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# Acceptability of Telepsychiatry in a Rural Kentucky Community Mental Health Clinic

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Running head: ACCEPTABILITY OF TELEPSYCHIATRY

Acceptability of Telepsychiatry in a Rural Kentucky Community Mental Health Clinic

Submitted in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice  
at Eastern Kentucky University

By

Leslie Brauner

Richmond, Kentucky

2015

## Abstract

While telepsychiatry has been championed as a method to improve access to care and health care delivery to remote regions, the willingness of rural patients to receive psychiatric treatment via telehealth technology remains uncertain (Rohland, Saleh, Rohrer, & Romitti, 2000). Published studies concerning general patient satisfaction with telemedicine are available; however, there is little focus on satisfaction of specialized telepsychiatric care to rural mentally ill adults. A capstone project was conducted to examine the acceptability and satisfaction of telepsychiatry in a rural Kentucky mental health clinic. Patient satisfaction with the modality was assessed using the Telemedicine Satisfaction and Usefulness Questionnaire (TSUQ) (Bakken et al, 2006). Results from the pilot revealed that the majority of participants were generally satisfied with the telepsychiatry intervention, yet responses were not as positive as suggested in previous literature. The project uncovered issues with technology, including poor connectivity and delay in audio-visual transmission, which could be improved to enhance the delivery of telepsychiatric care. Broader applications for telepsychiatry in clinical practice continue to stimulate enhancement and expansion of services.

*Keywords:* telepsychiatry, rural mental health, satisfaction, acceptability

Acceptability of Telepsychiatry in a Rural Kentucky Community Mental Health Clinic

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## Acceptability of Telepsychiatry in a Rural Kentucky Community Mental Health Clinic

### **Background and Significance**

Mental health issues are ranked as the third highest concern on the Rural Healthy People 2020 survey (Bolin & Bellamy, n.d.). Individuals that live in rural areas are likely to have poorer mental health outcomes due to poverty, limited access to specialized health care services, and scarcity of resources (Letvak, 2002; Lynn & Bonham, 2013). The failure to recognize or treat mental health disorders can adversely influence morbidity and mortality rates, especially in a population that is already considered vulnerable (United States Department of Health and Human Services, 1999).

While mental illness occurs in both urban and rural populations, affecting 20% of the total population in a given year, under-utilization of mental health services in rural populations contributes to several disparities (Gamm, Stone, & Pittman, 2010). The National Health Interview survey reported that the prevalence of major depression was significantly higher among rural (6.11%) than among urban (5.16%) populations and rates of suicide were 54% higher in rural areas than urban areas (Probst, Laditka, Moore, Harun, & Powell, 2005; Bishop, 2009). Rural dwellers have an equal rate of substance use disorders as their urban counterparts, yet rural residents have a higher risk for adverse outcomes (Van Gundy, 2006). Lack of access to mental health care services has been cited as a significant reason for higher hospitalization and suicide rates in rural residents (Rost, Zhang, Fortney, Smith, & Smith, 1998).

Approximately 85% of the 1,669 federally designated mental health professional shortage areas are classified as rural areas, with some rural counties having no practicing psychiatric provider, social worker, or therapist (New Freedom Commission on Mental Health, 2004). Patients in rural areas often travel long distances for their mental health needs due to the



scarceness of specialty services in remote regions. A lack of available public transportation and increased distance to qualified providers may lead to fewer visits and noncompliance with psychiatric treatment over time. Letvak (2002) stated that development of mental health services in rural areas is restricted due to the lack of providers living in and/or willing to commute to outlying locations, as well as the inability of rural residents to pay for services.

Nationally in 2009, 4.6% of adults had a serious mental illness compared to 5.4% in Kentucky (State Epidemiological Outcomes Workgroup Report (SEOW), 2012). It is estimated that approximately 181,000 adults and 45,000 children suffer with serious mental illness in Kentucky. Across the state, only 18% of the residents identified as needing psychiatric services receive care through the public mental health systems (National Alliance on Mental Illness, 2010).

The National Association for Rural Mental Health (NARMH) (n.d.) published a vision paper which outlined a strategic plan to improve mental health in rural communities. The “5 C’s” for the next century included an increase in consumer involvement in rural mental health, competence of mental health care providers in these areas, effective management of cost to ensure survival and growth of services, improved communication about available services, and focus on connection and partnerships of rural communities to outside resources. The NARMH also urged current mental health agencies in rural communities to examine processes of health care delivery and incorporate technology to manage information, cost, and efficiency concerns (NARMH, n.d.).

A paradigm shift is needed in the delivery of mental health care to address the continuing problems of availability, accessibility, acceptability, cost, and quality of care for rural mental health. In order to achieve parity in mental health outcomes with urban settings, a mental health

center must understand the unique challenges in delivering services to a geographically isolated community. Effective management requires a careful balance between the overwhelming need for services and increased acuity of rural patients with limited resources, lack of available providers, and inconsistent funding. It is imperative that rural mental health centers continually assess and adapt to the ever-changing health care climate and be willing to implement innovative approaches to improve services. The ultimate goal is creation of a sustainable, effective mental health care delivery system that meets the needs of and improves mental health care outcomes for rural populations.

Outpatient psychiatry practice is traditionally performed through direct presence of the provider and the patient. However, a shortage in available psychiatric providers and barriers in accessing these providers makes offering rural mental health care a daunting feat. In some areas, traditional psychiatric care is not available and mentally ill residents are unserved altogether. Telepsychiatry offers a solution to this broad problem. Telepsychiatry uses videoconferencing technology to assess, diagnose, and treat patients with mental illness, and is especially useful in areas where psychiatric services are not readily accessible. The current available research shows that telepsychiatry has the potential to be as effective as face-to-face services with comparable patient outcomes across a variety of psychiatric populations (O'Reilly et al., 2007; Ruskin et al., 2004; Garcia-Lizana & Munoz-Mayorga, 2010; Antonacci et al., 2008; Fortney et al., 2007; Rohland, 2001). Telepsychiatry has been studied and found to be an acceptable form of service delivery for different patient settings such as prisons, emergency rooms, and primary care offices (Rohland, 2001). Moffatt & Eley (2010) reports that telepsychiatry can directly benefit rural consumers by reducing expense and inconvenience, improving overall access to services, and improving quality of existing clinical services. However, studies regarding the potential for

telepsychiatry to be used to enhance delivery to rural psychiatric populations, including acceptability and integration into existing delivery systems, has been limited despite the appeal and recent advances in technology (Rohland, 2001). Bakken, et al. (2006) affirms that acceptance and use of telemedicine is a prerequisite to gaining clinical benefits with the technology.

A preliminary needs assessment for a proposed telepsychiatry project was conducted. The central Kentucky area continues to face shortages of psychiatric providers and difficulty recruiting new providers. Currently, one pediatric provider and two adult providers in a Lebanon, Kentucky community mental health clinic serve the entire mentally ill and developmentally disabled population in the region. Patients from outlying counties seek services in this clinic as well. As a result, patients are placed on a waiting list for an evaluation and have limited follow-up care. Patients released from an inpatient setting are often out of medication before their discharge appointment with a provider, resulting in re-hospitalization or overuse of emergency rooms and primary care offices for mental health needs. In response to these issues, the community mental health center purchased telepsychiatry software in attempts to recruit outside providers and allow for continuous care delivery to the mentally ill community. Recent changes to the Medicaid healthcare program allow for reimbursement for telepsychiatry services, posing promise for sustainability. Telepsychiatry has been suggested to supplement or replace traditional face-to-face visits while also allowing for immediate consultation, crisis intervention, and therapy services if needed.

The purpose of this DNP Capstone Project was to implement a telepsychiatry pilot program in a rural mental health clinic. Patient satisfaction with the modality was assessed using the Telemedicine Satisfaction and Usefulness Questionnaire (TSUQ) (Bakken et al, 2006).

### **Theoretical Framework**

Despite support for telepsychiatry projects, widespread adoption of the modality has been quite slow (Ruskin et al., 2004). Major barriers cited include resistance to change, cost issues, and uncertainty with technology (McGinty, Saeed, Simmons, & Yildirim, 2006). Everett Rogers' Diffusion of Innovations theory (1995) provides a theoretical framework to integrate modern ideas into practice. Roger's theory has been heavily applied to diffusion of technological innovations, such as telemedicine. Rogers defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 1995, p.5). The four main elements of Roger's theory are the innovation, communication channels, time, and the social system. Characteristics that may determine an innovation's rate of adoption in a new system include its relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2002). Relative advantage is the degree to which an individual perceives that the innovation is advantageous to the system. Compatibility refers to the ways in which the innovation is consistent with existing values, experiences, and needs of the organization or system. Complexity is the degree of difficulty of use of the new idea. Trialability refers to the use of the innovation as an experiment to understand its effects over a limited amount of time. Finally, observability is the how well the innovation and its benefits are visible to others (Rogers, 2002).

Rogers (2002) states that if an innovation is found to have greater relative advantage, compatibility, trialability, and observability, with less complexity, it will be adopted more rapidly. He defines the innovation-decision process by which an individual or organization implements the new innovation; first from knowledge about the innovation, to forming an attitude about the innovation, making a decision to adopt or reject implementation, to

implementation of the new idea, and lastly, confirmation of the decision to integrate the innovation into the system (Rogers, 2002).

Roger's Diffusion of Innovations theory is a useful framework for implementing telepsychiatry in rural health organizations and the modality can be evaluated on each of the characteristics outlined in Roger's theory. Telepsychiatry has the benefit of improving access to care in remote regions, which signaled a greater relative advantage over current practice in which shortages of specialized services are present (Antonacci et al., 2008). The telepsychiatry capstone project was compatible to the organization's mission and values. Complexity, trialability, and observability were assessed during a pilot program through patients' evaluations of satisfaction and use and impact of technology used during the project. Strategies to promote diffusion of this technology could be used to change perceived attitudes about the technology, find champions for change, raise peer support, educate providers about the benefits of telepsychiatry, and activate peer networks to diffuse the innovation (Rogers, 2002).

### **Review of Literature**

Rohland (2001) examined the acceptability of telepsychiatry to a rural Midwest population. The investigator conducted a 24-month longitudinal study as part of a three year project to develop, implement, and evaluate a telepsychiatry program in a rural area. The study was a crossover design that compared patient satisfaction between a telepsychiatry service delivery model to traditional, face-to-face care at two rural clinics. The study participants included 26 adult participants with an Axis I diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, major depressive disorder, panic disorder, obsessive compulsive disorder, or other anxiety disorder. The participants received a diagnostic evaluation and medication management appointments over the course of the two year period with 53% of visits

delivered via telemedicine and 47% of visits delivered with usual, face-to-face care. Patient satisfaction was measured by use of a 12-item, self report Satisfaction with Ambulatory Services 4.0 Adult survey instrument, with established reliability (Cronbach's alpha 0.77-0.95) and content and construct validity (Davies & Ware, 1991, as cited in Rohland, 2001). The survey was administered to each patient following every visit, and assessed patients' responses on access to service (convenience and ease), technical skills of staff, quality of patient-provider interaction, and their likelihood to recommend the service to family or friends. The researchers also measured clinical outcomes of care through use of the Global Assessment of Functioning (GAF) measurement for each client. Results showed that the mean GAF score for all patients changed very little over the course of the study, but GAF scores increased slightly more during the telemedicine arm of the study than the face-to-face arm. Telemedicine was rated higher than traditional care in domains of convenience, ease, technical skills, attention given, and time spent; while traditional care was rated higher in domains of self-reported outcome, helpfulness, eye contact, and overall satisfaction. Statistical tests of significance were not included due to small number of participants enrolled, non-random selection, and crossover design. However, the authors reported that the differences between ratings of satisfaction for each modality were small and do not suggest clinical or statistical significance. The study shows promise that telemedicine provides an acceptable alternative to care for delivery of psychiatric services to rural populations, which further supports the purpose of the capstone project highlighted in this paper.

Greenwood, Chamberlain, & Parker (2004) evaluated a telepsychiatry service in rural New South Wales, Australia. The researchers created a satellite clinic in the area and studied the impact of a 12-month long telepsychiatry service in a remote town of approximately 60,000 residents. The study was a cross-sectional research design where participants completed a post-

intervention survey following intervention. Participants in the study (N=20) received an initial consultation by a psychiatrist in a face-to-face interview and a follow up interview using telehealth technology. The researchers then measured the participant's preference between telepsychiatry and face-to-face consultation using a 22-item self-reported Likert questionnaire designed to assess multiple dimensions of patient satisfaction. The average age of the participants was 40 years old with equal gender distribution and diagnoses of mood disorder (80%) or anxiety disorder (20%). Results of the survey showed a high rate of satisfaction with the face-to-face consultation (mean positive response 85%) and a lower, but generally positive satisfaction rate with the telepsychiatry consultation (mean positive response 72.5%). Differences noted between face-to-face and telepsychiatry included difficulty discussing problems via teleconference, not finding the consultation informative, and not feeling comfortable in front of the camera. Overall, 90% of the participants were satisfied with the telepsychiatry interview and 80% indicated they would be likely to use this type of service again. The authors concluded that while face-to-face consultation is the preferable method, telepsychiatry is an adequate substitute when these services are not readily available.

Hilty, Nesbitt, Kuenneth, Cruz, & Hales (2007) conducted a study on the primary care needs, utilization, and satisfaction with telepsychiatric consultation in rural and suburban populations. The purpose of the study was to directly compare telepsychiatry outcomes for rural and suburban populations, rather than focusing on rural populations alone. They recruited 80 rural and 67 suburban psychiatric patients for their sample and each participant received a first-time telepsychiatric consultation from UC Davis Medical Center rural and suburban primary care sites in the California-Oregon state area. Demographic data of the rural population included more male and pediatric participants with primary diagnoses of mood disorder, adjustment disorders,

anxiety disorders, and other (psychotic disorders, substance abuse disorders, attention-deficit/hyperactivity disorder, and oppositional defiant disorder). Participants underwent telepsychiatric consultations ranging from 1-1.5 hours and later completed a validated 5-point Likert-style satisfaction survey. The respondents' ratings were averaged and analyzed using T-test and chi-square analyses. Satisfaction data showed that both study groups positively rated their ability to talk freely and having their needs met through telepsychiatry (mean= 4.49 and 4.28 respectively). Satisfaction was statistically higher for rural than suburban participants (mean= 4.71 versus 4.13,  $p < 0.05$ ). The authors determined that rural populations' perceptions of the value of psychiatric care in their community may be a reason for the difference in the research results and that primary care providers will likely use telemedicine technology if it is practical and patients like the service. Limitations of this study include a lack of randomization, limited generalizability to other settings, small sample size, and modest outcome measures. In addition, the telepsychiatric consultation was provided by primary care providers (versus psychiatric providers) who may be more unfamiliar with provision of mental health services in general.

Grubaugh, Cain, Elhai, Patrick, & Frueh (2008) explored the differences between patient acceptability toward mental health care among rural and urban primary care patients. A cross-sectional survey design was used to investigate attitudes towards both medical and mental health care delivered by telehealth means, with a secondary study performed using a subset of patients with posttraumatic stress disorder (PTSD). The authors aimed to broaden the generalizability of telepsychiatry research to other populations who may seek such services in the future. Primary care patients were recruited into the study and 194 participants were selected for inclusion. Each of the participants were 18 years of age or older and a patient of either an urban or rural health



clinic. The mean age of participants was 45.55 years with an average educational level of 13.89, and the majority of the sample were employed, Caucasian, and married. Of the total sample, 58.8% were classified as rural residents and 41.2% as urban residents. 11.3% of the sample met the criteria for PTSD as measured by the Posttraumatic Stress Disorder Symptom Scale-Self Report (PSS-SR). The participants did not actually complete a telepsychiatric consultation or visit, but rather completed the Telehealth Attitudes Questionnaire (TAQ) as they presented for a primary care visit. The TAQ is a 23-item Likert style questionnaire that rates comfort, confidence, and concerns with using telepsychiatry and has a reported internal consistency of 0.88. Following completion of the questionnaire, the researchers analyzed results using ANOVA and chi-square statistical tests. The results showed that there were no statistically significant differences between rural and urban participants across items on the TAQ survey and both groups indicated a comparable preference for psychiatric services delivered face-to-face and through telehealth technology. Of the sample that met criteria for PTSD, there were statistically significant differences found. The rural group that screened positive for PTSD reported more comfort in using telepsychiatry if it would save them a 1-hour drive to the nearest clinic ( $F=4.10, p<0.05$ ). However, there was no significant difference found between the PTSD responders in the urban subgroup. Lastly, using the chi-square/Fisher's exact test, there were no statistically significant differences found between rural and urban subgroups regarding concerns about telepsychiatry. Bivariate correlations for age and education and ANOVA tests for gender were conducted, and results showed that younger patients and participants with higher education were more likely to have a positive attitude towards telepsychiatry ( $\text{corr} = -0.19, p<0.01$  and  $\text{corr}=0.19, p<0.05$  respectively). The researchers concluded that both urban and rural populations are receptive to telepsychiatry services, and while telepsychiatry is not intended to be superior to

traditional care, it is preferred to no care at all. This study is limited by its research design and lack of qualitative data regarding specific patient concerns of telepsychiatry, as well as inability to generalize to other psychiatric diagnostic populations.

A project implementation study by Blackmon, Kaak, & Ranseen (1997) was included in the literature review to examine consumer satisfaction with the University of Kentucky's telemedicine program. The study sample consisted of 43 children and their parents residing in three rural Kentucky areas who were referred for telepsychiatric consultation. Each child participated in a 60 minute consultation and following the service, the parents and children over the age of 10 completed the Telemedicine Consultation Evaluation, a 12-item Likert style questionnaire developed by Peredina (1995). The questionnaire examined participants opinions on the ability to relate to the interviewer, feelings of anxiety or embarrassment when using the telehealth equipment, ability to see and hear during the interview, how the telemedicine consultation compared to face-to-face visit, and overall satisfaction with the telepsychiatric consultation. Of the 55 completed questionnaires received, all respondents reported they were 'very satisfied' with the telepsychiatric consultation (mean= 6.7/7). All respondents gave the highest rating for overall satisfaction (mean=7.0) and 98% of the respondents reported that that telemedicine was comparable to a face-to-face visit. Nine children completed the questionnaire and all reported they were 'very satisfied' with the telepsychiatric consultation. There were no concerns of hearing or vision difficulties. Approximately 20% of the respondents reported some anxiety or embarrassment while using the telehealth equipment. The authors reported that participants were overwhelmingly satisfied during the child psychiatric consultation provided through the program study. In addition, the researchers stated that consumers will likely choose

telepsychiatry to gain access to specialized services despite hesitance or lack of familiarity with technology, and that embarrassment or anxiety is expected to lessen with ongoing use.

### **Agency Description**

#### **Setting**

The DNP capstone project was implemented at the Lebanon Communicare clinic in Marion County, Kentucky. Marion County has an estimated population of 20,045 residents and is approximately 64 miles from the large city of Lexington, KY and 67 miles from the urban area of Louisville, KY (United States Census Bureau, 2014). The median household income is \$38,719, with 17% of the community living below poverty level (United States Census Bureau, 2014). The Communicare clinic is seated in the city of Lebanon, and employs three medication providers and approximately 15 therapists to meet the psychiatric needs of the entire community and surrounding counties. The therapists provide individual outpatient therapy, school-based therapy, family therapy, and substance abuse counseling.

The Lebanon clinic is part of a larger Communicare organization, which includes eight Community Mental Health Centers (CMHC) that serve the Lincoln Trail district of west-central Kentucky. Communicare is one of 14 designated CMHCs that receive state and federal funding to provide mental health services to underserved regions in the state. Communicare clinics serve the community as a whole and treat individuals independent of their ability to pay for mental health services. The organization also offers advanced treatment options, such as crisis stabilization units, therapeutic rehabilitation programs, illness management and recovery day programs, specialized therapy groups, substance abuse services, treatment for developmentally and intellectually disabled individuals, and emergency services. The majority of Kentucky

counties have limited access to mental health providers, with Communicare's regional district having an estimated 0-19 mental health providers per 100,000 residents (SEOW, 2012).

### **Target Population**

While children, adolescents, and adults are offered mental health treatment through the Lebanon Communicare clinic, the target population for the capstone project were adults over the age of 18 with an established psychiatric diagnosis. The participants for this project were established patients of the clinic who received medication management services under direct care of a psychiatric/mental health nurse practitioner (PMHNP).

### **Congruence of Project to Organization's Mission**

The mission of Communicare is "to utilize our core values to ensure the provision of behavioral health and developmental and intellectual services aimed at improving the emotional, physical, and mental health and overall quality of life within the communities we serve" (Communicare.org, 2014). The Lebanon clinic proved to be a great location for implementation of the capstone project as the clinic continually faces the challenges of providing specialized services to rural populations, including limited accessibility and availability of services, large turnover in providers, and poor recruitment of new psychiatrists or psychiatric/mental health nurse practitioners. Telepsychiatry has the potential to address these barriers to quality treatment and improve overall quality of life of the patients served. Vidyio, a cloud-based telecommunications application, had recently been purchased for use by the agency.

### **Identification of Stakeholders**

In order for the telepsychiatry capstone program to be implemented, key stakeholders were identified to assist with the change effort. These stakeholders include the Lebanon clinic

manager, regional manager, information technology director, the Medical Director, and the CEO of the Communicare organization.

### **Project Design**

A preliminary needs assessment was conducted and telepsychiatry appeared to be an appropriate modality to meet the existing needs of the rural clinic. Permission to use the Lebanon Communicare clinic was obtained (Appendix A). The post-test only design for the capstone project involved the implementation of a telepsychiatry pilot program through recruitment of participants, exposure to intervention, and evaluation of the intervention through the use of the TSUQ survey. The participant's responses on the TSUQ were evaluated to draw conclusions on the general acceptability of telepsychiatry to the rural population.

### **Project Methods**

#### **IRB Submission Process**

Before implementation of the capstone project, an expedited application was submitted to the Institutional Review Board (IRB) at Eastern Kentucky University. The IRB approved the project on August 25, 2015. Project implementation began thereafter, with the intervention completed on September 11, 2015.

#### **Measures and Instruments**

Data were collected through a demographic survey form and the Telemedicine Satisfaction and Usefulness Questionnaire (TSUQ) self-report survey (Appendix F). The TSUQ Instrument developed by Bakken et al (2006) is a 26-item Likert-type questionnaire that was initially used to assess telemedicine satisfaction and usefulness in a diabetes education and telemedicine project. Permission to use and modify the TSUQ instrument was obtained through e-mail correspondence with the primary author, Suzanne Bakken (personal communication,

2015). Individual items on the TSUQ were derived from a variety of satisfaction surveys including the Telemedicine Patient Questionnaire, the American Telemedicine Association (ATA) Home Technology Survey Item Bank, and the Engagement with Healthcare Provider instrument (Bakken et al., 2006). Twenty-one of the items on the questionnaire pertain to perceived satisfaction of telemedicine. An exploratory factor analysis isolated two components, Video Visits and Use/Impact, from the 21 satisfaction items which explained 63.6% of the variance. Subsequent analyses resulted in a single factor (Bakken, personal communication, 2015). At the time of development, the authors reported acceptable construct validity and internal consistency reliability measures with a Cronbach's alpha of 0.96 for video visits and 0.92 for use/impact (Bakken et al., 2006). In the current project, the Cronbach's alpha coefficient was 0.93 for video visits and 0.94 for use/impact. The Cronbach's alpha coefficient for the summed scale total score was 0.96.

Responses to the individual TSUQ items were given in a Likert-type rating format, on a scale from 1 (strongly disagree) to 5 (strongly agree). The instrument was modified and adapted for use for this project as approved by the TSUQ author. Individual items were kept in original format but the wording was changed slightly as needed for the project (terms 'doctor' and 'nurse case manager' were changed to 'healthcare provider').

### **Implementation**

Upon conclusion of a routine visit with their primary psychiatric provider, adult patients were recruited using a verbal recruitment script (Appendix C). A sample of 25 participants was recruited into the project; all met the defined inclusion criteria (over the age of 18, established psychiatric diagnosis, and resident of Marion County, Kentucky). Participants who voluntarily agreed to participate were prepared for the intervention through provision of a verbal description

of the capstone project purpose and expectations. The participants signed an informed consent document (Appendix D) for their participation in the telepsychiatry session as well as to use their data/responses from a demographic survey and the TSUQ (Appendices E and F). A second consent required by the Communicare Lebanon clinic ensured participants that there was no recording of the session, all state and federal HIPAA and confidentiality laws that apply to the session were upheld, and there was no dissemination of the information discussed during the telepsychiatry session.

Each participant completed a brief demographic questionnaire and participated in a simulated telepsychiatry visit with the project leader. The simulated appointment occurred in the clinic, with the participant seated in one room and the project leader in another room in the same clinic building. The visits were conducted similar to usual care visits, including assessment of participants' mental health state and answering any questions that participants had regarding their treatment. The project was designed to reflect usual care practices, with the exception that the participant received the service through the telehealth videocommunications equipment rather than a face-to-face service. Video and audio transmission transpired over Vidyio telehealth communication software installed by the clinic, which had been approved by the Kentucky TeleHealth Board to ensure confidentiality and HIPAA compliance. The participants were not required to operate the software; the setup was limited to a monitor with an attached web camera. The projected image of the provider was close to actual size on the monitor. Volume was controlled through an external speaker that featured echo-cancellation.

Participants were encouraged to respond and interact with the project leader in the same manner as a traditional visit. Following the simulated visit, participants completed the TSUQ survey and were able to leave free-text comments about their experience if they desired. All data

collected and patient identifiers/ information were anonymized, stored with the project leader, and kept confidential. Only the capstone project leader and the participants were involved in the telepsychiatry sessions and data collection.

### **Results**

All analyses were completed using Statistical Package for Social Sciences (SPSS) software Version 21 (IBM Corporation, 2012).

#### **Sample Description**

Of the 25 participants included in the project, the mean age of the participants was  $41 \pm 16$ . The majority (84%) were female, just over half (56%) were single and had a high school education or less (56%). Although 40% were employed, the median annual income was low (\$13,320) and the vast majority (84%) were Medicare or Medicaid recipients. The majority of the sample provided personal transportation to the clinic and traveled an average of  $11 \pm 10.78$  miles for care. The top three diagnoses for the sample population were Depressive disorder, Anxiety disorder, and Bipolar disorder. Only 7 of the 25 participants reported no prior experience with telemedicine; 68% of the sample had previously accessed care using some form of telemedicine services.



Table 1

*Sample Description*

Demographic Variable		n	%
Gender	Male	4	16
	Female	21	84
Marital Status	Single	14	56
	Married	7	28
	Separated/Divorced	4	16
Educational Level	No degree	5	20
	High school degree/GED	9	36
	Some college	6	24
	Associates Degree	1	4
	Bachelors Degree	3	12
Insurance	Medicaid	16	64
	Medicare	5	20
	Private Insurance	2	8
Employment Status	Unemployed	3	12
	Employed	10	40
	Disabled	8	32
Diagnosis	Anxiety Disorder	5	20
	Depressive Disorder	9	36
	Bipolar Disorder	5	20
	ADHD	2	8
	PTSD	2	8
Public Transportation Used	Yes	4	16
	No	20	80
Prior Telemedicine Use	Yes	17	68
	No	7	28

### Satisfaction Ratings

The mean summed score for the questionnaire was  $3.69 \pm 1.02$  on a 5 point scale. Mean summary scores for Video Visits and Use and Impact subscales were  $3.89 \pm 1.09$  and  $3.47 \pm 1.05$ , respectively. Only one of the 21 items (*I am more involved in my care using the telemedicine system*) had a mean score less than 3.0. The highest rated items focused on provider engagement: *My provider answers my questions*, *My provider deals with my problems*, and *My provider engages me in my care*. Items with the lowest ratings pertained to use of the technology to manage health needs: *My health is better than it was before I used the technology*; *I am more involved in my care using the telemedicine system*; and *The telemedicine system helps me to better manage my health and medical needs*. Although 52% of the sample reported ‘strongly agree’ and 14% reported ‘agree’ to the item regarding general satisfaction with the telemedicine system, 16% of the participants reported strong dissatisfaction.

Although 68% percent of the sample reported that the Vidyo telemedicine system was easy to use, only 52% of the population reported that they could trust the equipment to work. Nearly three-fourths (72%) of the participants reported that they could explain themselves well during the visit, and 64% responded that the lack of physical contact was not a problem. Almost two-thirds (64%) of the sample indicated they ‘strongly agree’ or ‘agree’ that talking to a provider during a video visit was as satisfying as talking in person. Only 56% of the sample indicated that the video visit would save time.

A comparison of users showed that first-time users were more strongly satisfied with the visit, with a mean satisfaction score of  $4.41 \pm 0.58$  compared to  $3.33 \pm 1.03$  for experienced users. An independent samples t-test was performed to compare the overall satisfaction scores for first time and experienced users. Those that had used telemedicine previously had a

significantly lower mean TSUQ score ( $69.88 \pm 21.53$ ) than first-time users ( $92.57 \pm 12.12$ ) ( $t(19.42) = 3.27, p = .004$ , two-tailed). The magnitude of the differences in the means (mean difference = 22.69, 95% CI: 37.21 to 8.17) was large (eta squared = 0.33) (Table 2).

Table 2

*Overall Satisfaction Scores for First-time Users and Experienced Users of Telemedicine*

Variable	Mean $\pm$ SD	<i>t</i>	<i>df</i>	<i>p</i>
First-time Users	92.57 $\pm$ 12.12	3.27	19.42	.004
Experienced Users	69.88 $\pm$ 21.53			

Common themes from free-text comments included poor transmission and internet connectivity issues. One participant felt that telehealth was impersonal. Responses provided in Table 3.

Table 3

*Free Text Responses/Comments on TSUQ*

Responses	
Poor transmission	<ul style="list-style-type: none"> <li>“I am more of an in person visit than on a computer. I can focus better on what the doctor has to say when I’m sitting with them in person. The system is sometimes blurry, cuts out what is being said, and makes what is being said staticy.”</li> <li>“When it freezes, can be aggravating.”</li> </ul>
Internet issues	<ul style="list-style-type: none"> <li>“I have been really pleased with telehealth thus far. I believe the only improvement that would be beneficial is to have a better internet provider available for the area.”</li> </ul>
Impersonal nature	<ul style="list-style-type: none"> <li>“I prefer in person visits, telehealth is too impersonal for me.”</li> </ul>

### Discussion

The findings from this project suggest that in a real world clinic setting, patient satisfaction with telemedicine was not as strong as had been reported in previous literature. While the participants' satisfaction scores were not overwhelmingly positive, overall satisfaction scores showed that the majority of the project sample found telepsychiatry acceptable and as satisfying as a traditional face-to-face visit. Subscale analysis found that participants were more satisfied with the visit itself and less satisfied with the use and impact of technology. Individual item analysis and exploration of themes amongst free-text comments pointed to issues with technology being the primary barrier to satisfaction with care. Participants and the provider were both acutely aware of transmission issues, including signal delay and intermittent disconnection, which often prolonged the visit and caused frustration with the equipment. Interestingly, participants remained satisfied with the provider relationship and were able to separately evaluate the technology factor from their overall satisfaction with the intervention. The project sample provided a relatively neutral response to overall satisfaction, but only a small percentage was strongly dissatisfied with the system. Further investigation is needed to explore whether confounding variables may be to blame. While the literature supports the likelihood that patients would prefer telepsychiatric care to none at all, patient-provider relationship and acceptability factors should be continually assessed (Grubaugh, Cain, Elhai, Patrick, & Frueh, 2008).

There was a significant difference in satisfaction scores among first-time and experienced telepsychiatry users. It is unclear in what capacity experienced users engaged in telemedicine, but since their satisfaction rating was lower than first-timers, it is possible that the current intervention failed to meet their expectations. However, first-time users appeared quite pleased with the system.

In contrast to many former telemedicine studies, this project included a telemedicine instrument that had established construct validity and internal consistency reliability (Whitten & Love, 2005). This project also had high response rate to the survey, with all 25 participants completing the survey in its entirety. Free text comments were beneficial in providing qualitative data for discussion.

The primary limitations of this project were the post-test only design along with a small sample size. Due to the outcome measure being directly reflective of the telehealth experience, comparison group and pre-test/post-test designs were not possible.

Provider satisfaction was not assessed in this project, but it would be useful to explore the provider's opinion of telemedicine modality and the impact on provision of care, reliability of clinical assessments, and retention of providers in rural areas. Satisfaction levels may change as technology increasingly assimilates into daily life and patients and providers become more comfortable with change in traditional psychiatry practices.

### **Implications**

It is reality that telehealth, and telepsychiatry, specifically, is expanding rapidly and may be a common approach for future mental health care in rural communities; therefore, this project was useful for gaining a better understanding of the patients' perspectives of telepsychiatry. This pilot project uncovered unanticipated problems with technology that should be addressed before further expanding the service.

In general psychiatry, a strong therapeutic rapport and healthy relationship between the provider and the patient is essential. The provider should be able to clearly communicate with the patient in real-time, as well as be able to visualize nonverbal cues that would contribute to the interaction. The telepsychiatry technology used in the implementation of this project presented

several challenges that threatened this important relationship and likely contributed to lower satisfaction scores. Participants expressed frustration with the poor audio and visual transmission. These types of problems may lead to patient hesitance or refusal to use the technology, which could compromise sustainability of the modality. Should a rural health care organization proceed with expanding use of the Vidyo telepsychiatry platform, it would be advisable to upgrade the technology, software, hardware, and internet connectivity as necessary to ensure that the patients can engage in a free-flowing conversation without interruptions, lags, and disconnections.

Following resolution of transmission and technology issues, it is possible that telepsychiatry could be practical solution for rural areas where access to care is a barrier to mental health treatment. Telepsychiatry and telehealth are innovative concepts that have a huge potential for growth. Telemedicine is rapidly increasing and integrating into all facets of modern healthcare, such as hospitals, urgent care centers, home health agencies, private offices, and patient's homes. Patients can engage in management of their health through a variety of electronic applications such as health education e-mails, patient portal sites to obtain direct laboratory or test results, electronic medication lists, and so on. Telepsychiatry can be expanded beyond the office to deliver an array of services in any location where they are needed. For example, the use of telepsychiatry services in the prison environment is growing due to the reduction in risk to the general public and decreased need for transportation of prisoners to off-location clinics (Deslich, Stec, Tomblin, & Coustasse, 2013). Telepsychiatry in schools and primary care offices allows providers to offer crisis intervention services immediately. Videoconferencing has already been used to supplement general health care offices by providing opportunities for psychiatric consultation and education (Monnier, Knapp, & Frueh, 2003). For

these reasons, telepsychiatry offers many more benefits to the rural community than traditional psychiatry services alone.

### **Conclusion**

In conclusion, this capstone project showed that the majority of the participants found the telepsychiatry visit to be generally acceptable. The project did uncover some potential problems with remote video care that could be improved to enhance the delivery of services. Broader capabilities for telepsychiatry may drive enhancement and expansion of services, as telepsychiatry has the potential to improve access to mental health care and availability of providers and services. Additionally, telepsychiatry localizes services in the community, which can improve compliance with care. Mental health organizations may find that telepsychiatry stimulates the recruitment and retention of psychiatrists and nurse practitioners who can deliver services from virtually any location. Telepsychiatry, when implemented successfully, may address several challenges that plague the rural mentally ill population to provide consistency in care, improve access to services, deliver safe and effective treatment, and improve overall quality of life to the communities served.

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**Appendix A: Permission to Use Facility**

Hello Leslie,

This e-mail is to confirm that it is acceptable to use the Bardstown and/or Lebanon Clinic sites for the Capstone Project.

Please let me know if you will need anything further.

Thank-you,

Kathleen A. Powers, MA, LPA

Regional Administrator-East

Nelson, Marion, and Washington Counties

(Received through electronic communications on March 16, 2015).

**Appendix B: Verbal Script for Recruitment**

As a student of Eastern Kentucky University's Doctor of Nursing Practice program, I am conducting a capstone project involving telepsychiatry. My goals are to introduce the concept of telemedicine to a rural mental health clinic and gather patient satisfaction data regarding this type of service. This project will include adult participants between ages 18-65 that live in the rural Marion county area. You are invited to share your opinion by completing a satisfaction survey after a telepsychiatry session. I will be collecting other certain information including age, diagnosis, marital status, and household income. Individual responses will be not be used, but rather combined with others' responses for reporting. All responses and information will be kept confidential and used for research purposes only. Your participation is voluntary and you may withdraw from the project at any time without consequence to your ongoing mental health care through the clinic. Thank you for your consideration.

## **Appendix C: Informed Consent for Capstone Project**

### **Consent to Participate in a Research Project**

#### **Acceptability of Telepsychiatry in a Rural Kentucky Population**

##### **Why am I being asked to participate in this project?**

You are being invited to take part in a capstone project about telepsychiatry satisfaction and acceptability. You are being invited to participate because you may benefit from psychiatry services that can be provided from a distance. If you take part in this project, you will be one of about 25 people to do so.

##### **Who is doing the project?**

The person in charge of this capstone project is Leslie Brauner, APRN at Eastern Kentucky University. She is being guided in this project by Dr. Evelyn Parrish.

##### **What is the purpose of the project?**

The purpose of this project is to introduce telepsychiatry to a rural community mental health clinic and assess whether or not the patients are satisfied with this form of service. We hope to learn that telehealth and/or telepsychiatry is an alternative form of service delivery that can be used to increase access to care and improve mental health outcomes in rural communities.

##### **Where is the project going to take place and how long will it last?**

The project procedures will be conducted at Communicare's Lebanon Clinic. You will need to come one time during the course of the project. A visit will take about 30 minutes. The total amount of time you will be asked to volunteer is 30 minutes over the next 8 weeks.

##### **What will I be asked to do?**

If you choose to participate in the project, you will engage in a simulated telepsychiatry session that will take place over the two-way audio-visual telehealth equipment. You will be asked to participate the same way as if you were seeing the provider in person. Following the visit, you will be asked to take a brief survey giving your opinion of the telehealth session.

##### **Are there reasons why I should not take part in this project?**

You could be excluded from this project if you do not live in the rural Marion County area serviced by the Lebanon clinic, if you are under the age of 18 years old, or you cannot complete the survey. If you are actively suicidal, homicidal, or unable to participate in the telehealth session due to a mental health crisis, you will be offered more acute services and/or treatment through the Communicare Lebanon clinic.

##### **What are the possible risks and discomforts?**

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. The project will not cause any physical harm. Although we have made every effort to minimize any emotional or mental harm, you may find some questions

we ask you to be upsetting or stressful. If these feelings occur, you will be offered an appointment with a clinic therapist who may be able to help you with these feelings.

**Will I benefit from taking part in this project?**

There is no personal benefit from taking part in this project.

**Do I have to take part in this project?**

If you decide to take part in the project, it should be because you want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the project and still keep the benefits and rights you had before volunteering.

**If I don't take part in this project, are there other choices?**

If you do not want to take part in the project, there are other choices such as being seen by your provider in a scheduled, face-to-face session.

**What will it cost me to participate?**

There are no costs associated with taking part in this project.

**Will I receive any payment or rewards for taking part in the project?**

You will not receive any payment or reward for taking part in this project.

**Who will see the information I give?**

Your information will be combined with information from other people taking part in the project. When we write up the results of the project to share it with other researchers, we will write about this combined information. You will not be identified in these written materials.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. For example, your name will be kept separate from the information you give, and these two things will be stored in different places under lock and key.

However, there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court or to tell authorities if we believe you have abused a child or are a danger to yourself or someone else. Also, we may be required to show information that identifies you to people who need to be sure we have completed the project correctly; these would be people from such organizations as Eastern Kentucky University.

**Can my taking part in the project end early?**

If you decide to take part in the project, you still have the right to decide at any time that you no longer want to participate. You will not be treated differently if you decide to stop taking part in the project.

The individuals conducting the project may need to end your participation in the project. They may do this if you are not able to follow the directions they give you, if they find that your being in



the project is more risk than benefit to you, or if the agency funding the project decides to stop the project early for a variety of scientific reasons.

**What happens if I get hurt or sick during the project?**

If you believe you are hurt or if you get sick because of something that is done during the project, you should call Leslie Brauner, APRN at (502) 348-9206 immediately. It is important for you to understand that Eastern Kentucky University nor Leslie Brauner, APRN will not pay for the cost of any care or treatment that might be necessary because you get hurt or sick while taking part in this project. That cost will be your responsibility. Also, Eastern Kentucky University nor Leslie Brauner, APRN will not pay for any wages you may lose if you are harmed by this project.

Usually, medical costs that result from research-related harm cannot be included as regular medical costs. You should ask your insurer if you have any questions about your insurer's willingness to pay under these circumstances.

**What if I have questions?**

Before you decide whether to accept this invitation to take part in the project, please ask any questions that might come to mind now. Later, if you have questions about the project, you can contact the project leader, Leslie Brauner, APRN at (502) 348-9206. If you have any questions about your rights as a research volunteer, contact the staff in the Division of Sponsored Programs at Eastern Kentucky University at 859-622-3636. We will give you a copy of this consent form to take with you.

**What else do I need to know?**

CommuniCare is involved in this project by providing supplies and equipment, access to the facility, and access to patient database.

You will be told if any new information is learned which may affect your condition or influence your willingness to continue taking part in this project.

*I have thoroughly read this document, understand its contents, have been given an opportunity to have my questions answered, and agree to participate in this research project.*

\_\_\_\_\_  
Signature of person agreeing to take part in the project

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed name of person taking part in the project

\_\_\_\_\_  
Name of person providing information to participant

**Appendix D: Sociodemographic Questionnaire**

Age:

Gender:

Marital status:

Highest grade completed/ Educational level:

Insurance:

Average Household Income:

Employment status:

Diagnosis:

Approximate number of miles to clinic/provider:

Did you use community or public transportation services for today's appointment?

Have you used telehealth/telepsychiatry before?

**Appendix E: Telemedicine Satisfaction and Usefulness Questionnaire Permission to Use**

Hello Dr. Bakken,

My name is Leslie Brauner and I am student at Eastern Kentucky University working towards completion of the Doctor of Nursing Practice (DNP) degree. I am currently in the process of completing my capstone project proposal which focuses on the acceptability of telepsychiatry in a rural Kentucky population. My capstone project aims to introduce telemedicine to a community mental health organization and subsequently assess the acceptability and patient satisfaction of this modality. I am requesting permission to use your Telemedicine Satisfaction and Usefulness Questionnaire as the primary survey instrument in my project. Thank you for your consideration and feel free to contact me with any questions or concerns.

Respectfully,

Leslie Brauner, APRN, PMHNP-BC

Eastern Kentucky University

From: Suzanne Bakken (sbh22@cumc.columbia.edu)

Permission Granted: 2/15/15

Original text: Feel free to use it and adapt as needed to your project should the functionality of the telemedicine program you are evaluating differ from the one in the questionnaire.

(Received through electronic communications on February 15, 2015).

**Appendix F: TSUQ Instrument**

## TELEPSYCHIATRY SATISFACTION AND USEFULNESS QUESTIONNAIRE

Developed by Bakken, et al. (2006)

	Strongly disagree			Strongly agree	
In general, I am satisfied with the telemedicine system.	1	2	3	4	5
My health is better than it was before I used the technology.	1	2	3	4	5
I am more involved in my care using the telemedicine system.	1	2	3	4	5
The telemedicine system helps me to better manage my health and medical needs.	1	2	3	4	5
The telemedicine system helps monitor my health condition.	1	2	3	4	5
My provider uses information from the telemedicine system in my office visits.	1	2	3	4	5
I follow my provider's advice better since working with the telemedicine system.	1	2	3	4	5
The telemedicine equipment is easy to use.	1	2	3	4	5
I can always trust the equipment to work.	1	2	3	4	5
It was easy to learn to use the equipment.	1	2	3	4	5
Talking to a provider during a video visit is as satisfying as talking in person.	1	2	3	4	5
A provider can get a good understanding of my medical problem during a video visit.	1	2	3	4	5
My privacy is protected during video visits.	1	2	3	4	5
I can explain my medical problems well enough during a video visit.	1	2	3	4	5
The lack of physical contact during a video visit is not a problem.	1	2	3	4	5
Video visits are a convenient form of healthcare delivery for me.	1	2	3	4	5
Video visits save me time.	1	2	3	4	5
Video visits make it easier for me to contact the provider.	1	2	3	4	5
My provider answers my questions.	1	2	3	4	5
My provider deals with my problems.	1	2	3	4	5
My provider engages me in my care.	1	2	3	4	5

Comments: