PROGRAM EVALUATION OF TELEMENTAL HEALTH SERVICES

by

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A DNP Project Submitted to the Faculty of the

COLLEGE OF NURSING

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GRADUATE COLLEGE

As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Justin Ryan Schwarting, titled Program Evaluation of Telemental Health Services and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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Final approval and acceptance of this DNP project is contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.

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DEDICATION

I dedicate this project to the underserved and rural patients who suffer from mental health issues. I hope this project will improve Telemental health technology and bring more awareness for the need of psychiatric services in rural and underserved areas.

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ABSTRACT

Rural and underserved mental health patients face challenges of low income, decreased transportation and shortage of mental health providers (Carpenter-Song & Snell-Rood, 2017; Weinhold & Gurtner, 2014). Telementalhealth (TMH) or telepsychiatry is a technology that enables patients to see a live provider at distance, which assists in medication management, therapy and assessments (Chan, Parish, & Yellowlees, 2015). The purpose of this Doctor of Nursing Practice (DNP) project is to conduct a program evaluation of patient and parental satisfaction TMH services at Horizon Health and Wellness. In this program evaluation, parents and adults (N=111) participated in the 5-point Likert scale surveys with one open ended question on TMH services. Results of the surveys indicate that parents and adults prefer in person psychiatric care compared to TMH services, however, there are high levels of TMH satisfaction. Participants who struggle with transportation and patients who are 60 and over, they are highly interested in home TMH services. The suggestion is to implement a home TMH service program, which will improve no show rates, patient outcomes and help those who struggle with transportation and immobility issues.

INTRODUCTION

Background and Significance

According to the National Institute of Mental Health (NIMH), mental health disorders are the leading cause of disability and disease in the United States (U.S.) (NIMH, 2013). Rural patients are financially and geographically at a disadvantage to receive psychiatric services, compared to patients who live in urban areas; because of provider and transportation shortages (Carpenter-Song & Snell-Rood, 2017; Weinhold & Gurtner, 2014). In fact, over 50% of counties within the U.S. are unable to recruit enough mental health providers (Chan, Parish, & Yellowlees, 2015). Provider shortages increases hospital admissions, costs and health risks (Flaherty, Daniels, Luther, Haas, & Kasckow, 2017). Furthermore, patients face mental health stigma, because of reduced privacy in rural communities (Whealin, King, & Shore, 2017). In response to the shortage of mental health treatment for patients, the World Health Organization (WHO) Mental Health Action Plan encourages improved information systems, research and evidence to expand access to mental health services (WHO, 2018).

Telemental health (TMH), also known as telepsychiatry, provides real-time synchronous communication through video by a provider and patient who are located at different sites (Chan, Parish, & Yellowlees, 2015). Moreau et al. (2018) indicates that TMH produces similar patient outcomes for posttraumatic stress disorder (PTSD), anxiety and depression, compared to patients who see providers in person. Furthermore, TMH provides advantages such as reductions in driving time, monetary savings and improved patient outcomes (Effken & Abbott, 2009; Lopez, Qanungo, Jenkins, & Acierno, 2018). TMH, therefore, is a viable option to help address mental health disparities within rural and underserved areas.

While there are great advantages for TMH, several barriers exist for patients accessing and adopting TMH services. A systematic review by Kruse et al. (2018) indicate that patients who are older believe that TMH is not personable, and fear confidentiality breaches, which reduces patient satisfaction and adoption of TMH. Additionally, patients may have TMH services, but they need to drive to a neutral site, if in home TMH is not provided. For example, patients with social anxiety, panic disorders with agoraphobia are less likely to attend TMH appointments, because of fear of being around other people (Pruitt, Luxton, & Shore, 2014). Furthermore, patients who suffer from mobility issues, or patients who may not have transportation are also likely to miss appointments with TMH. Therefore, assessing the need for home TMH services may identify issues that are causing lower rates of psychiatric patient appointment attendance rates at Horizon Health and Wellness.

Several research studies indicate that high patient satisfaction correlates into improved patient outcomes (Grondahl, Hall-Lord, Karlsson, Appelgren, & Wilde-Larsson, 2013; Kohler et al., 2015). Therefore, assessing psychiatric patient satisfaction is important, because if patient satisfaction scores are low, patient outcomes may suffer. While patient satisfaction for TMH services are comparable to receiving psychiatric services in person; most of the research was conducted for psychologists and therapists for patients who need therapy (Shulman, John, & Kane, 2017). Therefore, more research is needed to see if TMH services provided by psychiatric providers produce comparable patient satisfaction when using TMH services for medication management.

Advanced Practice Registered Nurse's (APRN) collaboration with other healthcare professionals provide an opportunity to transform health care systems by improving TMH

services, so patients have more access to psychiatric services (IOM, 2010). According to the National Organization of Nurse Practitioner Faculties (NONPF), one core competency for APRNs is to integrate technologies to improve patient outcomes (NONPF, 2017). APRNs should also assess patient's and caregiver's technological needs to promote behavioral changes (NONPF, 2017). This Doctor of Nursing Practice project will provide an opportunity to evaluate the strengths and weaknesses of TMH services, improve services through psychiatric health technologies and patient outcomes to the underserved within Horizon Health and Wellness.

Local Problem

Arizona is ranked 50th for access to mental health care, with only Oregon being ranked lower in the United States (Stuart, 2015). In fact, there are over 100 areas of psychiatric provider shortages within Arizona; and only one psychiatric provider for 30,000 patients within the shortage areas (Stuart, 2015). To improve the shortages of psychiatric providers and access to mental health services, Horizon Health and Wellness provides TMH services. However, according to the Chief Medical Officer (CMO) at Horizon Health and Wellness, there are shortages of psychiatric providers at some facilities, which may decrease patient satisfaction for TMH services. Second, it is reported by the CMO at Horizon Health and Wellness that patient attendance rates are low for seven-day discharge appointments. An evaluation of current TMH services and the need for home TMH are needed to see what areas of TMH services need improvement.

Purpose and Objectives

Little is known about how satisfied patients are with TMH services for medication management, psychiatric evaluations and therapy from psychiatric providers (Ellington, 2013).

Furthermore, patients who suffer from certain diagnoses, mobility issues, are less likely to show up to their TMH appointments (Pruitt et al., 2014). Therefore, the purpose of this Doctor of Nursing Practice project is to evaluate satisfaction of patients who use TMH and assess the need for home TMH at Horizon Health and Wellness. The project also will assess the need for services based on diagnosis and transportation issues. If there is a need for home TMH, it will build the foundation for implementing a home TMH program at Horizon Health and Wellness in the future. Home TMH may improve seven-day discharge appointment attendance rates, decrease costs and improve patient outcomes at Horizon Health and Wellness.

Study Question

The study question is, how satisfied are children, adolescent and adult patients with TMH at Horizon Health and Wellness?

Theoretical Framework

Roger's Diffusion of Innovation Theory will guide the evaluation of TMH at Horizon Health and Wellness (Rogers, 2003). First, the theory consists of a social system (Figure 1) with five groups, categorized based on their beliefs towards adopting innovation (Rogers, 2003). The five groups consist of innovators (2.5%), early adopters (13.5%), earlier and later majority (34%) and laggards (16%) (Rogers, 2003). If the groups within a system are not identified and educated regarding an innovation, then there will be less adoption of an innovation within an organization (Rogers, 2003). Therefore, identifying patients based on diagnosis, age and limited mobility issues may help the stakeholders know what characteristics of patients to focus on to create more satisfaction and adoption of TMH services. The concepts of Roger's Diffusion of Innovation Theory to evaluate the current TMH program are relative advantage, compatibility, complexity,

trialability, and observability (Rogers, 2003). The Rogers Diffusion of Innovation Theory

concepts and social system will help provide a foundation to identify issues with TMH services

and identify groups who are more likely struggling or not willing to adopt TMH.
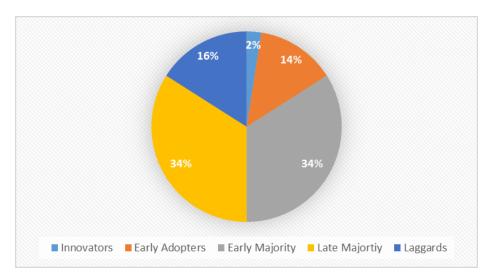

FIGURE 1. Rogers diffusion of innovation theory social system.

Social System

  Innovators usually consist of less than 3% of the organization and consist of champions

and superusers of TMH implementation (Mitchell & McBride, 2016; Rogers, 2003). Ultimately,

innovators advance technological systems to improve the safety and quality of care of patients.

For example, innovators within Horizon Health and Wellness can help redesign workflows,

which may improve the timeliness of TMH providers seeing patients. Early adopters also

become champions and support TMH implementation by finding solutions to improve TMH

(Mitchell & McBride, 2016; Rogers, 2003).

  Early and Late Majority make up the majority of the TMH users within an organization;

they use TMH but usually do not improve TMH processes (Rogers, 2003). For example, early

adopters may not use all aspects of TMH, or seek additional training. However, over time, early

adopters will use and grow more comfortable with TMH. Late adopters are more likely to use old workflows and try to avoid new technology. Late adopters need to see evidence that the innovation will help them, and they may require help from the innovators and early adopters; however, over time they adopt the system with education and persistence (Mitchell & McBride, 2016; Rogers, 2003). The laggards represent less than 20% of people within an organization system who use technological systems. Laggards are the most resistance to change, and may recognize issues, but are not willing to try new workflows. Laggards feel they may not have the skills or capability to use new technology. Early identification of laggards is important, so innovators and early adopters can help them feel more comfortable while using new workflows and technology. After education and reinforcement of new workflows, laggards are known to support new technologies (Mitchell & McBride, 2016; Rogers, 2003).

Researchers used Rogers Diffusion of Innovation Theory to study individual's adoption of new health care innovations. For example, Helitzer, Heath, Maltrud, Sullivan & Alverson (2004) implemented theory to assess adoption of a telehealth program in a rural area. Zhang, Yu, Yan, and Spil (2015) used specifically relative advantage, compatibility, complexity, trialability and observability to evaluate patients' acceptance of a health innovations. Furthermore, Chew, Grant & Tote (2004) used Roger's Diffusion of Innovation Theory to assess the adoption of electronic health systems by physicians. Therefore, research indicates that Roger's Diffusion of Innovation Theory is useful in assessing patients' satisfaction of TMH, based on the concepts of Roger's Diffusion of Innovation Theory.

Concepts of Rogers Diffusion of Innovation Theory

The five concepts of Roger's Diffusion of Innovation Theory (Figure 2), relative

advantage, compatibility, complexity, trialability, and observability will be used to evaluate

patients' satisfaction of TMH services. If the patient's satisfaction of these attributes is high, they

will more likely be satisfied of TMH services, which may improve patient outcomes (Rogers,

2003)

FIGURE 2. Concepts for innovation.

Relative Advantage

Relative advantage is measured in terms of advantages and satisfaction of TMH,

compared to other methods of receiving psychiatric services (Rogers, 2003). For example, TMH

saves time, compared to driving long distances to see a provider in person (Ellington, 2013). The

increased time savings may increase patients' attendance to appointments with psychiatric

providers. Furthermore, TMH allows patients to see their providers from various locations,

which can be at home or a designated area. Although TMH might be advantageous to use, TMH

adoption may not be successful, if patients do not perceive TMH innovation as beneficial (Rogers, 2003). The attribute of relative advantage will be measured by patients' perceived usefulness of TMH, compared to receiving psychiatric services in person. For example, the surveys (Appendix B & C) asks patients if were able to see the provider sooner and rate TMH services, compared to seeing a psychiatric provider in person. Patients who do not perceive that TMH has an advantage compared to seeing patients in person, may not adopt the innovation or be satisfied with TMH services.

Compatibility

Compatibility refers to how the innovation meets the perceived needs of adopters' values and norms of a group of people (Rogers, 2003). The greater the innovation can coincide with potential TMH users' values, the more likely for diffusion and adoption of TMH. For example, patients who would rather see a provider in person due to beliefs that TMH has confidentially flaws, or is not personable, compared to services in person (Zhang et al., 2015). The surveys (Appendix B & C) will ask patients if their information will be heard by others not in the room, which will assess TMH confidentiality. Therefore, the more familiar and educated patients are regarding TMH services, more likely patients will adopt TMH.

Complexity

Complexity is how patients perceive how difficult it is to use TMH (Rogers, 2003). The less complicated TMH is for patients, the more likely that patients will be satisfied with TMH innovation. For example, some patients may not be familiar with computer systems and might feel overwhelmed of the idea of using TMH. The surveys (Appendix B & C) ask the patients if they can hear, see and understand the psychiatric provider, which will assess the complexity of

TMH services. Therefore, evaluating the complexity of TMH is important to see if more

education is needed for TMH users, or TMH service modifications are needed, which may

improve TMH satisfaction (Rogers, 2003).

Trialability and Observability

Trialability measures whether the patient will use the innovation again (Rogers, 2003).

For example, some patients who used TMH services several times might be more likely to use it

again, because they get more comfortable with the innovation as time goes on. However, a

patient who used TMH innovation for the first time might be less likely to use the service again,

if the services were not up their standards. The surveys (Appendix B & C) assess how many

times a patient has used TMH services, which will be compared to the overall satisfaction of

using TMH services. As a patient uses TMH more often, the patient will most likely become

more comfortable with the innovation and may notice that their treatment outcomes are

comparable to receiving psychiatric services in person.

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Synthesis of Evidence

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The Health Resources and Services Administration (HRSA) agency suggests that TMH

improves access to mental health treatment and reduces shortages of mental health providers,

which will increase psychiatric treatment opportunities for patients within rural and underserved

areas (HRSA, 2016). Quality of treatment is associated with patient satisfaction, so a search was

conducted to gain a better understanding of TMH patient and care giver satisfaction.

Several literature searches were conducted to gain a better understanding of patients'

satisfaction while using TMH. The literature searches were conducted within PubMed and

Cumulative Index of Nursing and Allied Health Literature (CINAHL), PsychARTICLES,

PsychINFO, and MEDLINE databases. The following key words were used: "telehealth," "telemedicine," "telemental health," "telepsychiatry," "video conference," "patient satisfaction," and "perceptions." Inclusion criteria for research articles included: published within the last 10 years, English language, all age groups, peer reviewed, and human species. The searches yielded a total of 209 journal articles. Articles were excluded if the research was conducted through telephone, and not the use of a live video of a provider and patient. A total of 11 articles were analyzed and will be applied to the project's purpose (Appendix A).

One systematic review, one-mixed methods study with triangulation, one retrospective study, one qualitative study, and six randomized control trials, were included within the synthesis of evidence. The study samples were drawn from both urban and rural populations from the United States (n=10) and Australia (n=1). Furthermore, the literature synthesis included TMH services provided by therapists (n=7), psychiatrists providing medication management, assessment, and therapy (n=4), adults (n=9, children (n=2), Attention Deficit Hyperactivity Disorder (n=1), Post Traumatic Stress Disorder (n= 3) and studies with multiple psychiatric diagnoses (n= 8). Overall, the search provided more information relating to patient and caregiver satisfaction, such as therapeutic alliance, medication and appointment adherence and psychological functioning.

The synthesis of evidence produced several common themes. Most researchers indicated that patients and care givers reported overall high satisfaction of TMH and therapeutic alliance (Ellington, 2013; Farabee, Calhoun, & Veliz, 2016; Gros, Lancaster, & Lopez, 2018; Jenkins-Guarnieri, Pruitt, Luxton, & Johnson, 2015; McCarty, Stoep, Violette, & Myers, 2015; Morland et al., 2014; Myers et al., 2010; Powell, Henstenburg, Cooper, Hollander, & Rising, 2017;

Shulman, John, & Kane, 2017; Saurman et al. 2011; Whealin et al., 2017). Second, patients

reported that convenience and saving time was the most attractive aspect of TMH services. For

example, patients reported that TMH saves time, compared to driving far distances to see a

provider in an office and reduces long waits to see a local provider (Ellington, 2013). Over 50%

of the evidence consisted of Randomized Controlled Trials and one systematic review, which

increases the strength of the evidence (Polit & Beck, 2017). Furthermore, the researchers who

produced the high level of evidence are in congruence with each other. For example, the five

randomized controlled trials (RCTs) and the systematic review indicate high patient satisfaction,

therapeutic alliance, and convenience of TMH services (Farabee et al. 2016; Gros et al. 2018;

Jenkins-Guarnieri et al., 2015; Mcarty et al. 2015; Morland et al. 2014; Shulman et al. 2017).

The evidence also provided a qualitative study, which provided more depth and richness,

because it allowed patients to provide additional information regarding TMH; which might have

been restricted with researcher generated surveys (Powell et al., 2017). For example, patients

reported delays between audio, video, blurry images and password issues (Powell et al., 2017).

However, patients preferred TMH, because of delays in seeing provider in person, compared to

seeing a provider in person.

Jenkins-Guarnieri et al. (2015) indicate in their systematic review that patient satisfaction

and psychological functioning with TMH was comparable to patients' treatment in person. The

five randomized control trials also indicate no significant differences in patient satisfaction and

psychological functioning for TMH compared to patients receiving treatment in person (Farabee,

et al. 2016; Gros et al., 2018; McCarty et al. 2015; Morland et al., 2014; Myers et al. 2010;

Saurman et al. 2011; Shulman et al. 2017). Other researchers reported high satisfaction of using

TMH, but data did conclude a statistical significance of high patient satisfaction (Ellington,

2013; Myers et al, 2010; Powell et al., 2017; Saurman et al., 2011). Additionally, all researchers

confirmed that therapeutic alliance was high between therapist or psychiatrist except for the RCT

studies completed by Farabee et al. (2016) & Whealin et al. (2017). For example, Farabee et al.

(2016) and Whealin et al. (2017) concluded that other people in the room with the therapist

reduced therapeutic alliance between therapist and the patient during TMH sessions.

While all researchers reported high satisfaction of using TMH, most researchers were not

consistent on reporting what areas of TMH could be improved. For example, Whealin et al.

(2017) reported that TMH provided convenience to a see provider, increased patient treatment

engagement, reduced time traveling to providers, reduced stress, improved confidentiality,

compared to face-to-face visits with provider (Whealin et al. 2017). Additionally, other TMH

areas assessed were technical disruptions, safety issues, and comfortability (Ellington, 2013;

Whealin et al., 2017). Shulman et al. (2017) reported that no significant difference in

appointment adherence compared to treatment as usual group. It is important therefore, to assess

what specific areas that might be beneficial or needs improvement, so clinicians and

organizations can implement better technology and methods to improve TMH satisfaction.

Based on this literature synthesis, patients are satisfied with TMH services, but there is a

weakness or gap in research with assessing TMH satisfaction from patients who receive services

from psychiatric providers. For example, only one research study by (Ellington, 2013) assessed

TMH caregiver satisfaction with a psychiatric provider. The other researchers assessed TMH

patient satisfaction based on receiving therapy as the only modality, which does not encompass

the entire role of a psychiatric provider. Without having a complete assessment of the whole role

of a psychiatric provider while providing TMH, it is impossible to fully comprehend TMH

satisfaction after receiving medication management, therapy and psychiatric evaluations.

Therefore, the gap in research literature on TMH satisfaction supports this program evaluation

project of TMH at Horizon Health and Wellness.

METHODS

Design

This Doctor of Nursing Practice (DNP) project will use an evaluation program design to

determine if patients are satisfied with TMH services and to determine if there is a need for

HTHM, at Horizon Health and Wellness. It is unknown if home TMH services at Horizon Health

and Wellness are needed and if patients are satisfied with current services, so a program

evaluation design is appropriate (Polit & Beck, 2017).

Setting and Population

The program evaluation will take place at Horizon Health and Wellness outpatient

facility, which is a nonprofit integrated health care agency in Casa Grande, Arizona (HHW,

2019). Casa Grande resides within Pinal County, which is east of metro-Phoenix area, near the

Superstition Mountains (Pinal County, n.d.). Pinal county has a population of approximately

418,000, and mostly white (57%), followed by Hispanic (29%), and Native Americans (4.6%)

(Data USA, 2019). Pinal County has a poverty rate of approximately 15% (Data USA, 2019).

Such an extreme rate of poverty can make it difficult for people to access physical and mental

healthcare services. Horizon Health and Wellness helps underserved and rural patients who may

have trouble paying for health services (HHW, 2019). The organization provides inpatient,

outpatient and residential mental health services in Pinal, Gila, and Yuma counties (HHW,

2019). This DNP project will focus on outpatient TMH services, which provide psychiatric

assessments, brief therapy, counseling, and medication management to children and adults

(HHW, 2019). The current stakeholders consist of the CMO, nurse practitioners, psychiatrists

and patients.

Sample

The sample method will consist of a convenience method, which includes patients who

voluntarily agree to participate to fill out a survey, after a TMH session (Polit & Beck, 2017).

The project will include a purposive sample of mental health patients, which includes children (5

to 11), adolescents (12 to 21), adults (18 and older) and caregivers who receive TMH services.

The exclusion criteria will consist of patients who do not speak or understand English, and

patients who are mentally uncapable of weighing the pros and cons of participating in the study.

Currently, there is not a sample size or response rate determined to fulfill significance for the

program evaluation; however, the surveys will be handed out to patients for one month (Polit &

Beck, 2017).

Measurement Instrument

The adult survey (Appendix B) and parental survey (Appendix C) was adopted from

previous research and Roger's Diffusion of Innovation Theory framework (Ellington, 2013,

Meyers et al., 2008; Rogers, 2003). The surveys will evaluate patients' overall satisfaction of

TMH based on the following, ease of use, timeliness of seeing a provider, willingness to use

services again, number of times using TMH, technology itself, confidentiality, perceptions of

TMH, compared to in person care, mobility status, and willingness to use home TMH (Ellington,

2013; Farabee et al., 2016; Jenkins et al., 2016; Moreland et al., 2014; Myers et al., 2008).

Furthermore, the surveys will assess if the patients would rather have TMH services within their home and if they have high-speed internet. The surveys have not been validated or tested for reliability, but the questions have been adapted from previous research and Roger's Theory of Innovation (Rogers, 2003). The patients' responses to the 15 questions will be made on a 5-point Likert scale with, '1' representing, strongly disagree, and '5' indicating, strongly agree (Ellington, 2013). The survey also will collect demographic data such as gender, age, and diagnosis. Furthermore, an open-ended question will be asked to see if there are any issues that the parents and patients feel that are important for Horizon Health and Wellness staff to know, interest in home TMH, transportation issues, and number of times using TMH, which is a total of 19 questions on each survey (Polit & Beck, 2017).

Data Collection and Analysis

The patients will be encouraged to participate in a short survey by Horizon Health and Wellness personnel after their TMH session. Prior to patients receiving the survey, they will receive a disclosure statement (Appendix D), which will explain the purpose, process, benefits, disadvantages, and confidentiality of the surveys. The patients will be asked if he or she wants the staff to read the survey and disclosure statement, and if they need assistance filling out the survey. Each patient will fill out the survey and staff will help them, if patients request assistance. Patients who are 5 to 17 years old will need to complete the parental survey with a parent or caregiver. Patients who are 18 or older, may fill out the adult surveys independently. The paper surveys will be distributed for one month by Justin Schwarting, and medical assistants at Horizon Health and Wellness. I (Justin Schwarting) will collect the surveys from patients and Horizon Health and Wellness staff and patients, and the surveys will be put in a locked container.

The data from surveys will be entered in a password protected excel spreadsheet and then each survey will be shredded at the closure of the project in December. Each question will be averaged to determine the mean for each question and common issues and differences between child, adolescents and adults. The open-ended question will be reviewed for content themes. The data will be sent to the CMO as an executive summary.

Budget and Timeline

No budget is required for this DNP project; I (Justin Schwarting) will collect the data and printed surveys are at no cost. Additionally, patients will not receive compensation for completing surveys. The project is estimated to be finished by October of 2019.

Ethical Considerations

To complete this project, approval through the University of Arizona Institutional Review Board (IRB) is needed (Appendix E). Furthermore, Dr. Arthur Chou and committee members, will approve for implementation of DNP project at Horizon Health and Wellness. Prior to patients completing the survey, a disclosure statement will provide full disclosure to patients of the likely risks and benefits of the project (Polit & Beck, 2017). Participants' name or identifying information will not be asked, which will provide confidentiality (Polit & Beck, 2017). The patients have a right to participate and withdraw anytime, which will provide autonomy, self-determination, free of coercion and prejudicial treatment (Polit & Beck, 2017). Furthermore, the caregiver's consent and children's assent will be granted before given a survey (Polit & Beck, 2017). Participants who are mentally incapable of weighing the risks and benefits of the project, will not be asked to participate in the project (Polit & Beck, 2017).

RESULTS

The surveys (Appendix B & C) were distributed to seven sites over one month (7/29/19 through 8/23/19), and Horizon Health and Wellness staff distributed all surveys to reduce bias. Each site was contacted via email the first, second and last week to check in and see if they need additional support or if they have questions. A total of 121 surveys collected from participants, 10 incomplete surveys were removed from analysis. In addition, there were incomplete data for the following questions: four (4) on age, four (4) on gender, and 15 on (Item 1) questions were not completed. The surveys with the incomplete questions on age, and gender were not added to the analysis; however, the rest of the data on the incomplete Item 1 questions were added to the analysis. Of the 111 surveys, 54 were male, 53 female, 26 children/adolescents (23%) and 85 adults (77%). The age ranged from 6 to 65 years old. The satisfaction of TMH was measured with a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree and 3 = neural. Scores with a '4' or higher reflect a more favorable satisfaction toward TMH and scores below '3' indicate less favorable satisfaction toward TMH (Roush, 2019).

The most common diagnoses were bipolar disorder (23), anxiety (18), depression (19), attention deficit hyperactivity disorder (ADHD) (14) and post-traumatic stress disorder (PTSD) (8). Other diagnoses patients listed were schizoaffective disorder (6), schizophrenia (4), borderline personality disorder (BPD) (4), court ordered treatment (3), autism (2), substance abuse (2), obsessive compulsive disorder (2), oppositional defiance disorder (1), and disruptive mood dysregulation disorder (1). Almost half (N=50) of the surveys did not have a diagnosis or mental health issue listed. Court ordered treatment, autism, substance abuse, obsessive compulsive disorder, oppositional defiance disorder, and disruptive mood dysregulation disorder

diagnoses were not added to the analysis; because of low sample sizes. Most patients indicated they had multiple diagnoses on the surveys. If the patient listed depression and bipolar on the same survey, then it was categorized as bipolar disorder. Additionally, when schizoaffective, depression and or bipolar were on the same survey then they were categorized as schizoaffective disorder.

Parental and Adult Satisfaction

Overall, there was a high satisfaction towards TMH services, as shown in Table 1. In fact, 11 of the 14 items show a mean overall score of 4.0 or more across patient age (Table 1). Item 9 "I would have not received psychiatric services without telemental health" shows the lowest score of 3.65 with a standard deviation of 1.39, and item 8 "Telemental health allowed me to see a specialist sooner than in person" scored an overall mean score of 3.79 with a standard deviation of 1.23, which suggests that participants have other options to see providers (Table 1; Table 2).

TABLE 1. *Overall results.*

Item	Children Adolescents Adults	Adults	Children Adolescents
	Mean Score		
1. The amount of time waiting for appointment was acceptable.	4	4.05	3.84
2. Telemental health technology is easy to use.	4	3.88	4.46
3. I could talk comfortably with the telemental health provider on the television.	4.04	3.96	4.30
4. I could see the telemental health provider.	4.14	4.08	4.34
5. I could hear the telemental health provider	4.17	4.1	4.38
6. I could understand the telemental health provider recommendations.	4.18	4.11	4.38
7. I felt the telemental health provider was comfortable with seeing me over the television.	4.2	4.11	4.5
8. Telemental health allowed me to see a specialist sooner than in person.	3.79	3.67	4.19
9. I would not have received psychiatric services without telemental health.	3.65	3.48	4.23
10. I will receive the help I need because of my visit today.	4.28	4.16	4.26
11. The telemental health visit was as confidential as a regular in-person visit.	4.07	3.94	4.5
12. The telemental health visit was as good as a regular in-person visit.	**3.95**	**3.81**	4.42
13. I would be willing to see a telemental health provider again in the future.	4.16	4.05	4.5
14. Overall, I am very satisfied with services today.	**4.33**	**4.25**	**4.57**

Overall, the majority of responses were "agree" and "strongly agree" on all the items,
which shows most participants were satisfied with TMH services (Table 2). Although the
majority strongly agreed or agreed on Items 8, 10 and 12, the items show that more participants
strongly disagreed or disagreed with TMH services, compared to services with a live provider.

TABLE 2. *Children, adolescents, adults*

Category	Std. deviation	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Item 1	0.944357	1.80%	3.60%	22.52%	36.04%	36.04%
Item 2	1.08602	4.50%	4.50%	17.12%	31.53%	42.34%
Item 3	1.14991	7.21%	1.80%	15.32%	30.63%	45.05%
Item 4	1.07256	5.41%	1.80%	13.51%	31.53%	47.75%
Item 5	1.08946	5.41%	2.70%	11.71%	29.73%	50.45%
Item 6	1.06131	5.41%	0.90%	13.51%	29.73%	50.45%
Item 7	1.11595	6.31%	0.90%	13.51%	24.32%	54.95%
Item 8	1.23111	**8.11%**	6.31%	20.72%	27.93%	36.94%
Item 9	1.30485	**11.71%**	3.60%	27.03%	22.52%	35.14%
Item 10	0.981941	3.60%	0.90%	16.22%	31.53%	47.75%
Item 11	1.12875	6.31%	2.70%	14.41%	30.63%	45.95%
Item 12	1.16547	**8.11%**	2.70%	13.51%	36.94%	38.74%
Item 13	1.06999	5.41%	3.60%	7.21%	36.94%	46.85%
Item 14	0.883618	2.70%	0.00%	11.71%	**32.43%**	**53.15%**

Overall, all age groups were satisfied with TMH services; however, age group of 13-17 scored the highest with an overall average of 4.8 on overall satisfaction (Table 3). Item 13, "The telemental health visit was good as a regular in-person visit" scored just below a '4' (which was 3.95). The children and adolescent age groups scored high on Items 9 and 10, which indicate the participants view TMH services as favorable, compared to receiving psychiatric services in person. However, adults' participants (18-59) scored below a 4 on Items 9 and 10.

TABLE 3. *Overall age results.*

	Mean Score			
Item	6-12	13-17	18-59	>60
1. I am interested in using home telemental health services.	3.23	1.8	3.23	4.4
2. The amount of time waiting for appointment was acceptable.	**3.85**	4	4.02	4.6
3. Telemental health technology is easy to use.	4.42	4.6	**3.87**	4
4. I could talk comfortably with the telemental health provider on the television.	4.23	4.6	3.98	3.6
5. I could see the telemental health provider.	4.28	4.6	4.08	4
6. I could hear the telemental health provider.	4.33	4.6	4.1	4.2
7. I could understand the telemental health provider recommendations.	4.33	4.6	4.11	4.2
8. I felt the telemental health provider was comfortable with seeing me over the television.	4.52	4.4	4.11	4.2
9. Telemental health allowed me to see a specialist sooner than in person.	4.09	4.6	**3.67**	**3.6**
10. I would not have received psychiatric services without telemental health.	4.23	4.2	**3.41**	4.6
11. I will receive the help I need because of my visit today.	4.19	4.6	4.11	5
12. The telemental health visit was as confidential as a regular in-person visit.	4.42	4.8	**3.88**	4.8
13. The telemental health visit was as good as a regular in-person visit.	4.38	4.6	**3.77**	4.4
14. I would be willing to see a telemental health provider again in the future.	4.47	4.6	4.01	4.8
15. Overall, I am very satisfied with services today.	4.52	**4.8**	4.23	4.6

More than 90% of children were highly satisfied with TMH services with no one disagreeing with services on Item 15 (Table 4). On Item 1, over 28% of participants were not in favor of home telemental health services.

TABLE 4. *Children (6-12).*

Category	Std. deviation	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Item 1	1.63021	**28.57%**	4.76%	14.29%	19.05%	33.33%
Item 2	0.989743	4.76%	4.76%	14.29%	52.38%	23.81%
Item 3	0.728431	0.00%	0.00%	14.29%	28.57%	57.14%
Item 4	0.749906	0.00%	0.00%	19.05%	38.10%	42.86%
Item 5	0.764875	0.00%	0.00%	19.05%	33.33%	47.62%
Item 6	0.835711	0.00%	4.76%	9.52%	33.33%	52.38%
Item 7	0.835711	0.00%	4.76%	9.52%	33.33%	52.38%
Item 8	0.663257	0.00%	0.00%	9.52%	28.57%	61.90%
Item 9	1.06479	4.76%	4.76%	9.52%	38.10%	42.86%
Item 10	0.810923	0.00%	0.00%	23.81%	28.57%	47.62%
Item 11	1.09627	4.76%	4.76%	9.52%	28.57%	52.38%
Item 12	0.728431	0.00%	0.00%	14.29%	28.57%	57.14%
Item 13	0.785353	0.00%	4.76%	4.76%	38.10%	52.38%
Item 14	0.663257	0.00%	0.00%	9.52%	33.33%	57.14%
Item 15	0.663257	0.00%	0.00%	9.52%	**28.57%**	**61.90%**

Adolescents age group were the most satisfied of all age groups (Table 5). On item 15, 100% of the participants were satisfied. In fact, the only item adolescents to disagree with services were for the interest in home TMH services.

TABLE 5. *Adolescents (13-17).*

Category	Std. deviation	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Item 1	0.979796	**60.00%**	0.00%	40.00%	0.00%	0.00%
Item 2	0.632456	0.00%	0.00%	20.00%	60.00%	20.00%
Item 3	0.489898	0.00%	0.00%	0.00%	40.00%	60.00%
Item 4	0.489898	0.00%	0.00%	0.00%	40.00%	60.00%
Item 5	0.489898	0.00%	0.00%	0.00%	40.00%	60.00%
Item 6	0.489898	0.00%	0.00%	0.00%	40.00%	60.00%
Item 7	0.489898	0.00%	0.00%	0.00%	40.00%	60.00%
Item 8	0.8	0.00%	0.00%	20.00%	20.00%	60.00%
Item 9	0.8	0.00%	0.00%	20.00%	0.00%	80.00%
Item 10	0.489898	0.00%	0.00%	0.00%	40.00%	60.00%
Item 11	0.489898	0.00%	0.00%	0.00%	40.00%	60.00%
Item 12	0.4	0.00%	0.00%	0.00%	20.00%	80.00%
Item 13	0.4	0.00%	0.00%	0.00%	20.00%	80.00%
Item 14	0.489898	0.00%	0.00%	0.00%	40.00%	60.00%
Item 15	0.4	0.00%	0.00%	0.00%	**20.00%**	**80.00%**

As shown in table 6, about 83% of adults were satisfied with TMH services, and only 3.75% disagreed on item 15. The highest disagreement for services were on item 9 and 10, which indicates patients perceived that TMH services did not allow them to see a provider sooner, and live providers were available.

TABLE 6. *Adults (18-59).*

Category	Std. deviation	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Item 1	1.42516	21.25%	5.00%	26.25%	23.75%	23.75%
Item 2	0.961444	1.25%	3.75%	26.25%	28.75%	40.00%
Item 3	1.11102	5.00%	6.25%	20.00%	33.75%	35.00%
Item 4	1.21957	8.75%	2.50%	15.00%	28.75%	45.00%
Item 5	1.1202	6.25%	2.50%	13.75%	31.25%	46.25%
Item 6	1.12472	6.25%	2.50%	13.75%	30.00%	47.50%
Item 7	1.10673	6.25%	1.25%	15.00%	30.00%	47.50%
Item 8	1.17254	7.50%	1.25%	15.00%	25.00%	51.25%
Item 9	1.25275	**8.75%**	**7.50%**	25.00%	25.00%	33.75%
Item 10	1.34809	**16.25%**	**3.75%**	28.75%	25.00%	26.25%
Item 11	0.974599	3.75%	0.00%	20.00%	33.75%	42.50%
Item 12	1.21443	8.75%	3.75%	16.25%	32.50%	38.75%
Item 13	1.24474	11.25%	2.50%	16.25%	37.50%	32.50%
Item 14	1.17786	7.50%	5.00%	8.75%	36.25%	42.50%
Item 15	0.938666	3.75%	0.00%	12.50%	**36.25%**	**47.50%**

Although a low sample size of 5, a total of 80% of 60 and older adults were satisfied with TMH services (Table 7). In fact, the only age group not to disagree with interest in home TMH services were 60 and older group.

TABLE 7. *Adults (60 and older).*

Category	Std. deviation	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Item 1	0.8	0.00%	0.00%	20.00%	**20.00%**	**60.00%**
Item 2	0.489898	0.00%	0.00%	0.00%	40.00%	60.00%
Item 3	1.54919	20.00%	0.00%	0.00%	20.00%	60.00%
Item 4	1.49666	20.00%	0.00%	20.00%	20.00%	40.00%
Item 5	1.54919	20.00%	0.00%	0.00%	20.00%	60.00%
Item 6	1.6	20.00%	0.00%	0.00%	0.00%	80.00%
Item 7	1.6	20.00%	0.00%	0.00%	0.00%	80.00%
Item 8	1.6	20.00%	0.00%	0.00%	0.00%	80.00%
Item 9	1.49666	20.00%	0.00%	20.00%	20.00%	40.00%
Item 10	0.8	0.00%	0.00%	20.00%	0.00%	80.00%
Item 11	0.0	0.00%	0.00%	0.00%	0.00%	100.00%
Item 12	0.4	0.00%	0.00%	0.00%	20.00%	80.00%
Item 13	0.8	0.00%	0.00%	20.00%	20.00%	60.00%
Item 14	0.4	0.00%	0.00%	0.00%	20.00%	80.00%
Item 15	0.8	0.00%	0.00%	20.00%	0.00%	**80.00%**

As shown in Table 8, males and females were satisfied with TMH services of an overall mean score of 4.33 (males) and 4.22 (females). However, males scored '4' or less on items #3 (comfort), #8 (seeing a provider sooner), #9 (receiving the help on visit), #11 (confidentiality), and #12 (TMH good as in person visit). Females scored less than '4' on items #2 (wait time), #8 (seeing a provider sooner), and #9 (Receiving the help on the visit). It appears overall, males and

females were satisfied with the TMH services, but scored TMH lower, compared to seeing a

provider in person, which is the same findings of the overall mean scores of children, adolescents

and adults.

TABLE 8. *Gender results*.

	Mean Score	
Item	Males	Females
1. The amount of time waiting for appointment was acceptable.	4.16	3.84
2. Telemental health technology is easy to use.	4.05	4.0
3. I could talk comfortably with the telemental health provider on the television.	3.98	4.15
4. I could see the telemental health provider.	4.05	4.28
5. I could hear the telemental health provider.	4.07	4.32
6. I could understand the telemental health provider recommendations.	4.07	4.33
7. I felt the telemental health provider was comfortable with seeing me over the television.	4.09	4.37
8. Telemental health allowed me to see a specialist sooner than in person.	3.68	3.84
9. I would not have received psychiatric services without telemental health.	3.81	3.47
10. I will receive the help I need because of my visit today.	4.12	4.16
11. The telemental health visit was as confidential as a regular in-person visit.	3.88	4.24
12. The telemental health visit was as good as a regular in-person visit.	3.88	4.01
13. I would be willing to see a telemental health provider again in the future.	4.12	4.2
14. Overall, I am very satisfied with services today.	4.33	4.22

Relative Advantage and Compatibility

Although participants were satisfied with TMH services (4.33), participants' overall

mean score of TMH compared to in person visit was a 3.95 (Table 1). However, over 75% of

participants agreed or strongly agreed that TMH services were good as an in-person visit (Table

2). Although participants felt that they could have received services without TMH (3.65), and

TMH did not allow them to see a provider sooner (3.79); most of the participants agreed and

strongly agreed (Table 2). Furthermore, participants are willing to use TMH again (4.16) and

confidentiality compared to in person visit had an overall mean score of 4.07.

Trialability, Observability and Complexity

As participants used TMH services more, participants' satisfaction improved in all the

items, except on one item, as shown in Table 9. The only aspect of TMH satisfaction of services

that did not improve was the amount of time waiting for TMH appointments with an overall

mean score that went from 4.0 to 3.84 (Table 9). Additionally, as participants used TMH services

more, perceptions of seeing a provider sooner (Item 9) and would have not received services

without TMH (Item 10) improved. Participants willingness to see a TMH provider again and

comparing TMH services to a live provider had an overall mean score of 4 or higher while using

TMH services more than ten times.

TABLE 9. *Trialability results.*

Item	1 to 5	6 to 10	>10
1. I am interested in using home telemental health services.	2.81	**3.53**	**3.53**
2. The amount of time waiting for appointment was acceptable.	**4.0**	**4.05**	**3.84**
3. Telemental health technology is easy to use.	4.0	3.88	**4.46**
4. I could talk comfortably with the telemental health provider on the television.	4.04	3.96	**4.3**
5. I could see the telemental health provider.	4.14	4.08	**4.34**
6. I could hear the telemental health provider.	4.17	4.1	**4.38**
7. I could understand the telemental health provider recommendations.	4.18	4.11	**4.38**
8. I felt the telemental health provider was comfortable with seeing me over the television.	4.2	4.11	**4.5**
9. Telemental health allowed me to see a specialist sooner than in person.	3.79	3.67	**4.19**
10. I would not have received psychiatric services without telemental health.	3.65	3.48	**4.23**
11. I will receive the help I need because of my visit today.	4.18	4.16	**4.26**
12. The telemental health visit was as confidential as a regular in-person visit.	4.07	3.94	**4.5**
13. The telemental health visit was as good as a regular in-person visit.	3.95	3.81	**4.42**
14. I would be willing to see a telemental health provider again in the future.	4.16	4.05	**4.5**

Home Telemental Health

A total of 111 participants responded to the home TMH question (Item 3; Table 13) and

participants who used TMH 1-5 (n=49), 6-10 (n=15), and >10 times (n=37) (Table 9). Overall,

mean score for interest in home telemental health was 3.18 (Table 10). Additionally, as shown in

Table 4 ,5 and 6, 28% of Children, 60% of Adolescents and 21% of Adults strongly disagreed for

the interest in home telemental health services. However, 17 patients indicated that they

struggled with transportation (Item 1) with a mean score of 4.27, which shows a higher interest

in home TMH, compared to patients who did not struggle with transportation. In fact, 58% of

participants who need transportation strongly agree in the interest in home telemental health

services (Table 11). Participants who do not need transportation, 27% strongly disagree in the

interest in home telemental health services (Table 11). Additionally, participants who were 60

and older, had an overall mean score of 4.4, compared to 3.23 for 0-12 and 18-59 years old

(Table 3). In fact, no one strongly disagreed or disagreed for interest in telemental health for 60

and older (Table 7). The age range of 13-17 scored an overall mean score of 1.8. Furthermore,

patients who used TMH six or more times, they had an overall mean of 3.53, compared to

participants who used TMH 1 to 5 times scored an overall mean of 2.81 (Table 9).

TABLE 10. *Home telemental health results – Interest.*

	Mean Score	
Item	Transportation Not Needed	Transportation Needed
1. I struggle with getting transportation for my appointments.	No = 95	Yes = 16
2. I have internet services at home.	Yes = 71 (74.7%) No = 24 (25.2%)	Yes = 9 (56.2%) No = 7 (43.8%)
3. I am interested in home telemental health services.	3.18	4.27

TABLE 11. *Home telemental health results - Transportation.*

Grouping	Std. deviation	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Transportation Needed	1.07182	5.88%	0.00%	11.76%	23.53%	**58.82%**
Transportation Not Needed	1.46629	**27.00%**	12.00%	25.00%	16.00%	20.00%

Psychiatric Diagnoses

The sample size was low for most of the diagnoses, however, patients with Schizophrenia

scored a 3.75 on overall satisfaction, compared to patients with other diagnoses scored a '4' or

higher (Table 15). While comparing telemental health services to in person visits (Item 13),

patients with bipolar, depression, PTSD, and Schizoaffective disorder scored below a '3.'

Additionally, patients with ADHD, bipolar, depression, PTSD, and schizoaffective indicated that

that telemental health services did not allow them to see a provider sooner than person. Most of the patients felt the provider was comfortable with patient, could understand, hear, see and talk with provider and technology is easy to use. However, patients with schizoaffective disorder scored an average below '4' on items 3 through 9. The patients with ADHD, anxiety, bipolar, borderline personality disorder, depression, and schizoaffective disorder scored a '3' or higher (Item 1) for interest in home telemental health and patients with schizophrenia and PTSD indicated a '3' or lower.

TABLE 12. *Psychiatric diagnoses.*

Item	ADHD	Anxiety	Bipolar	Borderline	Depression	PTSD	Schizoaffective	Schizophrenia
1.	3.28	3.27	3.21	3	3.36	**2.75**	3	**2.5**
2.	**3.71**	**3.94**	**3.73**	4.25	**3.78**	**3.5**	4.5	4.25
3.	4.5	4.16	**3.91**	4.75	4.05	**3.75**	**3.33**	4
4.	4.21	4.33	4.21	4.25	421	**3.62**	**3.5**	**3.75**
5.	4.35	4.44	4.34	5	4.57	4	**3.5**	4.75
6.	4.35	4.55	4.39	5	4.57	**3.75**	**3.5**	4.75
7.	4.35	4.5	4.34	5	4.52	**3.75**	**3.5**	4.75
8.	4.42	4.61	4.39	5	4.52	4	**3.5**	**3.25**
9.	**3.78**	4	**3.56**	5	**3.84**	**3.62**	**3.16**	4
10.	**3.64**	**3.5**	**3.52**	**3.75**	**3.52**	**3.12**	4.66	**3.75**
11.	4.35	4.22	**3.95**	5	4.36	**3.87**	4.83	4.25
12.	4.42	4.38	4.21	5	4.26	**3.87**	4.16	4.5
13.	4.28	4.16	**3.91**	4.75	**3.88**	**3.37**	**3.33**	4
14.	4.42	4.5	4.26	5	4.42	3.5	4.16	4.25
15.	4.71	4.72	4.26	5	4.57	4	4.66	**3.75**

Narrative Responses

Participants' responses to the open-ended question "Is there anything else that you would like to tell us that would help us improve telemental health services for you?" was limited to only five responses, however, most of the comments were positive towards TMH services. For example, participants stated "Thank you for taking care of my child," "Please do not get rid of telemental health services! I love my providers; I would not come here without telemental health services." However, some participants complained of telemental health services lacking a human element, and the computer screen freezing. The comments suggest that participants are mostly

satisfied with TMH services, but they also like seeing a provider in person, which aligns with the overall means scores of this project.

DISCUSSION

This program assessment of TMH services helps solidify the claims from previous research that patients are satisfied with TMH while receiving medication management and psychiatric evaluations from psychiatric providers (Ellington 20013; Meyers et al., 2008). Although Ellington (2013) and Meyers et al. (2008) indicate parents were satisfied TMH services from psychiatric providers, this project appears to be the only data available to assess parents, adults, gender, need for home TMH and comparisons of TMH use over time. Most of the research conducted was on satisfaction of TMH from telepsychologists and teletherapists, so this data helps reduce the gap in information regarding patients' and parents' satisfaction in TMH services from psychiatric providers.

While age groups 0-12, 13-17 and >60 believe that TMH services are just as good as in person, patients who are 18-59, they would prefer to see a provider in person. The most satisfied with TMH services is the age range of 13-17, which may indicate that the younger generation are more satisfied with TMH services, compared to age range of 18-59. However, a small sample size (N=5) of 60 and over also indicated a high score of TMH services, compared to in person psychiatric services.

Relative Advantage and Compatibility

Researchers of future studies need to gain more insight to see what factors lead patients to be reluctant to use TMH services at home. Overall, it appears that adults perceive TMH services worse than seeing providers in person, which provides little relative advantage. Parents

of children and adolescents, however, perceive TMH services to be as good as seeing a provider in person, which shows a high relative advantage. It is possible that parents of children and adolescents may have a harder time seeing live providers, compared to adults. This may reduce the capability of comparing TMH services and live providers. Furthermore, participants who had built a rapport with a live provider may have not seen the advantage of seeing a TMH provider, which could reduce satisfaction scores of TMH. Overall, participants perceive that they could receive psychiatric services without TMH services. The participants' lack of awareness of the limited availability of live providers may be the result of low scores of seeing providers sooner with TMH services. The TMH services appears to have high compatibility with participants. For example, TMH aligns with participants' values and norms, because they are willing to use TMH again and they are satisfied with confidentiality of TMH services.

Trialability, Observability and Complexity

Although participants scores improved with comfort, talking, visual, hearing, understanding and perceived help, the scores for confidentiality, ease of use, and comparisons of TMH service to in person visits did not improve over time. The participants may have been confused on what the question meant. For example, using TMH 1-5 times, possibly could have meant the number of times using TMH that day. The surveys probably need to be modified in the future to get a better picture of how using TMH over time impacts trialability.

Psychiatric Diagnoses

Most of the patients were satisfied with telemental health services except for schizophrenia and PTSD, however, there was a low sample size for most of the diagnoses. In fact, half the participants did not report a diagnosis. For example, borderline personality disorder

(n=4), schizoaffective disorder (n=6), schizophrenia (n=6), PTSD (n=8) were low in sample size, so there may not be a true representation of how patients with those diagnoses feel about telemental health services. Additionally, patients self-reported the diagnoses on surveys; so, patients may have put down a false diagnosis. However, patients with anxiety, depression, ADHD, and borderline personality disorder appear to be satisfied with telemental health services, compared to the other diagnoses listed. The question "I would have not received psychiatric services without telemental health services" scored below '4' for all diagnoses, except patients with schizophrenia. Again, this suggests that patients may not be aware that live providers are not available. More education to patients that live providers are not available may provide more awareness of in person provider shortages. With more investigation, identifying diagnoses might be a good way for Horizon Health and Wellness to identify laggards in the future.

Suggested Improvements

It is important to implement home TMH services for patients who are interested in home TMH and struggle to get to their appointments. Although all age groups of participants indicated a score of '3' or lower of interest in home TMH, participants who are 60 and over and those who struggle with transportation are highly interested in home TMH services with a score of '4' or higher. Patients who are 60 and over may have immobility issues that makes it harder to go to their appointments. Therefore, initially, identifying patients with immobility, and those who struggle with transportation might be a good start with implementing a home TMH program. The home TMH program might reduce no show rates, improve patient outcomes, and reduce hospital discharge and appointment no show rates.

Additionally, further assessment is needed to see how home TMH compares to in person care and facility TMH services. The current assessment of comparing in person care to TMH is not a true assessment of all the relative advantages of TMH technology could provide. For example, with both services, patients need drive to the same facility, so no time or money savings occur for patients.

Conclusion

This DNP project shows the need for future implementation of a home TMH program at Horizon Health and Wellness. The program evaluation results also show that participants are highly satisfied with TMH services but appears that seeing a live provider is more preferred for adults. However, with implementation of home TMH, that may change the perceptions of TMH compared to live provider services for adults, because patients will be able to benefit from all the advantages of TMH services. Importantly, the results of this program evaluation provide a foundation for future studies examining parental and adult TMH satisfaction of medication management provided by psychiatric providers.

APPENDIX A:

SYNTHESIS OF EVIDENCE

Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
Elington, E. (2013). Telepsychiatry by APRNs: an answer to the shortage of pediatric providers? *Issues in mental health nursing. 34*, 719-721. doi: 10.3109/01612840.2013.784386	No hypotheses or question indicated	Evaluation	**Sample:** 125 patient encounters, 75 unique patients, boys: 79, girls: 46 Age: 4 to 17 years old **Setting:** Outpatient community mental health clinic in Arizona	**Data Collection:** Parental Satisfaction surveys over 3 months, modified survey from Myers, Valentine & Melzer (2008) **Data Analysis:** Excel spreadsheet, average scores	54/75 (72%) surveys completed. Very satisfied with quality of services= 4.69/5 average score suggest the services in the future: 4.63/5 average score Enabled child to see provider sooner: lowest score: 3.90/5
Farabee, D., Calhoun, S., & Veliz, R. (2016). An experimental comparison of telepsychiatry and conventional psychiatry for parolees. *Journal of Psychiatry Services. 67*(5).	Effectiveness of telepsychiatry for offenders with psychiatric disorders?	Randomized Control Trial	**Sample:** 104 adults, Male=77, Female= 27 40(Hispanic), 30(African American), 29(non-Hispanic,white) Age years (s.d): 38.1 ± 10.3 years **Setting:** University of California, outpatient	**Data Collection:** Baseline and 6-month follow-up interviews, participants were paid $25 for each interview, baseline: conducted in person by staff researchers within 7 days of consent. Follow up: interview conducted by phone, assessed: therapeutic alliance, medication adherence (Morisky Medication Adherence Scale),	Telepsychiatry compared to face-to face: psychological functioning: BSRS-5 scores: no significant effects Medication adherence: similar results to each group Telepsychiatry group: Levels of satisfaction: High on each subscales: quality of care: (3.7 ± 1.3); similarity of face-to-face encounters: (4.0 ± 1.3), average ratings exceeded

Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
				psychological functioning (Brief Rating Scale-BSRS-5), and satisfaction with telemedicine (telemedicine satisfaction questionnaire) (randomly selected to telepsychiatry or face-to-face treatment- ID #, even or odd) **Data Analysis:** 40 (telepsychiatry condition), 64 (face to face, control condition) Repeated measures analysis of variance	midpoint of 3, =neutral favorable perceptions of telepsychiatry **Limitations:** 6 month period, did not compare groups satisfaction levels, unequal group sizes, did not compare Telepsychiatry to face-to-face satisfaction
Gros, F., Lancaster, C.L., Lopez, C.M., & Acierno, R. (2018). Treatment satisfaction of home-based telehealth versus in-person delivery of prolonged exposure for combat-related PTSD in veterans. *Journal of Telemedicine and Telecare. 24*(1). 51-55. doi:10.1177/1357633X16671096 journals.sagepub.com/home/jtt	Is telehealth service equally received and accepted by patients with PTSD, and result in similar levels of patient satisfaction? Hypothesis: no difference in satisfaction levels between in person and home-based telehealth services.	Randomized Control Trial	**Sample:** 67 veterans Mean age: 44 Male: 94%, Female: 6% **Setting:** Community outpatient clinic at southeastern VA	**Data Collection:** 1-week post-test assessment of satisfaction (SDPQ) and overall perceptions (CPOSS) of telehealth of in person vs telehealth	Significant effect of tx modality on SDPQ telehealth travel item (F=5.1; P=0.029), willing to travel further for telehealth compared to in person tx No significant effects

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Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
			medical center and participant's home	**Data Analysis:** Analysis of covariance (ANCOVA), separate ANCOVAs on SDPQ & CPOSS subscales	of modality on perception of quality and satisfaction of services (F>2.1; p<0.16) Limitations: Limited to veterans with PTSD, majority was male.
Jenkins-Guarnieri, M.A., Pruitt, L.D., Luxton, D.D., & Johnson, K. (2015). Patient perceptions of telemental health: systematic review of direct comparisons to in-person psychotherapeutic treatments. *Journal of Telemedicine and e-health. 21* (8). doi:10.1089/tmj.2014.0165	What is patient satisfaction receiving telemental health compared to patients receiving in person treatment?	Systematic Review	**Sample:** 14 articles (9 RCTs, **Setting:**	**Data Collection:** PyscINFO, Ovid, MEDLINE databases. **Data Analysis:**	Four studies = no statistically significant difference in patient satisfaction in study and control groups Six studies= no statistically difference in therapeutic alliance 1 study found statistically significant better results of therapeutic alliance of in person group
McCarty, C.A., Stoep, A.V., Violette, H., & Myers, K. (2015).	Videoconferencing with telpsychiatrists and therapists will improve children's ADHDs symptoms and caregivers will be satisfied with treatment modality	Randomized Control Trial	**Sample:** 111 children (5.5 to 12 years old) and caregivers 8 tele psychiatrists and 8 therapists	**Data Collection:** Client Satisfaction Questionnaire **Data Analysis:** Averaged scores	Mean score of satisfaction= 38 (range 27-40) out of possible 40.

Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
			provided six sessions spread apart 3 to 4 weeks with telepsych and caregiver behavior training through videoconferencing

Setting:
7 communities in Washington & Oregon | from questionnaire | |
| Morland, L.A., Mackintosh, M.A., Greene, J.C., Rosen, C.S., Chard, M.K., ... Frueh, C.B. (2014). Cognitive processing therapy for posttraumatic stress disorder delivered to rural veterans via telemental health: a randomized noninferiority clinical trial. *Journal of Clinical Psychiatry.* 75(5). | Will videoconferencing be as effective and "as good as" in-person delivery? | Randomized Control Trial

Modality: Cognitive Processing therapy via video compared to in person | **Sample:**
Rural PTSD patients, Videoconferencing group: 61
In Person Group: 64

Setting: | **Data Collection:**
PTSD severity, measured by clinician administered PTSD scale
Assessments at baseline, mid treatment, posttreatment, and 3- and 6-months post treatment

Data Analysis: | Significant PTSD symptom reductions at posttreatment (Cohen d=0.78, P,0.05)

High levels of therapeutic alliance, treatment compliance, and satisfaction, and moderate levels of treatment expectations, no differences between groups (F < 1,9, P > .17) |
| Myers, K.M., Stoep, A.V., McCarty, C.A., Klein, J.B., Palmer, B.N., Geyer, J.R& Melzer, S.M. (2010). Child and adolescent telepsychiatry: variations in utilization, referral | 1. PCP referral sites would make equal use of telepsychiatry services
2. All PCPs would refer patients with equal | Retrospective analysis of telepsychiatry activity | **Sample:**
Under 7 years of age (18%) 123, 7-12 years old (43%) 302, 12 years and older | **Data Collection:**
Utilization data, patient demographics, diagnoses, collected | Similar male and females (P>0.05),

190 PCPs referred pts to telepsychiatry (106 |

Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
patterns and practice trends. *Journal of Telemedicine and Telecare, 16*, 128-133. doi: 10.1258/jtt.2009.090712	frequencies across all specialties 3. Telepsychiatrists will show similar practice patterns regarding consultation compared to ongoing care.		(39%) 276 Total: 701 Males: 457, Females: 244 **Setting:** Seattle Children's Hospital (serves four states: Washington, Alaska, Montana and Idaho) Olympia City, Wennatchee, Yakima, Longview, Aberdeen, Ketchikan, & Naselle	from 2001 to 2007 collected from electronic health records **Data Analysis:** Chi square tests, evaluated differences in age, sex and diagnostic groups Independent t-tests evaluated PCP referrals Analysis of variance evaluated provider differences in utilization rates (All conducted using SPSS version 15.0.1.)	family physicians, 71 pediatricians, 13 nurse practitioners, Pediatricians significantly referred more patients than family physicians (t=2.8, p <0.05), Telepsychiatrists did not show similar practice patterns, return appointments (F=21.9, P, 0.0001) Telepsychiatry satisfaction better or similar to face to face appointments
Powell, R.E., Henstenburg, J.M., Cooper, G., Hollander, J.E., Rising, K.L. (2017). Patient perceptions of telehealth primary care video visits. *Annals of Family Medicine. 15*(3).	Telehealth will increase flexibility and reach of health services. Objective: describe patient experiences with video visits.	Qualitative	**Sample:** 19 participants (age: 18 and over) Median age: 43 Male :10(53%) Female: 9(47%) **Setting:** Urban: Internal medicine practice at Thomas	**Data Collection:** Semi structured interviews (open ended questions on emotional experience, technical issues, future visits with video visits) within 1 week to 1 month of video	Connection process easy, some reported issues with pass words and codes, but no issues once connected, 4/19(21%), reported delays between audio and video 1/19(5%): blurry

Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
			Jefferson University	assessment, **Data Analysis:** Transcribed and stripped, imported into NVivo 10 for coding and analysis	images Decrease wait times, compared to in office visits, convenience Main considerations of favoring video visits: cost and transportation All patients voiced interest in future visits Limitations: Unknown how patients were selected, might increase bias, limited to 2 practices in 1 health system, most participants had experience with video conferences, interviews up to 1 month of visit.
Saurman, E., Perkins, D., Hons, B.A., Roberts, R., Roberts, A…Lyle, D. (2011). Responding to mental health emergencies: implementation of an innovative telehealth service in rural and remote new south wales, Australia. Journal of Emergency Nursing. *37*(5).	No question/hypothesis	Mixed method with triangulation design	**Sample:** 20 emergency department nurses 31 patients No data on male/females who were interviewed	**Data Collection:** Semi structured interviews: baseline: 20 emergency department (face to face), 6 months (telephone),	25/31 (81%) patients strongly agreed services was responsive to their needs (mean score 4.1) & also would consent for treatment again and suggest it

Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
doi:10.1016/j.jen.2010.11.005			**Setting:** New Wales, Australia	(Accessibility and acceptability of service), 31 patients (telephone survey at baseline and 72 hours of video assessment) – 5 point likert scale **Data Analysis:** Quantitative data analyzed through Excel, statistical significance using two-tailed x2 tests (P<.05), z score to compare usage rates of video assessment, thematic analysis for provider and patient interviews.	to someone else 28/31 (90%) of patients agreed service was organized 40% of time, assessed by psychiatrists, 60% of the time assessed by mental health nurses
Shulman, M., John, M., & Kane, M.J. (2017). Home-based outpatient telepsychiatry to improve adherence with treatment appointments: a pilot study. *Journal of Psychiatric Services.* 68(7).	Will patients who were non-adherent with outpatient appointments who received telepsychiatry improve in adherence to appointments, compared to treatment as usual group?	Randomized Control Trial	**Sample:** 22 (18 to 65 years old) **Setting:** Zucker Hills Hospital Outpatient clinic , New York	**Data Collection:** Participants randomly assigned to telepsychiatry, **Data Analysis:** Characteristics: Chi-Square analysis Continuous variables: Independent T test or Wilcoxon Rank	No significant difference of appointment adherence of telepsychitary (missed appts:23%± 25%), compared to treatment as usual group (missed appts: 31%± 19%). No significant difference in age,

Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
				Sum test	gender, diagnosis, distance to clinic or baseline non adherence appointment rates Sig greater # of participants in telepsych group reported no difficulty in keeping appointments (P=.01) Limitations: Possible Type II error, low # of participants, short study period
Whealin, J.M., King, L., Shore, P. & Spira, J.L. (2017). Diverse veterans' pre-and post-interventions perceptions of home telemental health for posttraumatic stress disorder delivered via tablet. *The International Journal of Psychiatry in Medicine.* 52(1). 3-20. doi:10.1177/0091217417703291	What are the perceptions of HTMH among veteran patients with PTSD?	Naturalistic design , pre/post test designs	**Sample:** 47 rural veterans with PTSD Avg age: 49.3, 83% male, native Hawaiian/pacific islander: 27.6%, white: 25.6%, Asian: 21.3%, mixed: 19.1%, black: 6.4% **Setting:** Rural pacific islands	**Data Collection:** 12 sessions of Cognitive Processing Therapy via android tablet from psychologists VHA mobile telehealth (mTH) questionnaires: Baseline (1 week prior to care) & post-treatment (week 5). & VHA perceptions of HTMH intervention questionnaire &	Pre assessment: neutral attitudes toward HTMH Post assessment: -27% reported reason of using HTMH was convenience -facilitated access to the intervention: 8%, increased privacy: 8%, less stressful 8%, 100% (Agree or strongly agree with being comfortable &

Reference	Research Question/Hypothesis	Study Design	Sample and Setting	Methods for Data Collection and Data Analysis	Findings
				VHA mTH Patient Satisfaction Questionnaire **Data Analysis:** IBM SPSS Statistics Base Program version 20 (independent t-tests and chi-square tests- examine engagers and non-engagers) paired sample t-tests to compare baseline and post-engagement attitude scores in HTMH	see clinician clearly, 82% able to hear clinicians, 93% technical assistance provided, Same rapport: (51%) , good care (100% agreed), equipment easy to set up: 100% agreed), rather use HTMH, compared to face-to-face: (72.4% agreed) **Limitations:** Low generalizability some participants lacked web/Wi-Fi services so withdrew from program, tx provided by psychologists and not PMHNPs & only represents patients with PTSD

APPENDIX B:

PARENTAL TELEMENTAL HEALTH PATIENT SATISFACTION SURVEY

Parental Telemental Health Patient Satisfaction Survey

Age: ___ Gender: _____ Psychiatric Diagnosis: _____

Circle the correct response to each question (5= Strongly Agree, 4= Agree, Neutral=3, Disagree=2, Strongly Disagree= 1)

1. Number of times using Telemental Health: 1-5   6-10   More than 10

2. My child struggles with getting transportation for appointments: Yes or No

3. My child has internet services at home: Yes or No

4. My child is interested in Home Telemental Health Services: 5   4   3   2   1

5. The amount of time waiting for appointment was   5   4   3   2   1
    acceptable

6. Telemental Health Technology is easy to use   5   4   3   2   1

7. My child could talk comfortably with the tele-psychiatric   5   4   3   2   1
    provider on the television.

8. My child could see the tele-psychiatric provider   5   4   3   2   1

9. My child could hear the psychiatric provider
    with no issues   5   4   3   2   1

10. My child could understand the psychiatric   5   4   3   2   1
    Provider with no issues

11. My child felt confident that information   5   4   3   2   1
    was not being overheard by others not in the room

12. I felt the psychiatric provider was comfortable   5   4   3   2   1
    with seeing my child over the television

13. Telemental Health allowed my child to see a   5   4   3   2   1
    specialist sooner than in person

14. My child would not have received psychiatric   5   4   3   2   1
    services without Telemental Health

15. My child will receive the help I need because   5   4   3   2   1
    of my visit today.

16. The Telemental Health visit was as good as   5   4   3   2   1
    a regular in-person visit.

17. My child would be willing to see a tele-psychiatric   5   4   3   2   1
    provider again in the future.

18. Overall, my child very satisfied with services today.   5   4   3   2   1

19. Is there anything else that you would like to tell us that would help us improve telehealth services for you?

APPENDIX C:

ADULT TELEMENTAL HEALTH PATIENT SATISFACTION SURVEY

Adult Telemental Health Patient Satisfaction Survey

Age: ___ Gender: _____ Psychiatric Diagnosis: _____

Circle the correct response to each question (5= Strongly Agree, 4= Agree, Neutral=3, Disagree=2, Strongly Disagree= 1)

1. Number of times using Telemental Health: 1-5   6-10   More than 10

2. I struggle with getting transportation for my appointments: Yes or No

3. I have internet services at home: Yes or No

4. I am interested in Home Telemental Health Services: 5   4   3   2   1

5. The amount of time waiting for appointment was   5   4   3   2   1
   acceptable

6. Telemental Health Technology is easy to use   5   4   3   2   1

7. I could talk comfortably with the tele-psychiatric   5   4   3   2   1
   provider on the television.

8. I could see the tele-psychiatric practitioner with   5   4   3   2   1

9. I could hear the tele-psychiatric provider   5   4   3   2   1

10. I could understand the tele-psychiatric provider   5   4   3   2   1
    recommendations.

11. I felt confident that my information was not being   5   4   3   2   1
    overheard by others not in the room

12. I felt the psychiatric provider was comfortable with   5   4   3   2   1
    seeing me over the television.

13. Telemental Health allowed me to see a specialist   5   4   3   2   1
    sooner than in person

14. I would not have received psychiatric services   5   4   3   2   1
    without Telemental Health.

15. I will receive the help I need because of my   5   4   3   2   1
    visit today.

16. The Telemental Health visit was as good as a   5   4   3   2   1
    regular in-person visit.

17. I would be willing to see a tele-psychiatric   5   4   3   2   1
    provider again in the future.

18. Overall, I am very satisfied with services today.   5   4   3   2   1

19. Is there anything else that you would like to tell us that would help us improve telehealth services for you?

APPENDIX D:

DISCLOSURE STATEMENT

Disclosure Statement

Telemental Health Patient Satisfaction

The purpose of this survey is to evaluate patient telemental health patient satisfaction and the need for home telemental health services.

If you choose to participate with this survey, the only cost of participation is that it will approximately take ten minutes to complete. There are no known risks associated with participating, and no compensation for completing the survey. However, by completing the survey, you may help improve the telemental health services at Horizon Health and Wellness, which may improve your psychiatric care in the future. The survey will not collect identifying information such as your name, date of birth, and address. The surveys also will be secured in a locked container and then shredded immediately after the completion of the project. The survey data will be entered in a secured password protected electronic database.

If you choose to complete the survey, participation is voluntary, refusal to participate will involve no penalty or loss of services at Horizon Health and Wellness. You may withdraw at any time from the survey and choose to skip any question on the survey. An Institutional Review Board at The University of Arizona approved this project and found it acceptable, according to applicable federal and state regulations, including University policies that are designed to protect the welfare and rights of participants.

For questions about your rights as a participant in this evaluation program survey, or to discuss other complains or concerns of people who are not affiliated with this survey evaluation, you may contact the Human Subjects Protection Program online at http://rgw.arizona.edu/compliance/human-subjects-protection-program.

By taking this survey, you agree to have your responses used for evaluation of the telemental health program at Horizon Health and Wellness.

Thank you

Justin Schwarting, BSN, RN, DNP PMHNP Student

APPENDIX E:

THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD APPROVAL

LETTER

THE UNIVERSITY OF ARIZONA

Research, Discovery & Innovation

Date: July 05, 2019

Principal Investigator: Justin Ryan Schwarting

1618 E. Helen St. P.O. Box 245137

Tucson, AZ 85724-5137 Tel: (520) 626-6721 http://rgw.arizona.edu/compliance/home

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Protocol Number:	1907765145
Protocol Title:	Program Evaluation of Telemental Health Services

Determination: Human Subjects Review not Required **Documents**

Reviewed Concurrently:

 HSPP Forms/Correspondence: *determination_v2019-02-25_schwarting_6_26.pdf*

Regulatory Determinations/Comments:

- Not Research as defined by 45 CFR 46.102(l): As presented, the activities described above do not meet the definition of research cited in the regulations issued by U.S. Department of Health and Human Services which state that "Research means a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge. Activities that meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program that is considered research for other purposes. For example, some demonstration and service programs may include research activities. For purposes of this part, the following activities are deemed not to be research."

The project listed above does not require oversight by the University of Arizona.

If the nature of the project changes, submit a new determination form to the Human Subjects Protection Program (HSPP) for reassessment. Changes include addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the study activity. Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218)

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