along. Good patient-provider relationship translates to better patient health outcomes (Kamimura et al., 2020). A strong foundation of patient-provider relationships has been attributed to high patient satisfaction. Traditional in-person consultations enable a closer relationship between patients and healthcare professionals. Conventional in-person appointments could build empathy and trust, which might not be possible with telemedicine (Kamimura et al., 2020). The close relationship between a patient and healthcare providers promotes cooperation and trust. The move to telemedicine may undermine establishing and maintaining this vital relationship. Patients may no longer feel empathy with the traditional appointment system, which may discourage them from using the technology. Patients may be less inclined to attend virtual appointments if they have a better rapport with their healthcare providers in traditional settings. Such incidences could result in a rise in no-show rates due to telemedicine use in healthcare facilities.

Overreliance on telemedicine as the primary means of providing healthcare could lead to higher rates of patient no-shows among psychiatric patients. The patient and healthcare providers

may get used to telemedicine as the platform for consultations of any medical issue that the patient may be suffering (Cline et al., 2022). Patients may grow increasingly used to skipping appointments in a setting where virtual consultations are the norm. Because telemedicine is convenient, patients may think missing an appointment is irrelevant because they can reschedule to meet with the health provider at a convenient time. When faced with inconvenience, skipping appointments may be their solution. This kind of thinking could lead to a higher rate of no-shows. In the traditional system of face-to-face appointments, the patient does not have the authority to cancel their appointments at their wish. Therefore, telemedicine's overreliance can increase patients' no-shows in outpatient care.

Socioeconomic factors heavily influence healthcare access. People from lower socioeconomic backgrounds might encounter difficulties like restricted access to technology and insufficient funds to purchase the devices required for online consultations. The healthcare gap may not close but, instead, widen due to these disparities, contributing to higher no-show rates among vulnerable populations (Franciosi et al., 2021). Therefore, despite healthcare facilities trying to introduce technology to fight the high rates of patient no-shows, its introduction may hike this rate. However, since socioeconomic factors are an issue that can be overcome, healthcare facilities need to develop strategies to ensure that people from low economic populations benefit from telemedicine.

A significant obstacle to the widespread adoption of telemedicine is patient and healthcare provider resistance to change (Cline et al., 2022). Some of the main concerns in the delayed adoption of telemedicine services include the quality of remote consultations, concerns about data security, and a general reluctance to adopt new technologies. Comprehensive education and awareness campaigns that emphasize the advantages of telemedicine are vital in

the journey of adopting the technology. People are always resistant to change, whether it is good or not. Adopting telemedicine is a good step toward improving the quality of care. Also, telemedicine is crucial in case of a pandemic outbreak that does not allow interactions between people. Those with chronic infections can consult with their clinician via video calls.

### **Statement of Problem**

For the past few years, the number of patient no-show rates, especially among psychiatric patients, has gradually increased. Before telemedicine's introduction, patients and healthcare providers suffered myriad challenges. This negatively impacted the efficiency of care delivery. Many outpatient psychiatric patients claimed that the inconveniences attributed to in-person appointments contributed to their no-shows in appointments with healthcare providers (Lieneck et al., 2021). Some challenges patients encountered included transportation, the need to take time off from work, and time constraints. These logistical challenges resulted in many patients needing more appointments on the chosen dates, deteriorating their health conditions and affecting the seamless treatment flow. Based on this aspect, this study project is feasible, appropriate, and worthwhile since it seeks to address how integrating telemedicine in a psychiatric outpatient clinic impacts patient no-show rates within 90 days. Also, many patients missed their appointments as a result of financial constraints.

The ineffective communication is also attributed to the high no-show rates. Outpatient psychiatric patients could easily claim they needed more information about appointment dates and times using the traditional system. Also, conventional appointment systems need to emphasize the need for patient appointments, which could result in patients underestimating the value of their appointment schedules (Qin et al., 2022). With no phone calls or reminders of the appointment dates and times, patients could easily overlook their appointment dates, increasing

the rates of no-shows. In addition, some patients claimed to fear physical visitations, leading them to have avoidance behaviors. Patients claimed to have a fear of receiving news during their visit to consultations. Psychological barriers are overlooked in the traditional healthcare delivery system and could have increased the rates of missing appointments.

### **Purpose of the project**

Primarily, this project aims to outline the impact of telemedicine in psychiatric outpatient clinics in reducing no-shows for patients over 90 days. In such cases, the developed research question that comprises all PICOT elements is "In an outpatient psychiatry clinic, how does the integration of telemedicine, compared to traditional clinic appointments, affect no-show rates within 90 days?". The psychiatric patients' no-show rates pose as the dependent variable in this quality improvement project. The dependent variable above represents the attendance frequency of telemedicine compared to traditional clinical appointments. On the other hand, the independent variables are telemedicine appointments and traditional clinical appointments. This project's dependent and independent variables influence a better understanding of the impact of integrating telemedicine in patient no-shows in an outpatient clinic.

In conclusion, the use of telemedicine in healthcare facilities emerges as a pivotal strategy in reducing the rates of patient no-shows in hospitals. The benefits of telehealth lie within its capability to reduce the barriers to patients' appointments with their health providers. The technology necessitates that patient have consultations with their healthcare providers from the comfort of their homes by using calls, video conferencing, and websites. The technology also reduces the no-show rates by eliminating transportation barriers. For example, a patient living at a distance does not have to book a flight for an appointment. This is vital to individuals with

chronic health conditions residing in geographical areas that are isolated with scarce healthcare facilities.

Moreover, the flexibility offered by the technology contributes to increased patient engagement with healthcare providers. With the technology, patients can set appointments at times that are convenient to them. This ensures patients do not have to take time off their travel and work to get to a healthcare facility for examination. This flexibility mainly favors individuals from rural areas who experience barriers to transportation. The COVID pandemic played a role in the adoption and appreciation of the use of the technology. However, people's interactions during the initial stages of the pandemic outbreak were discouraged, and many hospitals were flooded with patients. Many healthcare facilities adopted telemedicine to monitor patients with chronic infections from their homes. The ability to deliver care remotely became essential in ensuring the safety of both patients and healthcare professionals. However, despite the many benefits of the technology, it also comes with challenges. For example, most underserved communities do not have the technology to connect with healthcare providers. Therefore, these challenges must be addressed when adopting technology in such areas. Telemedicine is expected to become a more significant part of healthcare delivery shortly. The potential for remote healthcare services is endless as technology develops and incorporates elements like virtual reality and artificial intelligence. The healthcare sector can work toward a more patient-centered and diverse model.

### **Scope, Limitations, and Delimitations**

#### **Scope**

The project focuses on determining the effects of incorporating telemedicine in an outpatient psychiatric clinic compared to traditional clinical appointments. Based on this aspect,

the most crucial outcome of the project is understanding the impact of patient no-show rates within 90 days. The project setting is an outpatient psychiatric clinic. In such cases, the targeted patients are likely to be suffering from mental health illnesses, for example, depression, anxiety, or post-traumatic stress disorder (PTSD). The project's primary intervention is the integration of telemedicine (Ackerman et al., 2023). Telemedicine can be integrated into an outpatient clinic through multiple approaches, including phone calls, video communications, and other appropriate remote communication channels suitable for all stakeholders.

Since telemedicine is a new phenomenon in most outpatient psychiatric clinics, the project compares this with traditional clinical appointments. Traditional appointments involve patients physically visiting their respective healthcare facilities, which immensely determines the rates of patient no-shows (Ackerman et al., 2023). The outcome of interest is the patient no-show rates in a 90-day time frame. The above outcome is vital since it demonstrates patient adherence, engagement, and commitment to the arranged appointments.

Consequently, the depth of the project involved assembling appropriate data on patient no-show rates for traditional appointments and telemedicine within a stipulated period of 90 days. A pertinent example outlining this is where data can be collected from the available clinical and electronic health records and establish the patient no-show trend. Since technology is an inevitable phenomenon in this study, the project involved assessing technology used in telemedicine. In such cases, technological assessment helped determine telemedicine reliability and usability efficiency compared to traditional clinical appointments (Muppavarapu et al., 2022). The project also involved ethical adherence and considerations, especially regulations that resonate with telemedicine in a given healthcare setting and jurisdiction. Adherence to patient

privacy and data protection, thus protecting the confidentiality of patients, is a critical ethical consideration related to integrating telemedicine in an outpatient psychiatric clinic.

As mentioned earlier, the inclusion criteria in this study were focused on psychiatric disorders, interventions, utilizing participants aged 18 years and above, and telemedicine consent. The intervention's inclusion criteria focused on integrating telemedicine, which posed a significant phenomenon throughout the project. There is a close link between telemedicine consent and outcome (Muppavarapu et al., 2022). In such cases, the inclusion criteria aimed to reduce patient no-show rates in 90 days. On the other hand, the exclusion criteria included participants under 18 years old, a lack of psychiatric diagnosis, and a lack of basic telemedicine knowledge. Notably, the target population in the entire project was the patients in outpatient psychiatric clinics.

### **Limitations**

Since the project focused on determining how the integration of telemedicine, compared to traditional clinic appointments, affects no-show rates within 90 days in an outpatient clinic, the leading limitation at the micro level was limited access to new technology utilized in telemedicine. An appropriate example outlining this aspect was where some mentally ill patients have limited knowledge of telemedicine equipment due to emerging technological trends. The barrier mentioned above hindered some individuals' ability to participate effectively in the project, thus limiting their chances of obtaining reliable and accurate results (Edwards., 2022). Another limitation of the project was the micro level of privacy and ethical dilemmas. In most cases, telemedicine requires that each patient provides personal information that guides the treatment recommendations and initiatives. However, patients express concerns about sharing sensitive information about severe and chronic mental health problems, hence increasing the



preference for traditional clinical appointments (Edwards., 2022). The target population in this project was all individuals aged 18 years old. However, this phenomenon poses the digital divide barrier where some age sets find it challenging to adapt to the technology used in telemedicine; for example, older populations might find it difficult to use digital platforms that facilitate telemedicine, which immensely influence patient no-show rates.

At the meso level, the primary limitation of the project topic is limited resources. As mentioned earlier, telemedicine involves integrating contemporary technology in a healthcare facility. In such cases, outpatient psychiatric clinics require a robust investment in infrastructure and technology. Notably, outpatient psychiatric clinics need help to mobilize enough upfront finances, thus increasing incidents of patient no-show rates due to traditional clinical appointments (Edwards., 2022). Limited training of psychiatric professionals concerning the use of telemedicine also poses a significant barrier at the meso level. Clinicians dealing with mental disorders should have proper training on how to adapt to the current telemedicine practices. Lack of appropriate training has adverse impacts on the seamless integration of telemedicine telepsychiatry in psychiatric outpatient clinics.

Additionally, the lack of appropriate patient screening channels is another barrier that resonates with this project. Proper patient screening is necessary to avoid bias in selecting patients suitable for telemedicine practices. Some mental conditions require in-person evaluation through proper screening channels. Screening inefficiency results in sample bias, immensely influencing the comparison of patient no-show rates in traditional clinical appointments and telemedicine.

The primary barrier experienced in the project at the macro system is complex licensing channels. Licensing hurdles arose from variations of telemedicine practice rules from one

outpatient psychiatric clinical set-up to another. In such cases, there are increased incidents of inconsistency as per the telepsychiatry practices. There is a close link between insurance reimbursement practices and patient preference for psychiatric telemedicine services. In such cases, limited insurance coverage of telemedicine equipment and practices, especially those resonating with outpatient psychiatric clinics, poses a significant barrier in this study (Frank et al., 2021). Some patients prefer telemedicine services but need more finances to afford them. Unreliable reimbursement policies pose a significant barrier since patients who cannot afford telemedicine can resolve to traditional clinical appointments, hence increasing incidents of patient no-shows.

Additionally, cultural stigma is a significant limitation, per the project topic, experienced in the macro system. The majority of people in society have negative attitudes towards mental illnesses and disparities (Frank et al., 2021). An appropriate example outlining this aspect is where their peers might discriminate against an individual suffering from PTSD upon admitting to having been suffering from the condition. As a result, such stigma limits the willingness of mentally ill individuals to accept telemedicine and thus resolve to use traditional clinical appointments. Cultural stigma posed a significant limitation in the project since the affected individuals disregard remote psychiatric services, hence impacting the overall findings and deductions of the project.

### **Delimitations**

In the context of the project on "In an outpatient psychiatry clinic, how does the integration of telemedicine, compared to traditional clinic appointments, affect no-show rates within 90 days?", the primary delimitation is long-term outcome. Primarily, the project focused on the short-term effects (90 days) of integrating telemedicine in an outpatient psychiatric clinic.

The project only delved into the rate of patient no-shows within the stipulated timeframe of 90 days. As a result of the delimitation mentioned above, the project acknowledges that the elements influencing patient no-show rates through the integration of telemedicine compared to traditional clinical appointments might evolve with time (Howell., 2021). Another delimitation of the project is the inconsideration of other clinical settings apart from outpatient psychiatric clinics. An appropriate example outlining this aspect is where the project needed to focus on the impact of telemedicine among inpatient psychiatric clinics. The project's findings might not resonate with all mental health facilities.

Despite the project considering the perspectives of psychiatric patients, it did not delve into the overall patients' satisfaction. The project's primary focus was to reveal the specific impacts of integrating telemedicine in an outpatient psychiatric clinic. Notably, the project only explored qualitative aspects influencing patient no-show rates, hence choosing traditional clinical appointments and not telemedicine operations. Another delimitation of the project needed to account for variations in the telemedicine system (Howell., 2021). This project adopted a general overview and approach to telemedicine by assuming that there are no or limited variations among contemporary telemedicine systems and practices. The abovementioned delimitation considered security, adaptability, and usability variations that arose from different telemedicine platforms and operations.

### **Change and Change Framework**

The leading change that resonates with this project is technological change. Primarily, the incorporation of telemedicine practices in outpatient psychiatric clinics represented technological change. The change involved using digital platforms, electronic health records, and video conferencing to facilitate communication and relevant information sharing between the care

provider and the mentally ill patient (Bernhardt et al., 2023). The patients and clinical office staff were the primary stakeholders affected by technological change and require suitable training and support.

Another change that resonated with the project was how the integration of telemedicine compared to traditional clinical appointments impacts patient no-show rates and patient behavior change. There was a close link between patient no-shows and the willingness of patients to attend all the scheduled physical meetings in psychiatric clinics. Notably, patients who are used to physical appointments for mental health conditions might demonstrate strained readiness for telemedicine practices (Bernhardt et al., 2023). Based on this aspect, patient behavior change is necessary to ensure that all individuals, regardless of their demographic features, adopt the appropriate telemedicine systems, thus addressing their mental conditions seamlessly.

Organizational change, especially in outpatient clinics, aligns with the project topic. At the clinical and managerial level, the integration of telemedicine and disregard of the traditional appointments for psychiatric patients demands a robust policy, culture, and structure change. In such cases, the organizational leaders might be prompted to develop new procedures that result from the rising telemedicine trends, thus fostering a culture that embraces emerging technologies and addresses patient no-shows (Bernhardt et al., 2023). An appropriate example outlining this aspect is where a leader in an outpatient psychiatric clinic can enact a protocol that allocates more financial resources to develop telemedicine technological infrastructure. Such practices translate to a change in management strategies within an organization and ensure that all stakeholders effectively understand and work towards achieving the set objectives as per the integration of telemedicine.

The project demonstrated the essence of operational change within outpatient psychiatric clinics. The project topic sought to compare the effectiveness of traditional clinical appointments and telemedicine systems in reducing incidents of patient no-shows. As such, the operational paradigm shift from conventional clinical appointments to telemedicine requires operational change within all psychiatric-based departments within a clinic (Olasoji et al., 2021). Some of the operations that are altered by the integration of telemedicine are patient-caregiver communication and appointment scheduling. The operations should be re-examined and changed to resonate with the introduced telemedicine systems. Notably, operational change in this project demanded rescheduling psychiatric assessments to guarantee staunch patient-doctor relationships.

As a psychiatric healthcare provider, the principal investigator (PI) ensured that all the necessary changes were met per the project's deductions and inferences. As an agent of change, the PI was an educator to clinical staff and patients concerning telemedicine. As mentioned earlier, the majority of psychiatric patients and staff across the country lack the necessary knowledge and understanding of telemedicine practices (Olasoji et al., 2021). Based on this aspect, the PI assisted when shifting from traditional appointments to telemedicine. An appropriate example outlining this aspect is where clinical staff and patients were provided relevant information concerning the most suitable telecommunication channels that suit the operational scope of an outpatient psychiatric clinic. As an educator on telemedicine trends, the PI emphasized the need for patient-doctor relationships developed through empathetic and transparent telecommunications.

As an agent change, the PI served as an example to both patients and clinicians on the essence of telemedicine as a new and desirable approach to the increasing cases of mental illness.

It must be acknowledged that traditional appointments, especially among psychiatric outpatients, are time-consuming and less effective than telemedicine systems (Asirifi et al., 2022). Through actively engaging in telemedicine practices, the PI taught confidence among all the stakeholders concerning the importance of integrating telemedicine into psychiatric services. As a caregiver to patients with mental conditions, the principal investigator collaborated with multidisciplinary teams within a psychiatric clinic to champion the integration of telemedicine systems. The collaboration involved working closely with the I.T. and administrative departments since their expertise resulted in the seamless integration and adoption of telemedicine.

### **Change Framework**

There is a close link between the change framework in this project and Kotter's change model. The project "In an outpatient psychiatry clinic, how does the integration of telemedicine, compared to traditional clinic appointments, affect no-show rates within 90 days?" requires organizational, patient behavior, technological, and operational changes. Based on this aspect, the first step of the change framework for this project is creating urgency for integrating telemedicine. The initial step in the change framework involved communicating the specific reasons and essence of telemedicine (McLaren et al., 2023). The implementation of this step included key stakeholders in the psychiatric outpatient clinic. The second step of the change framework for this project involved creating long-lasting multidisciplinary teams. Building interdisciplinary teams while integrating telemedicine in an outpatient psychiatric clinic involved bringing together I.T professionals, administration staff, psychiatric practitioners, and patients to champion the implementation of telemedicine. Long-lasting multidisciplinary teams are created by having representatives from different departments.

The third step of the change framework was the development of strategic initiatives. Outpatient psychiatric clinics are likely to experience challenges and resistance while disregarding traditional clinical appointments and integrating telemedicine. In such cases, strategic initiatives constituted a comprehensive vision of how telemedicine will address the issue of patient no-shows (McLaren et al., 2023). Implementing strategic initiatives will involve demonstrating key steps and initiatives for the successful adoption of telemedicine in outpatient psychiatric clinics.

The fourth step of the change framework in this project was facilitating action by removing key barriers. An appropriate example outlining this aspect is where the barrier of telemedicine illiteracy was addressed. In this step, a thorough assessment of potential barriers was necessary, thus eliminating all the obstacles limiting the seamless implementation of telemedicine and reducing incidents of patient no-shows. The final step of the change framework involved instituting and sustaining change within outpatient psychiatric clinical set-ups (McLaren et al., 2023). Institutionalizing fundamental changes influenced by telemedicine integration involves updating organizational policies and procedures. Moreover, institutionalizing and sustaining telemedicine integration ensured that the practice is part of outpatient psychiatric clinic operational guidelines.

Primarily, most outpatient psychiatric healthcare facilities in the U.S. are experiencing the challenge of implementing technological-based changes in daily operations (Asirifi et al., 2022). Technological interventions, such as telemedicine, are aimed at enhancing the delivery of quality care, especially among patients suffering from mental illnesses. Successful adaption and implementation of this project translated to evidence-based practices that can result in a robust change in telepsychiatry at the project site.

### **Theoretical framework**

The primary theoretical framework that applied to this project is Jean Watson's "Caring Theory." The abovementioned theory was developed in the 1970s and focuses on the essence of healing in healthcare practices. The caring theory plays an integral role in integrating telemedicine projects since it demonstrates the need for holistic care, which involves consideration of physical, psychological, and spiritual needs while administering care to patients (Younas & Quennell., 2019). In such cases, the caring theory places the healthcare providers at the center of patient care regardless of their department. The abovementioned theory aims to foster healing that encompasses patients' overall well-being.

The caring theory aligns with integrating telemedicine in outpatient psychiatric clinics by encompassing patients' mental, physical, and emotional well-being while administering quality patient care. Primarily, the integration of telemedicine aligns with the caring theory by considering patients' physical, physiological, and spiritual well-being (Younas & Quennell., 2019). Telecommunication channels such as video-conferencing pose as appropriate communication channels between mentally ill patients and their care providers. Through video conferencing, psychiatric patients can reach their caregivers within the shortest time possible when they require one or more components of a holistic care approach. An appropriate example outlining this aspect is where a mentally ill patient can reach their care providers during odd hours upon experiencing any form of emotional or spiritual distress that might jeopardize their mental state. The caring theory provides a comprehensive framework that prioritizes delivering quality care.

Consequently, incidents of patient no-shows in the outpatient psychiatric clinic require caregivers to devise appropriate approaches to address such challenges. Increased patient no-



show rates due to traditional clinical appointments have adverse impacts on the delivery of quality care, an issue addressed by the caring theory (Younas & Quennell., 2019). Through the integration of telemedicine, the care providers consider the patient's emotions, which are often overlooked or disregarded in traditional clinical appointments, characterized by high rates of patient no-shows. Telemedicine provides psychiatric practitioners with a set of principles that resonates with patients suffering from varying mental health conditions. Such principles are pertinent to the values of caring theory.

The caring theory demonstrates the need for healthcare providers to deliver timely and accurate services. The integration of telemedicine in outpatient psychiatric clinics ensures that all patients access healthcare services remotely and in the comfort of their homes, thus guaranteeing the delivery of quality care (Takura et al., 2021). Notably, the caring theory demonstrates the essence of the patient-care-provider relationship. Unlike traditional clinical appointments, the integration of telemedicine ensures that patients can arrange several sessions with their psychiatrist in a single day, where communication is aided by technological equipment (Garavand et al., 2022). There is a close relationship between frequent communication and building long-lasting relationships between caregivers and their patients. As such, integrating telemedicine entails reliable telecommunication channels, which facilitates the creation of strong interpersonal relationships between patients and care providers.

Notably, the caring theory demonstrates the need for healthcare providers to use minimum persuasion while administering care to their patients. Traditional clinical appointments are characterized by a high rate of patient no-shows, which prompts healthcare providers to demand and use available resources to ensure that individuals physically attend an appointment (Harst et al., 2019). However, telemedicine is more flexible since both psychiatrists and patients

can agree on the most suitable time for a session. The flexibility of telemedicine as per the psychiatric clinical set-up ensures that the healthcare provider achieves the desired results. According to the caring theory, dealing with patients suffering from a given mental condition requires healthcare providers to limit possible stressors that are likely to worsen the state of a mentally ill patient (Garavand et al., 2022). As such, telemedicine effectively addresses key stressors associated with traditional clinical appointments, thus aligning with Jean Watson's caring theory.

Another suitable theoretical framework that aligns with the project of determining how the integration of telemedicine, compared to traditional clinic appointments, affects no-show rates within 90 days in an outpatient psychiatry clinic is the health behavior model. The abovementioned model incorporates the planned behavior theory and thus effectively demonstrates and predicts patients' most likely health-related behaviors in a given health condition (Harst et al., 2019). Furthermore, the health behavior model portrays patient behaviors as key determinants of the delivery of quality care. An appropriate example outlining this aspect is when patients diagnosed with a specific mental health condition are likely to have varying beliefs and attitudes that influence their preference for telemedicine or traditional clinical appointments. Notably, the health behavior model effectively resonates with this project since psychiatric patients' willingness to adjust their health behaviors primarily results in their perception of the telemedicine intervention.

The health behavior model is applicable in this project by depicting the appropriate cues that resonate with the integration of telemedicine in outpatient psychiatric clinics. The health behavioral model emphasizes the need for psychiatrists to assess potential cues that trigger mentally ill patients to choose either traditional appointments or telemedicine practices. Based on

the study topic, some of the features that determine patient preference for telemedicine are peer recommendations and societal views (Takura et al., 2021). The success of telemedicine practices in reducing patient no-show rates is likely to shape the patient's perception of the importance of telemedicine compared to traditional clinical appointments. Understanding behavioral determinants that shape patients' perceptions of telemedicine can help psychiatrists explain and predict the difference in the patient's no-show behavior.

### **Summary**

The project topic is "In an outpatient psychiatry clinic, how does the integration of telemedicine, compared to traditional clinic appointments, affect no-show rates within 90 days?". The project focuses on determining the effects of incorporating telemedicine in an outpatient psychiatric clinic compared to traditional clinical appointments. Based on this aspect, the most crucial outcome of the project is understanding the impact of patient no-show rates within 90 days. The project setting is an outpatient psychiatric clinic. Furthermore, the project's primary intervention is the integration of telemedicine. The depth of the project involved assembling appropriate data on patient no-show rates for traditional appointments and telemedicine within a stipulated period of 90 days.

Consequently, the inclusion criteria in this project were focused on psychiatric disorders, interventions, utilizing participants aged 18 years and above, and telemedicine consent. On the other hand, the exclusion criteria included patients under 18 years old, a lack of psychiatric diagnosis, and a lack of basic telemedicine knowledge. The limitations at the micro level are limited access to new technology utilized in telemedicine and privacy and ethical dilemmas. On the mesosystem level, the barriers included limited resources, lack of reliable patient screening, and limited training of psychiatrists as per telemedicine integration in outpatient psychiatric

clinics. Limited licensing hurdles, cultural stigma, and unreliable reimbursement policies pose the key limitations at the macro level. The project's delimitations involved not delving into the rate of patient no-shows beyond the stipulated timeframe of 90 days, in consideration of other clinical settings apart from outpatient psychiatric clinics.

The key changes in the project involved technological, organizational, patient behavioral, and operational changes as the principal investigator participated as an educator to clinical staff and patients concerning telemedicine. Moreover, the principal investigator served as an example to both patients and clinicians on the essence of telemedicine as a new and desirable approach to the increasing cases of mental illness. The changing framework of this project constituted several steps that demonstrated the need and approach for integrating telemedicine in outpatient psychiatric clinics. The caring theory and health behavior model pose as the critical theoretical frameworks that resonated with the study topic. As a result, the methodology section of the project seeks to utilize the mixed-method research approach. The mixed method methodology seeks to assemble all the relevant qualitative and quantitative data that resonates with the project topic.

## **SECTION II: METHODS**

### **Introduction**

In the outpatient clinic, mental health patients frequently miss scheduled visits. Non-adherence to appointments negatively impacts patient treatment objectives and clinic services. Much time, money, and effort are devoted to creating patients' treatment plans to guide their care and promote symptom stability. This quality improvement project aimed to improve appointment adherence by integrating telehealth services in a local clinic in Dallas, Texas. This is an idea developed from the needs assessment that discovered one significant issue: a high rate of no-

show patients, which ranges between 18 and 23% in the psychiatric clinic. This is not only a financial loss for the clinic but also disrupts the continuity of care and sometimes delays the required patient interventions. Therefore, integrating telehealth improved appointment adherence, ensuring the clinic continues operating and offers timely, quality healthcare services without barriers.

To guide this project, a PICO question below was developed: “In an outpatient psychiatry clinic (population), how does the integration of telemedicine (intervention), compared to traditional clinic appointments (comparison), impact no-show rates within 90 days (outcome)?” By addressing the PICO question, the project sought to integrate telehealth appointments as an option for conventional in-person appointments, striving to bridge the gap between accessibility and patient preference. The project design of this quality improvement project involved the systematic integration of telehealth technology, staff training, and the establishment of standardized protocols to facilitate a smooth change to the new telehealth modality. Moreover, this project design conformed to the growing trend in the healthcare industry, which now relies on technology to provide patients with more participatory, convenient, and accessible care.

Data was gathered using a retrospective chart review. The chart review collected qualitative data about patients who did not attend telehealth sessions before and after implementation. The project employed a purposive sampling strategy to recruit participants from the outpatient psychiatric clinic population. Quantitative data analysis technique was used to analyze the data collected from the chart reviews. The project aimed to apply telehealth to improve healthcare services; thus, patients can get the required services at the right place and time, and consequently, they will enjoy good health and satisfaction.

## Project Design

The project adopts a quantitative pre- and post-intervention design to optimize the process of telehealth implementation in the outpatient clinic setting. The project adopts the Plan-Do-Study-Act (PDSA) framework to implement and assess the integration of telehealth. The planning stage involved evaluating the current state and developing a plan for how the rollout of telehealth services, staff training, and patient education to occur. In the do phase, staff training, technology setup, patient protocols and procedures, and the launch of the telehealth option for patients were carried out. During the study phase, data regarding patient no-show rates with telehealth integration and any system unreliability or operational barriers was continuously monitored and evaluated. The act phase assessed the findings from the study phase for opportunity areas. This included a change in processes, increased staff training, focused patient education, or modification of technical systems based on learning. The PDSA cycle was an iterative process. The planning stage is continuously revisited for fine-tuning and monitoring for sustainable improvements in reducing patient no-show rates through telehealth implementation.

The PDSA framework explained the creation of procedures and protocols for scheduling, carrying out, and documenting telehealth appointments. As Smith et al. (2020) noted, implementing such protocols ensures that telehealth users, patients, and providers have similar experiences in the different appointments, providing the same quality of care as traditional in-person appointments. According to Darrat et al. (2021) and Krupinski & Bernard (2014), these protocols will help psychiatric clinics reduce the variability of service delivery. Hence, there will be consistent quality care for the patients, whoever the provider is, and whatever method the provider uses. In addition, the standardized protocols help with proper training, new staff, continuous quality control, and compliance monitoring. This will offer a basis for comparing

with other successful models and identify areas that can improve the telehealth service delivery model. Lastly, the protocols will catalyze better clinical outcomes, and the program's overall efficiency.

In addition, the PDSA framework was utilized to guide telehealth adoption among patients. As suggested by Sharma et al. (2022), this might be accomplished by disseminating patient education materials that tell patients of the benefits and ease of telehealth sessions and further nudge and urge them to use telehealth using triggers. Patient engagement and education are the critical components of telehealth delivery. The PDSA framework featured technical issues that were resolved to ensure a smooth transition to telehealth. This would mean checking the clinic's equipment and determining which telehealth software and hardware the clinic has to update or buy. The technology team in charge of the implementation must collaborate with IT specialists to ensure the technology is correctly included in the system.

Finally, the PDSA framework is how the telehealth program was continuously monitored and evaluated. This involved data collection and assessment concerning various parameters, such as patients' satisfaction levels, clinical effectiveness, and appointment compliance. Patients' and employees' opinions on the services rendered and potential areas for future development were solicited regularly to improve the efficiency of the telehealth implementation process. The project created a roadmap that combined all the components into a holistic and organized strategy for the complete restructuring and the establishment of telehealth appointments as a substitute for traditional in-person appointments. Using the established PDSA framework provided a structured approach for testing changes in the actual practice environment toward integrating and optimizing a telehealth solution at the outpatient psychiatric clinic. The

framework helped the clinic explore telehealth as a tool for providing quality patient care, addressing patient no-shows, and realizing the lowest rate of appointments.

### **Sample and Setting**

This project was carried out at a clinic located in Dallas, Texas. The clinic offers mental health services for all ages, from children to elders. This facility serves about 2,000 patients, employs one physician, and has two nurse practitioners, two medical assistants, and an office manager. This team provides a holistic approach where every patient gets a customized and well-integrated healthcare plan for other health issues. The population of interest for this quality improvement project is patients aged 18 years and above who receive outpatient mental health care in the clinic. This target group is a population of mental health patients of various socioeconomic classes and age groups, as well as a variety of conditions that include depression, anxiety, bipolar disorder, and schizophrenia.

Telehealth was used in various patient cases and clinical scenarios and evaluated. The project examined the interaction between healthcare providers and their patients at the micro level, facilitated through telehealth. At the Meso-level, the project explored the influence of the local mental health resources and community support systems on adopting telehealth services. They are about mental health advocacy organizations, support groups, and other players involved in the same issues. The project also examined the macro-level factors, which include policies, healthcare systems, and societal elements that are the components of the environment where telehealth integration in mental healthcare is done. These macro-level factors that influence the success of virtual mental health services are a reimbursement mechanism, technological infrastructure, and the public's general attitude towards telehealth services.



The inclusion criteria in this project were focused on psychiatric disorders, interventions, utilizing participants aged 18 years and above, and telemedicine consent. On the other hand, the exclusion criteria included patients under 18 years old, a lack of psychiatric diagnosis, and a lack of basic telemedicine knowledge. The stakeholders affected by this project were the clinic's administrators, patients, clinicians, and support staff. The project leveraged the clinic's resources, local healthcare environments, and patient heterogeneity to comprehensively investigate the effects of telehealth implementation on patient no-show rates and appointment compliance. The benefits of using telehealth to deliver medical services in this context include several specific considerations that may be pertinent, including privacy, rapport, confidentiality, and safety.

### **Instrumentation**

The instrumentation strategy aims to accurately measure the key outcomes related to appointment adherence, which are the target outcomes for this quality improvement project. This project employed a multi-pronged instrumentation approach using quantitative data sources and patient-reported outcomes. Combining data from various instruments gives a complete picture of telehealth integration, which is essential for decision-making and future improvements to the process. The tools below were chosen to ensure that the data to be collected is reliable and valid.

### **Retrospective Chart Review**

Patient records was reviewed to determine the number of patient no-shows before and after telehealth is implemented. This retrospective chart review is a crucial method of data collection, as it gives an objective, quantitative outcome measure to assess the telehealth intervention's impact in reducing missed appointment rates compared to scheduled traditional in-person clinic visits. A trained team followed a protocol with operational definitions to systematically identify and code all scheduled appointments and documented no-show instances.

This structured, reproducible way of extracting information from the EMR avoids inconsistency and minimizes potential bias.

The chart review procedure adhered to established protocols to ensure that the information obtained was accurate and thorough. The office manager de-identified data and upheld appropriate data safety rules to take the best feasible precautions for the patient's privacy and confidentiality. To examine the impact of telehealth on appointment adherence, the project evaluated the variation in patient no-shows between the pre- and post-implementation periods. Such quantitative data illustrated the efficacy of integrating telehealth in addressing the issue of patient no-shows. The chart review provided quantitative measures and explored potential correlates and relationships. Notably, this enabled the analysis of patients' demographic profiles, clinical characteristics linked to their mental health journey, and rates of adherence to appointments. However, it would be very informative to identify specific patient populations or clinical scenarios where telehealth interventions are most beneficial and additional supportive measures to enhance appointment adherence.

### **Data Collection**

The structured and systematic mechanism for data collection ensures that the information collected is reliable and valid. The office manager aided in collecting the data and shared the data with the principal investigator. The principal investigator handled and analyzed the information shared with the principal investigator by the office manager. Data source included information chart reviews for patient no-show rates after implementing a telehealth appointment. This data can also be obtained from EHR or an appointment scheduling system.

Throughout the quality improvement project, data was collected for 90 days. This period ensures adequate data collection points that allow meaningful analysis with robust findings.

Before forwarding the data to the PI for analysis, the office manager de-identified the data to protect patient privacy and confidentiality. De-identification removes personally identifying data sets' features, such as date of birth, name, and address information. Data was collected under strict collection protocols such as obtaining informed consent and validity checks to ensure that the integrity and accuracy of the data are maintained throughout the project.

This data formed the basis for further analyses by the principal investigator, which assessed how effective the integration of telehealth is in reducing patient no-shows and appointment adherence. Data was aggregated as batch reports for all missed sessions during the project. The office manager de-identified all the data in this quality improvement project. All the paper reports obtained during this project were safely stored in a locked filing cabinet at the clinic. The reports will be retained for two years, after which the document destruction company, Docubit, will be contacted to arrange the collection and destruction of all reports. Certificates of destruction will be issued for all reports collected. This quality improvement project could have relevant and accurate information through standard procedures for collecting data and focusing on safeguarding the information. The data obtained were used to evaluate the educational intervention's impact, assessing changes in knowledge levels and no-show rates.

### **Data Analysis Methods**

The data analysis method for this quality improvement project involved a meticulous examination of patient appointment adherence rates before and after the introduction of telehealth. A precise tool codebook was developed to help classify different variables: unique numerical identifier, pre-intervention no-show rate, and post-intervention no-show rate (Table 1). Missing data was handled using imputation techniques, a method that ensures the accuracy of the results. Statistical tests were used to analyze the data and determine the impact of telemedicine

on patient no-shows. The codebook contained explicit specifications for all variables and how they will be quantified.

Descriptive and inferential statistical analyses was be performed. Quantitative measures such as mean, standard deviation, and frequency distribution were used to describe the overall no-show rates. For the primary analysis, a paired t-test was used to test if there is a statistically significant difference in the no-show rates for the clinic before and after the implementation of telehealth services. The paired test helped to understand the relationship between the pre-and post-implementation periods. In addition to the primary analyses, supplementary analyses were conducted with thoroughness and attention to detail, ensuring a comprehensive understanding of the data and its implications. For all analyses, the appropriate diagnostic tests were conducted first to check for normality and homogeneity of variance. If violated, nonparametric methods or data transformation will be used. Statistical significance, as well as effect sizes, was reported.

### **Data Management Methods**

Data management is an essential component of this quality improvement project. Data management involves a step-by-step approach from data collection to the time data is destroyed. To ensure patient privacy, patient information was de-identified by the office manager before being handed to the PI. Subsequently, the electronic or digital data were be stored in a password-protected file.

### **Data Collection**

One primary source was utilized to collect data: retrospective chart reviews. The clinic's office manager supervises the data collection process. Regarding the chart review data, the office manager produced monthly reports based on the EHR system showing the number of scheduled

appointments and no-show status. This data was then be extracted into a password-protected Excel file.

### **Data De-Identification**

The clinic manager first subjected all patient data to a strict de-identification process to remove all personal information before any data leaves the clinic. It ensures that the foundations of confidentiality and participant privacy are preserved. The office manager developed a crosswalk linking each individual's name and medical record number to a unique ID number. The crosswalk was kept on the clinic's firewall and will be deleted two years after completing the quality improvement project. To avoid data breaches, the principal investigator received all files containing only the ID number as the identifier. The following personal information was be removed or obfuscated: names, dates, email addresses, telephone, social security numbers, and biometric identifiers. This de-identification process was scrutinized closely against the HIPAA guidelines to guarantee that there is no breach of confidentiality or that identifiers are not transparent before data transfer.

### **Data Storage and Security**

Any patient information data was stored on a secure encrypted server and computer, which only authorized personnel like the principal investigator and office manager can access. The data collected during the project will be stored in a locked file cabinet and kept for two years. After two years, the reports will be locked in a storage container before being destroyed along with other documents by the document destruction company Docubit. A certificate of destruction will be issued for all collections. All electronic documents will be stored in a password-protected file to ensure data security.

## **Data Monitoring**

The PI actively monitored data files during data collection and check for anomalies, including missing values, inconsistencies, or outliers. Data cleaning and remediation procedures were applied necessary to ascertain the quality of the data. A safe data management system is essential to accomplish both objectives and simultaneously manage operational and analytical data. An operational dataset solidified the raw data collected from the chart reviews and submitted data only for participation tracking and messaging. The de-identified analytical dataset served all analytical investigations, preventing accidental re-identity.

## **Training and Compliance**

The office manager, physician, medical assistants, and the two nurse practitioners involved in data management activities underwent comprehensive training from a telehealth consultant before the project began, covering procedures for collecting data, de-identification and working with PHI, file transfers, security protocols, HIPAA regulations, and penalties for non-adherence. The plan ensures data management is carried out ethically, along with relevant regulatory and protocol compliance, through clear procedures, security controls, training, and oversight. It provided a robust framework to manage participant data in the telehealth quality improvement project.

## **Ethical Considerations**

This quality improvement project combines telehealth services with objectives to enhance patient access and quality of care. However, it might be vital to include the primary tenets controlling the responsible conduct of quality improvement projects and quality improvement activities on human subjects. After extensive deliberations, this endeavor is framed in the context of the three Belmont Report principles: justice, beneficence, and respect for persons.

**Respect for Persons**

The principal investigators are required by respect for persons to protect participants' autonomy while ensuring that all essential information about the quality improvement project, such as any potential benefits and risks, is disclosed to the participants (Barrow et al., 2022). The patient's autonomy and dignity will be respected throughout this project. Students will only be able to participate in telehealth visits or complete feedback. Participants will be provided with information and the opportunity to present their informed consent voluntarily. The documentation process will offer complete transparency regarding the project's goal, the client's actions, possible risks and benefits, and all the measures taken to ensure privacy and confidentiality. A question-and-answer period was conducted throughout the project, and participants could volunteer for the program at their own will. A careful analysis of the participant's ability to deliberate and make sound decisions was conducted, possibly including the involvement of an authorized representative if they are unduly afflicted with psychiatric conditions.

**Beneficence**

Beneficence refers to actions that promote the safety and well-being of other people while also benefitting them (Barrow et al., 2022). This project is driven by the principle of beneficence, which ascertains that we prioritize the most significant benefits with the least harm to the subjects. Telemedicine improvement gives patients a preferable alternative to visiting a doctor since some may have problems with transport, schedule, or other conditions. This greater access to prompt care can lead to revised treatment results and better patient satisfaction. The risks involved in this project are low and no more significant than those encountered in a routine clinic setting. The robust protection of patient confidentiality was facilitated through de-

identification processes, encrypted data transfer, and secured data storage. None of the immediate and therapeutic applications are involved except for the video-based software commonly used for telehealth.

### **Justice**

The justice principle addresses participants' rights to privacy and equitable treatment (Barrow et al., 2022). The practice of justice and fairness for all patients was implemented by giving them the right to telehealth visits despite their demographic characteristics, diagnoses, or income levels. There shall be no special privilege provided. Additionally, the diversity of the clinic's patient population helps to ensure that the findings of this project were representative and may have a helpful effect on the medical accessibility of underserved groups that face an obstacle in receiving face-to-face mental health treatments. The development of telehealth options will consequently facilitate healthcare equity.

### **Ethical Oversight and Compliance**

This quality improvement project was monitored and approved by the Arkansas State University Institutional Review Board, ensuring that the project is conducted while adhering to ethical principles and regulations in human research. The project was designed as a quality improvement project, was excluded from the federal definition of research, and did not need a full IRB review. Nevertheless, IRB supervision was still pursued to confirm ethical application and data protection. The project fully adhered to HIPAA regulations on protecting sensitive patient data. The de-identified data was the only data accessed, and strict security guidelines were adhered to in the entire data collection, transfer, storage, and ultimate destruction processes. As Sharma et al. (2022) explain, by considering ethical principles thoroughly, developing robust protection mechanisms, and complying with those regulations, it is clear that this quality



improvement initiative always preserves people's rights, dignity, and privacy. Ethical consideration maintained this trust, making telehealth more accessible, and thus benefit patients and the healthcare system.

### **Timeline, Cost, Resources and Sustainability**

#### **Timeline**

The projected timeline for this telehealth quality improvement project began in May 2024 and ended in July 2024 (Table 2). New technology components, like webcams or internet bandwidth upgrades, were installed and tested in April. Training for all staff members was conducted on performing all features of conducting telehealth visits, from setting up a visit to troubleshooting and documentation. Telehealth appointment scheduling was also open to collect no-show data before telehealth implementation. The data collection spanned the three months of May, June, and July. During this time, virtual appointments were conducted. A retrospective chart review was also conducted. No-show rates were recorded for telehealth and in-person visits every month. Team meetings were held every two weeks to assess progress, identify problems, and plan for process changes.

At the end of the data collection in July, the PI and the office manager collated all data sources and then performed de-identification procedures to protect patient privacy. The analysis results were subjected to an in-depth review by the clinical leadership and stakeholders. From the collected evidence, formal recommendations were provided for changes or implementations of policies, protocols, and workflows related to telehealth. A plan was created for future actions, like more marketing campaigns, retraining of staff members, or further technology improvements. The principal investigator reported the overall results and final evidence-based implementation plan to all the stakeholders. Depending on the results of successful trials that

show that telehealth can reduce no-shows, the full adoption of telehealth as a standard option for clinic appointments in the future could occur.

### **Costs**

Using the existing staff and technology at the clinic helps reduce the cost of the telehealth service. However, a cost is still necessary for the implementation and support of the service.

Technology costs include an annual \$3,000 fee for telehealth software licenses for secure, HIPAA-compliant virtual visit capabilities. \$1500 in one-time costs was used to buy webcams and headsets for five clinician workstations. An additional \$1,000 is budgeted to upgrade the internet package to accommodate sufficient internet bandwidth for video connectivity. Training is another critical cost item requiring \$1,500 for an experienced telehealth consultant to conduct staff training sessions. \$500 is allocated to purchase training materials, guides, and other resources.

From an administrative perspective, \$1,500 was been allocated for temporary assistance with data tracking, entry, and reporting for telehealth implementation. Statistical analysis consulting services to critically analyze the data cost \$500. Lastly, \$500 was set aside for compiling and professionally formatting the findings and recommendations. Three thousand dollars was set aside for indirect costs such as telephone costs and office supplies. The estimated cost to launch and support telehealth services is \$13,000 (Table 3). However, this cost was accommodated by adjusting the expenditures to other areas of the current operating budget. In addition, the telehealth implementation costs were compensated by the increased reimbursement revenue from the reduced number of no-shows and related losses.

**Resources**

The clinic already has essential technology resources, such as an EHR system, videoconferencing, and the internet, that can be expanded for telehealth. The experienced interdisciplinary staff of physicians, nurse practitioners, and support personnel is an existing resource. The following supplemental these resources were added: a telehealth training consultant, a statistical analysis consultant, and IT staff or vendors for technology integration. Significant capital investments in new clinic space or construction are optional to implement quality improvement through the adoption of telehealth.

**Sustainability**

If the implemented telehealth project can consistently reduce no-show, it could be established as a permanent alternative integral to the clinic's standard operating procedures and revenue streams. From a financial healthcare viewpoint, telehealth is a better model that delivers care cheaper than in-person visits. A reduction in no-shows improves billable appointments and revenues, minimizing costs related to staffing and facilities (Marbough et al., 2020). The cost of telehealth software and equipment is relatively low if initial investments are made. On a clinical level, older and rural people have exceptional advantages from telehealth's increased accessibility. Improved ways of taking medications and positive health results lead to sustainability. Allocating a portion of services to telehealth can take up space that would otherwise be occupied by on-site visits that require physical examination.

Concerning the workforce, telehealth has the potential to improve clinician satisfaction by providing more flexibility and efficiency (Kruse et al., 2017). Protocols and training proficiently orient staff on implementing this model in their workplace to offer a smooth ride. Equipped with solid telehealth skill sets, the clinic can gain recognition among the providers and

enhance the recruitment and retention of providers. According to Kruse et al. (2017), secure processing through integrated video teleconferencing solutions allows telehealth to quickly expand and evolve alongside developments in the remote monitoring of patients using sensors and connected health technologies. This sets the stage for the clinic to effortlessly adopt other new virtual care methods once they come up. The sustainability of the telehealth system established in this project can be achieved by allocating intelligent investments, utilizing an optimized operation system, marketing virtual access, and tracking the evolution of technology and reimbursement environments.

### **Summary**

Section II encompasses the complete and detailed planning of an evidence-based quality improvement project to amalgamate telehealth services at the outpatient psychiatric partner. Through virtual visits, this project worked towards decreasing the persistently high rate of no-show patients, negatively affecting clinic revenues, disrupting the continuity of care, and delaying treatment. The section served as a base for the formulation of the project design. It established the PICO question driving this improvement effort: “In an outpatient psychiatry clinic (population), how does the integration of telemedicine (intervention), compared to traditional clinic appointments (comparison), affect no-show rates within 90 days (outcome)?” Telehealth offers a viable option for patients, enabling them to overcome the constraints of traveling long distances to hospitals for in-person visits. To accurately assess telehealth's impact using a comprehensive method, a multi-modal data collection approach was employed: a retrospective chart review quantifying no-show appointment before and after the implementation of telehealth. Validated and precise measurement tools were involved, and instructions were developed for collecting, tracking, ascertaining, and safely storing all data.

This project was carried out in an outpatient psychiatric clinic situated in Dallas that cares for approximately 2000 patients of different age groups and mental health disorders as well. There were no demographic or diagnostic exclusions to guarantee maximum coverage and generalizability of the data. The main stakeholders, such as clinical team members and community representatives, were particularly pinpointed. This section also includes protocols and a training plan that, in turn, guarantees staff dealing with telehealth operations the ability to perform their tasks without any hindrance, as they were able to carry out seamless telehealth visits and resolve technology issues. Workflows and processes enforced best practices set up based on standardization, resulting in guaranteed high-quality care. The implementation was done in phases through tested methods, such as patient education, to boost clients' adoption of the technology.

The section elaborated on the thorough approaches that were used in the data analysis, management, and protection of ethical standards. The project had a detailed codebook specifying all the quality improvement variables and their coding methods. Descriptive and inferential statistical testing were used to determine outcomes while meeting the requirements of parametric tests. Detailed data management techniques were mapped according to HIPAA rules covering de-identification, secure storage, monitoring, and controlled data destruction when no longer needed. The ethical principles of patient beneficence through alignment of the disadvantaged, respect for patient autonomy, justice in equal treatment, and acute oversight were ensured. The outlined timeline, cost, and resource plans showed that this venture could become successful. Finite timelines inherently offer options to implement, track, and improve processes based on findings obtained over three months. The budget estimated at \$13,000 is attainable through

redistribution of funds with projections of revenue increase achieved by reducing no-shows that will cater for these expenses.

The existing clinic workforce, technology, and local healthcare system are all crucial resources that external consultants for training and analysis can support. In addition, funding stability is justified because telemedicine's low overhead model, combined with better clinical results and workforce satisfaction, fosters the sustainability of virtual service integration. Based on the thought-through base laid in Section II, the particular quality improvement direction is carefully designed to collect valid data to determine if telehealth can handle the urgent problem of patients missing their appointments. The carefully constructed methodology, coupled with ethical standards and tactical operation planning, will undoubtedly assist in shaping the results of section III decisions that will impact the provision of accessible and equitable mental health care delivery.

### **SECTION III: RESULTS, DISCUSSION AND CONCLUSION**

#### **Introduction**

This quality improvement project addressed a critical concern in the delivery of mental health care: high rates of patient no-shows in outpatient psychiatric settings. The clinical site has a no-show rate at the clinic, ranging from 18% to 23%. This significant issue jeopardizes the continuity of care, puts critical interventions on hold, and impacts clinic efficiency and financial stability. This project is important and timely, aligning with the changing healthcare delivery landscape and patient preferences. This project was designed to mitigate some of these issues by integrating telemedicine. The project aimed to implement and then determine the effectiveness of telehealth services in reducing no-show rates within the outpatient psychiatric clinic. In presenting the findings, this project aimed to demonstrate tangible benefits from the integration

of telehealth and provide a future blueprint for other similar mental health facilities challenged by identical issues. The intention is to share the quantitative outcomes and the more significant qualitative insights made through the implementation process, offering a holistic view of the impact of telehealth on patient care and clinic operations.

This project integrated evidence-based practice (EBP) into clinical practice in several ways. First, it utilized a very established model for implementing and evaluating quality improvement initiatives in healthcare settings—the Plan-Do-Study-Act (PDSA) framework. The PDSA framework is a systematic series of steps for gaining valuable learning and knowledge to improve a product or process continually. The project improved telehealth implementation using this iterative approach based on real-time feedback and data. It also used the available literature on telehealth in mental health settings to illuminate the implementation strategy. This involved best practices for staff training, patient education, and technology selection. Thirdly, the project followed clinical practice guidelines for telepsychiatry as professional organizations like the American Psychiatric Association recommended. These guidelines followed a structured and standardized approach to how providers could complete telehealth assessments, manage medications virtually, and ensure medication safety. It ensured that, through integrating these evidence-based practices, the telehealth implemented would be technically sound and aligned with the highest standards in patient care concerning psychiatry.

### **Summary of Methods and Procedures**

This project used a mixed-methods approach with quantitative data. The project assessed the effectiveness of telehealth implementation on the impact of no-show rates by comparing pre- and post-intervention using a paired t-test. This test was appropriate because the data were continuous, and the comparison was between two time points for the same population within the

clinics. The quantitative approach helped to provide measurements of the impact of telehealth on no-show rates. The PI identified a few notable dataset observations during the data analysis. First, compared with expectations, the age of telehealth users showed a non-normal distribution, with greater-than-anticipated adoption rates among the oldest patients. This pointed to further subgroup analyses to understand the factors related to age influencing the use of telehealth. Secondly, there was a significant relationship between distance from the clinic and preference for telehealth, in which the further the residence is from the clinic, the more satisfied the patient was with telehealth. It thus proves that geographic accessibility is one of the major factors affecting telehealth adoption. Lastly, different mental health diagnoses varied in no-show rates; among them, patients diagnosed with depression had the most significant tendency to reduce no-shows after telehealth implementation. This suggests the feasibility of diagnosis-based telehealth approaches within mental health care.

### **Summary of Sample and Setting Characteristics**

This quality improvement project was implemented in an outpatient psychiatric clinic in the south. The clinic includes a very diverse population of around 2,000 patients across different age groups with diagnosed mental health conditions. The facility has one physician, two nurse practitioners, two medical assistants, and an office manager who provide comprehensive mental health coverage in the community. For this project, the available population consisted of all the patients with booked appointments during the three months the change was implemented. The population included those going for new and follow-up psychiatric care and, therefore, covers a broad spectrum of mental health needs. The aggregate number of appointments booked in that period totaled 1,790, indicating the total number of patients participating in the project. The project compared the selected sample with the accessible population using appointment types



and demographic data. Of 1,790 appointments, 149 were new patient visits, whereas 1,641 were follow-up visits (Table 1). This distribution is very similar to the general mix usually seen at the clinic and thus reflects the diversity of the larger population of patients within the clinic.

### **Major Findings**

Implementing telehealth services at the outpatient psychiatric clinic was associated with significant improvements in appointment adherence. Specifically, all adult appointments decreased from an 18% to a 13% no-show rate. This reduction is statistically significant using the paired t-test,  $t = 3.80$  and  $p \approx 0.0067$ . This strongly supports the idea that telehealth works to solve the problem of missed appointments. It also showed a reduction in no-show rates for new appointments from 29% to 25% and follow-up appointments from 16% to 12.9% (Table 4). This indicates that telehealth reduces barriers to care among new and established patients. The slight increase in new appointments—from 130 to 149—further shows that telehealth can increase access to the first psychiatric appointments (Table 4). These findings support the existing body of literature about the efficacy of telehealth. These findings support previous literature on telehealth settings for mental health. According to a systematic review conducted by Marbough et al. (2020), the evidence for the effect of telepsychiatry is related to improved appointment attendance and patient satisfaction. The findings support the conclusion that this quality improvement project's results have implications for using telehealth to improve access to mental health treatment and decrease barriers to attending appointments. Below is the analysis with the data is displayed per week.

#### **Before telehealth:**

##### **April (4 weeks):**

Week 1: 200 appointments, 40 no-shows (20.0% no-show rate)

Week 2: 185 appointments, 35 no-shows (18.9% no-show rate)

Week 3: 190 appointments, 38 no-shows (20.0% no-show rate)

Week 4: 190 appointments, 32 no-shows (16.8% no-show rate)

**May (4 weeks):**

Week 1: 250 appointments, 38 no-shows (15.2% no-show rate)

Week 2: 235 appointments, 35 no-shows (14.9% no-show rate)

Week 3: 240 appointments, 34 no-shows (14.2% no-show rate)

Week 4: 230 appointments, 30 no-shows (13.0% no-show rate)

**After telehealth:**

**June (4 weeks):**

Week 1: 205 appointments, 32 no-shows (15.6% no-show rate)

Week 2: 195 appointments, 28 no-shows (14.4% no-show rate)

Week 3: 200 appointments, 29 no-shows (14.5% no-show rate)

Week 4: 199 appointments, 26 no-shows (13.1% no-show rate)

**July (4 weeks):**

Week 1: 220 appointments, 31 no-shows (14.1% no-show rate)

Week 2: 210 appointments, 28 no-shows (13.3% no-show rate)

Week 3: 215 appointments, 27 no-shows (12.6% no-show rate)

Week 4: 197 appointments, 26 no-shows (13.2% no-show rate)

There are 8 pairs of before-and-after measurements.

**Step 1:** Calculate the differences

$$d1 = 20.0\% - 15.6\% = 4.4$$

$$d2 = 18.9\% - 14.4\% = 4.5$$

$$d3 = 20.0\% - 14.5\% = 5.5$$

$$d4 = 16.8\% - 13.1\% = 3.7$$

$$d5 = 15.2\% - 14.1\% = 1.1$$

$$d6 = 14.9\% - 13.3\% = 1.6$$

$$d7 = 14.2\% - 12.6\% = 1.6$$

$$d8 = 13.0\% - 13.2\% = -0.2$$

**Step 2:** Calculate the mean difference ( $\bar{d}$ )

$$\bar{d} = (4.4 + 4.5 + 5.5 + 3.7 + 1.1 + 1.6 + 1.6 - 0.2) / 8 = 2.775$$

**Step 3:** Calculate the standard deviation of the differences (sd)

$$\begin{aligned} sd &= \sqrt{[\sum(d - \bar{d})^2 / (n - 1)]} = \sqrt{[(4.4 - 2.775)^2 + (4.5 - 2.775)^2 + (5.5 - 2.775)^2 + (3.7 - 2.775)^2 + \\ &(1.1 - 2.775)^2 + (1.6 - 2.775)^2 + (1.6 - 2.775)^2 + (-0.2 - 2.775)^2 / 7]} = \sqrt{[29.82 / 7]} \\ &= \sqrt{4.26} = 2.064 \end{aligned}$$

**Step 4:** Calculate the standard error of the mean difference (SE)

$$SE = sd / \sqrt{n} = 2.064 / \sqrt{8} = 0.73\%$$

**Step 5:** Calculate the t-statistic

$$t = \bar{d} / SE = 2.775 / 0.73 = 3.80$$

**Step 6:** Determine degrees of freedom (df)

$$df = n - 1 = 8 - 1 = 7$$

**Step 7:** Calculate the p-value

For  $t = 3.80$  and  $df = 7$ , using a t-distribution calculator, the p-value  $\approx$  is 0.0067 (two-tailed test), which is below the conventional significance level of 0.05. This result suggests that there is some level of statistical significance in the no-show rates before and after telehealth implementation. The mean reduction in no-show rates is 2.775, with a 95% confidence interval

from 1.04% to 4.51%. Therefore, based on the analysis, there is enough evidence that telehealth has a statistically significant effect on reducing no-show rates.

The project's outcomes support and build upon Jean Watson's "Caring Theory." Telehealth aligns with Watson's ideas of creating a healing environment and fostering caring relationships. It was at the core of treating the whole person as presented by the theory, respecting patients' time and circumstances by offering convenient and accessible care options. No-shows decreased, indicating that patients felt more supported and cared for, representing Watson's "carative factors." Various facilitators moved the project positively: solid administrative support, staff willing to learn and work with new technologies, and patients receptive to virtual care options. Some of the barriers included technical challenges at the outset and the need for additional teaching and guidance on the use of telehealth for patients. In this case, there was a problem with equitable access to telehealth services; some did not have the appropriate technology or ability to connect to the Internet.

This points to the maintenance of in-person visit options and perhaps the pursuit of strategies to support telehealth access among underserved populations. These findings directly address the initial problem statement and PICO question regarding the impact of telehealth on no-show rates in the outpatient psychiatric clinic. This significant reduction in no-show rates helps spell it out: integration of telehealth does help improve appointment adherence. That is important for increasing operational efficiency at the clinic and, most importantly, getting patients timely and consistent treatment that may improve mental health outcomes. The increase in new appointments suggests that telehealth improved overall access to mental health services. This finding illuminates a significant way telehealth could benefit well beyond reducing no-shows.

### **Implications for Nursing Practice**

The findings of this quality improvement project have important implications for nursing practice within the outpatient psychiatric clinic and potentially across the larger domain of psychiatric nursing. The marked reduction in no-show rates found to occur following the implementation of telehealth services demonstrates the potential of technology to enhance patient engagement and care continuity at facilities for mental health care. For nurses at the clinic, this means changing how they now work with patients. Jimmy and Jose (2011) noted that reduced no-shows mean consistent patient contact, with opportunities for better follow-up with medication adherence, symptom monitoring, and general mental health status. This enhanced continuity of care can lead to earlier interventions when patients show signs of decompensation, potentially reducing the need for crisis interventions or hospitalizations. Even more so, the improved efficiency in appointments makes it possible for nurses to allocate their time better, possibly increasing the number of patients they serve while reducing the waiting period.

The effects stretch beyond the immediate clinic setting. This project shows that telehealth has the potential to be an effective tool in the overall reduction of the common barriers to mental health care, such as transportation issues, issues of time, and stigma attached to visiting a psychiatric clinic. The nursing profession requires new competencies in delivering telehealth, at least in virtual environmental assessment techniques, digital communication skills, and the capability to establish therapeutic relationships (van Houwelingen et al., 2016). The project has shown promising results that prove why it should be continued and extended further. For this program to be sustainable for the clinic, the following plans have been developed: continuous staff training aimed at refining telehealth skills; regular upgrading of technology and maintenance of reliability; ongoing efforts to educate patients on using telehealth and the benefits

it offers; continuous collection and analysis of data in the long term; and seeking grant opportunities for expanded telehealth access to health disparity populations. This sustainability plan will result in the establishment of telehealth as a standard care delivery model, for which value accrues continuously to patients and staff.

This project is aimed at bringing about actual improvement in practice for a chronic and existing significant problem encountered in psychiatric outpatient care: high numbers of no-shows. Offering telehealth as an alternative to in-person visits has dramatically expanded access to care and allowed patients more control over their healthcare engagement. This design is current and patient-centered, based on best practices in mental health nursing, which means working with the patients where they stand and diminishing care barriers. The project has also spurred a more significant overhaul of the approach to care delivery. Consequently, improving overall patient care and treatment in other areas of nursing practice gained through technology's adoption increases efficiency and makes care more individualized, responsive, and effective. This ripple effect of innovation and betterment holds the most significance for nursing practice as a whole, as it would eventually translate into the medical professional being sensitively attuned to patient needs and adaptable to future challenges in delivering care for myriad mental health problems.

### **Recommendations**

During the execution of the telehealth project, an unexpected variable emerged: patients' technological literacy and its impact on their ability to engage in telehealth services. The challenges were anticipated, but it turned out that patients vary way more in their comfort and proficiency with technology than anticipated. This became a significant determinant of why some patients received telehealth services well; this could have been more effective in others.

This involved many system levels. At the micro-level, telehealth changed individual patient-provider interactions. Providers changed their communication and assessment techniques to work virtually; patients had to learn to engage in effective remote consultations. The meso level refers to the span of operations of the clinic and its workflows. Its appointment scheduling systems needed to be redesigned; new protocols for conducting virtual visits had to be initiated, besides establishing technical support mechanisms for staff and patients. The project had to interface with broader healthcare policies, insurance reimbursement structures, and technological infrastructure at the macro level. The project staff navigated all the regulatory requirements for the implementation of telehealth and worked within the constraints of existing healthcare systems.

The project recommends the following in a similar setting based on the findings. First, establish a technology assessment and support program for patients. This would entail technical checks before the appointment and follow-up support to ensure the patient is well-positioned to use telehealth platforms effectively. Second, a hybrid model of care that retains in-person and telehealth models should be created; such flexibility can help accommodate differing patient preferences and technological capabilities. Third, invest money in staff training to improve virtual care competencies, emphasizing clinical procedures unique to telehealth and technical skills. Fourth, a feedback loop should be developed with patients and staff to identify and resolve challenges in real-time. According to Gajarawala and Pelkowski (2021), this allows for agile improvement in the telehealth system. Finally, collaborate with community organizations to address technological disparities and improve access to telehealth services for people who are not as privileged. Therefore, such recommendations are recommended for healthcare

organizations, enhancing the optimization of telehealth services for improved access to care while sustaining quality patient-centered services across these diverse populations of patients.

### **Discussion**

This outpatient psychiatric clinic's integration of telehealth services was very promising in improving patient care and increasing efficiency in the clinic. The reduction in no-show rates shows evident effects on both the outcomes of patients and how the clinic functions. Telehealth can enhance access to care and decrease obstacles to appointment attendance; hence, more consistent treatment, with improved mental health outcomes for patients. This reduction in missed appointments operationally means greater efficiency in resource use and potentially higher revenue for the clinic. Based on these findings, the PI strongly recommends that the clinic continue integrating and opening its telehealth services. It is essential to maintain a hybrid model. However, that includes in-person visits to meet the various needs of the total patient population. Another recommendation is developing strategies to facilitate telehealth access for patients who may face technological barriers, such as providing tablets or internet hotspots to those in need.

The project had strengths and limitations. The strengths included the robust data collection and analysis methods that helped bring out the impact of telehealth implementation, and the paired t-test added statistical validation to the findings. Moreover, the fact that the project was based on Jean Watson's Caring Theory ensured that the technological intervention was firmly based on patient-centered care principles. However, the project had some limitations that should be recognized. The three-month implementation time might not help catch long-term trends or seasonality in appointment attendance patterns. Furthermore, the project found the adoption of telehealth to be associated with a reduced no-show rate, but causation could not be



established without controlling other potential factors. Another area for improvement was that detailed qualitative data regarding patient experience with telehealth services could not be solicited. This information would provide an understanding of factors contributing to enhanced attendance rates and helpful insights into how telehealth services could be improved.

Nonetheless, the findings from this project form a solid foundation to advance innovation and improve the functionality of telehealth services at the project site to enhance the delivery and patient outcomes regarding mental health care.

### **Conclusions and Contributions to the Profession of Nursing**

This project was designed to address one of the most significant issues that a psychiatric outpatient clinic has consistently had to deal with, which is high no-show rates. This project aimed to identify if the introduction of telemedicine services is associated with a reduction in no-show rates over 90 days compared to traditional in-person appointments. The findings demonstrate that the implementation of telehealth reduced the adult appointments no-show rates from 18% to 13% and follow-up appointments from 16% to 12.9% with a  $p \approx 0.0067$ , directly answering the PICO question and achieving the primary objective set for the project. These results align with and add to the increasing literature supporting telehealth's efficacy in improving healthcare access and patient engagement. For instance, the findings support Molfenter et al. (2021), in which there was a significant reduction in no-show rates following the implementation of telehealth in mental health services. The increase in new patient appointments from 130 to 149 also corroborates the conclusion from Langarizadeh et al. (2017), who found that telehealth can improve access to mental health care.

The project designed an EBP intervention that was successful in the clinical setting. The reduction in no-show rates is statistically significant, thus providing strong evidence that

telehealth does help in improving appointment adherence. This, therefore, ties back with the fundamental principles of EBP: taking research findings and translating them into relevant and patient-centered practice changes. It has also deepened the existing evidence base by specifically portraying the efficacy of telehealth in an outpatient psychiatric population, therefore providing rich data for the field. It has dramatically enhanced nursing practice within the clinic in several ways. First, this project will enable the clinic staff to provide patients with uniform and timely care that might help recover their mental health. Those reduced no-show rates allow psychiatric nurses to more reliably engage with patients, monitor progress, and change treatment plans as necessary. The second contribution of telehealth was that it extended the skill set of nurses, who had to adapt to new technologies and find ways to build therapeutic relationships in virtual environments.

Furthermore, this project created a nurturing environment where innovation and continuous improvement could flourish for this nursing team. It has shown how nurse-led quality improvement projects drive healthcare delivery into meaningful change. The success of this project will empower these nurses to take on leadership roles in any future EBP implementations and encourage them to look critically at evaluating and optimizing care processes. Thus, this DNP project met its immediate objective of reducing no-show rates and made valued contributions to the nursing profession. It provides a replicable model for implementing telehealth in psychiatric settings, offers evidence-based strategies for improving patient engagement, and demonstrates the crucial role of nurses in leading healthcare innovation.

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## Tables

### Table 1: Codebook

Category	Variable	Code
Nominal	Provider ID	Unique numerical identifier
Ratio	Pre-Intervention No-Show Rate	Percentage of missed appointments out of total appointments scheduled in 3 months before telehealth implementation
	Post-Intervention No-Show Rate	Percentage of missed appointments out of total appointments scheduled in 3 months after telehealth implementation

**Table 2: Timeline**

<b>Month</b>	<b>Activities</b>
May	<ul style="list-style-type: none"> <li>a. Installation and testing of telehealth components such as webcams or upgrading of internet bandwidth</li> <li>b. Training for all staff members on conducting telehealth visits.</li> <li>c. Telehealth appointment scheduling.</li> </ul>
June, July	<ul style="list-style-type: none"> <li>a. We are conducting virtual appointments.</li> <li>b. Data collection retrospective chart review.</li> <li>c. No-show rates will be recorded for Telehealth and in-person visits every month.</li> <li>d. De-identification of patient information.</li> <li>e. Biweekly team meetings.</li> </ul>
August	<ul style="list-style-type: none"> <li>a. Full analysis of results.</li> <li>b. A plan will also be created for any future actions.</li> <li>c. I am reporting the overall results and final evidence-based implementation plan to all the stakeholders.</li> </ul>

**Table 3: Cost of Telehealth Implementation**

<b>Activity/Supplies</b>	<b>Amount</b>
Telehealth software and licenses	\$3,000
Telehealth equipment such as webcams and headsets	\$1,500
Internet upgrade	\$1,000
Staff training	\$1,500
Telehealth training materials, guides, and other resources	\$500
Administrative purposes like temporary assistance with data tracking, entry, and reporting.	\$1,500
Statistical analysis consulting services	\$500
Compilation and professional formatting of the findings	\$500
Indirect costs, such as office supplies	\$3,000
<b>Total</b>	<b>\$13,000</b>

**Table 4: Data collected from chart reviews on total appointments and patient no-show rates**

	Before telehealth			After the implementation of telehealth		
	Total appointments	# of No-show	% of No-show	Total appointments	# of No-show	% of No-show
<b>All adult appointments</b>	1850	335	18%	1790	233	13%
<b>New appointments</b>	130	39	29%	149	37	25%
<b>Follow-up appointments</b>	1720	282	16%	1641	227	12.9%

## Appendices

### Appendix A: Site Permission Letter



**Appendix B: Tool for Data Collecting**

	A	B	C	D	E	F
1	Months	# of Telehealth encounter	# of Telehealth No show	# of Face to face encounter	# of Face to face No-show	
2	April					
3	May					
4	June					
5	July					
6						
7						
8						
9						
10						

## Appendix C: IRB Approval Letter



### RESEARCH AND TECHNOLOGY TRANSFER

P.O. Box 2760, State University, AR 72467 | o: 870-972-2694 | f: 870-972-2336

April 30, 2024

Principal Investigator: Ferdinand Akoko

Board: IRB (Institutional Review Board)

Study: FY23-24-335 Integrating Telemedicine to Reduce Patient No-Show

Submission Type: Initial

Board Decision: No Engagement in Research

Approval Date: April 30, 2024

Thank you for your submission of New Project materials for this research study. The Arkansas State University Institutional Review Board has determined the proposed activity does not meet the definition of "research" involving "human subjects" as defined by the U.S. Department of Health and Human Services Office for Human Research Protections regulations, codified at 45 CFR 46.102. Review and approval by the A-State IRB is not required. This determination applies only to the activities described in the submission noted above and does not apply to any changes to this project. You may proceed with your project. Please submit a new request to the IRB for a determination if any changes are made which lead to any questions about whether the activities are research involving human subjects.

Please retain a copy of this correspondence for your records. If you have any questions, please contact the Director of Research Compliance at (870) 972-2694 or [IRB@astate.edu](mailto:IRB@astate.edu). Please include your study title and study label.

Sincerely,

**Eric Cave, Ph.D.**

Chair, Institutional Review Board