# EFFECTIVENESS OF TELEMENTAL HEALTH SERVICES IN RURAL COMMUNITIES: AN INTEGRATIVE REVIEW

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Elizabeth Vebangsi MSN, PMHNP-BC, FNP-BC

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Scholarly Project Chair Approval: *RAJoseph* 6/9/2022

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**ABSTRACT**

Telemental health has been recognized as a technique to improve access to care delivered to Rural communities and those willing to use telehealth services have increased tremendously since its introduction. Literature evaluates patients' satisfaction with telemental health services and their acceptance to improve care delivery in rural communities. The literature review identified three major themes: improved care, increased use of telemental health services, and reduced cost and timesaving. Even though some studies uncovered issues from technology, poor connectivity, and delay in audio-visual transmission, the potential of mental health services continues to enhance care delivery to rural communities.

*Keywords***:** Telemental health, rural mental health, telepsychiatry, effectiveness, cost

# EFFECTIVENESS OF TELEMENTAL HEALTH SERVICES IN RURAL COMMUNITIES: AN INTEGRATIVE REVIEW

## Dedication

I dedicate this project to people suffering from mental health issues living in underserved areas and rural communities. I hope this project will create awareness and encourage mental health providers to use telemental health to increase their access to care. I also hope this project will enable primary care and midlevel providers to incorporate integrative care into their various specialties.

**Acknowledgments**

I want to thank the DNP committee for their continual support, guidance, encouragement, and advice in helping me reach my potential as a doctoral student and complete this project. My sincerest gratitude to my chair Dr. Joseph, Dr. Goodrich, Dr. Akers, Dr. Turner, and Dr. Murphy. Many thanks to the PMHNP faculties who molded me with mental health knowledge.

Additionally, I give my sincerest gratitude to my children for their unwavering love and support, Alvin, Daisy, Claudia, Elizabeth, Sarah, Alex, Laura, Akonji, my brothers, predominantly Christian and Simon, and not forget my nieces and nephews. Thank you all for the encouragement, support, and motivation.

I also thank God for making my dreams come to reality. He always has the final say in everything in life.

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## List of Abbreviation

American Association of Colleges of Nursing (AACN)

Cumulative Index to Nursing & Allied Health (CINAHL)

Doctor of Nursing Practice (DNP)

Evidence-Based Practice (EBP)

Health Resources and Services Administration (HRSA)

Level of Evidence (LOE)

Liberty University (LU)

Preferred Reporting Items for systematic reviews and Meta-Analysis (PRISMA)

Rural Health Information Hub (RHI hub)

## SECTION ONE: FORMULATING THE REVIEW QUESTION

### Introduction

Excellent or positive mental health is associated with various developmental outcomes, including better health status, higher educational achievement, enhanced productivity, earnings, improved interpersonal relationships, better parenting, closer social connections, and improved quality of life. Positive mental health is fundamental to coping with adversity, while poor mental health impedes individuals' capacity to realize their potential, work productively, and contribute to their community. People with mental health issues constitute a vulnerable group because they are subjected to high levels of stigma and discrimination, experience high levels of physical and sexual abuse, are restricted in the exercise of their political and civil rights, and are unable to participate fully in their society or policy decision making processes (Lake & Turner, 2017). The majority of those with mental health issues live in low or middle-income communities that cannot provide essential health and social care. Mental illness is closely associated with poverty, wars, and other humanitarian disasters. In some cases, it leads to suicide, one of the most common causes of preventable death among adolescents and young adults (Lake & Turner, 2017). More than 85% of the world's population lives in low-and middle-income countries, and poverty is linked to a higher burden of mental illness, with variables such as education, food insecurity, housing, social class, socioeconomic status, and financial stress revealing a strong association (Lake &Turner, 2017).

People living in rural communities face increasing disparities in health outcomes and a significant gap in life expectancy compared to urban people (Morales et al., 2020). Many rural communities have a shortage of mental health providers causing difficulties in accessing mental health care.

The decline in mental health personnel is likely to impact access to care for people with mental illnesses (Andrilla et al., 2018). The shortage of mental health providers is inversely related to the need. The gap in mental health access is also vast for low-income individuals with Medicaid. In 2015, only one-third of psychiatrists accepted new Medicaid patients compared with over 70% of primary care and other consultant physicians (Patel et al., 2020). According to Shim et al. (2021), the primary reasons individuals with mental illnesses do not seek services at earlier stages of the disease include a lack of access to mental health services, an increase in mental health care costs, and fewer mental health providers. Telemental health services are increasingly viewed as effective ways to deliver mental health care, such as consultations and therapy to promote population health and provide ready access to patient-centered care in rural communities (Fairchild et al., 2019). This paper will examine the effectiveness of telemental health as an alternative strategy to deliver care in rural communities.

**Defining Concepts and Variables**

Telemental health visits may be defined as a one-to-one patient–tele provider interviews utilizing live video interaction in a private examination set-up (Reay et al., 2020). Telemental health modalities include telephone-delivery therapy, videoconferencing, mental health apps, and internet-delivered programs such as telemental health services. Furthermore, mental health interventions are described as synchronous, interactive communication that occurs in real-time such as telephone and video conferencing, and are most like face-to-face treatment. Asynchronous treatments include emails, texts, faxes, apps, and online programs. Most of the research points out that Telemental health is a form of interactive videoconferencing that has become a critical strategy in delivering care in rural communities. Rural patients' access to appropriate and adequate mental health services has been limited by barriers including

accessibility, availability, and acceptability (U.S. Census Bureau, 2016). However, U.S. Census Bureau defined rural communities as open countryside and settlements with fewer than 2,500 residents.

**The rationale for Conducting the Review**

Mental health care needs are on the increase. According to Rural Health Information Hub (RHIhub) (2020), as of September of 2021, Health Resources and Services Administration (HRSA) designated 3,426 Mental Health Professional shortage areas in rural areas. A study conducted in 2018 revealed that the most significant challenge preventing rural Americans from receiving the care was the lack of health professionals providing mental health services in rural and frontier areas, Travel distances, lack of public transportation, lack of health insurance covering mental health, reimbursement issues, and social stigma were also challenging issues affecting access and provision of mental health services in rural communities (RHIhub, 2020). Annual health care spending on managing mental illness in the United States is estimated at $201 billion. Rural mental health programs usually start with grant funding and face significant sustainability challenges when grant funding ends (Lambert et al., 2016). According to Andrilla et al. (2018), 43.4 million Americans aged 18 and older suffered from mental health issues in 2015. According to National Alliance on Mental Illness (NAMI) (2020), 1 in 5 adults in the U.S experienced a mental illness; 1 in 25 experienced severe mental illness; 50% began at age 14, and 75% by age 24. It is essential to measure how common it is to understand mental health and its physical, social, and financial impact. In 2018, 115 million Americans lived in a mental health professional shortage area (Barnett & Huskamp, 2019). It was estimated that the number of psychiatrists, psychologists, and psychiatric nurse practitioners was low in rural communities compared to urban areas. According to the rural healthy people survey they administered, Bolin

and Bellamy (2020) found that mental health issues were the third-deepest concern. Barnett and Huskamp's (2019) studies revealed that suicide rates increased by 33% from 1999 to 2017, with the highest increase in rural counties. Failure to recognize or treat mental health disorders leads to increased mortality rates because this population is already considered vulnerable. The national survey on drug use and health also noted that one-quarter of adults with mental illness testified to an unmet need for mental health (RHIhub, 2020). Treatment findings revealed that among people likely to need mental health treatment, rural residents typically received fewer mental health services than urban residents from 2010 to 2015 (RHIhub, 2020). According to Andrilla et al. (2018), there is an unequal distribution of mental health providers throughout the census divisions and geographic categories; understanding this is important for developing innovative approaches to improve rural communities' mental health. According to Lake and Turner (2017), mental health conditions are responsible for the highest hospital, long-term, and ambulatory care costs compared to other chronic diseases. Understanding the economic burden of mental health conditions in rural communities can strengthen the case for early intervention. Telemental health services may be an alternate means of providing access in rural areas. This project examined the feasibility and effectiveness of telemental health care disparity in rural communities.

**Purpose and Review Question(s)**

An integrative literature review was performed to examine the effectiveness of telemental health delivery in rural communities. The DNP training helps develop an awareness and understanding of the issues, which is the step towards influencing how health care is organized, paid for, and delivered. There are profound disparities and a disproportionate distribution in mental health care delivery in the United States, especially among those living in

rural communities. It is essential to evaluate the health care delivery and outcomes in rural communities to reduce healthcare disparities. Healthcare disparities in rural communities can be reduced through collaboration with local and federal governments by addressing structural inequities and using technology such as telemental health. Telemental health has been recommended to supplement traditional face-to-face office visits while allowing immediate consultation, crisis intervention, and therapy services (Reay et al., 2020). This DNP scholarly project examined if telemental health is an effective strategy to address mental health needs in rural communities.

***Review Question***

Is telemental health service an effective strategy to meet the mental health needs in rural communities?

**Inclusion and Exclusion Criteria** (Appendix A)

***Inclusion Criteria:*** The following were the criteria for the inclusion of articles

- Peer-reviewed publications on research performed on adults and children above 15 years with mental health diagnoses
- Published in the English language after 2015
- Publications that examined the use of telemental health services

***Exclusion Criteria***: Criteria for exclusion were:

- Articles on children below 15 years of age
- Articles published before 2015
- Publications in a language other than English

## Conceptual Framework

Whittemore and Knafl (2005) and Cooper's (1998) five-step process were utilized to guide this integrative review project. This methodological approach assisted in identifying the problem, literature search and evaluation, data analysis, interpretation, and presentation of results. According to Whittemore and Knafl's method, integrative review methods are the only approach that allows for the combination of diverse methodologies and has the potential to play a more significant role in evidence-based practice for nursing. According to Whittemore and Knafl, an integrative review methodology must involve detailed and thoughtful work so that the outcome can significantly contribute to a particular body of knowledge and consequently to practice and research. Identifying barriers to care delivery in rural communities and redirecting resources to these areas can improve treatment outcomes. Establishing evidence-based care is an essential responsibility of nurses, particularly those Nurse Practitioners with Doctor of Nursing Practice (DNPs). They can translate research into practice by advocating for policies to address or reduce the practice gaps.

## Doctor of Nursing Practice Essentials

The Doctor of Nursing Practice (DNP) study program is based on eight core principles, also known as Essentials of Doctoral Education for Advanced Practice Nursing. This section contains instances of how the eight essentials were met in this scholarly project.

### *Essential I.*

Scientific Underpinnings for Practice. Understanding the importance of using science concepts to evaluate and enhance care delivery and improve outcomes. Telemental health has been cited to improve and enhance care delivery in rural communities.

***Essential III.***

Clinical Scholarship and Analytical Methods for Evidence-based Practice. Melnyk's level of evidence was used to identify the highest level of evidence in this scholarly project.

***Essential IV.***

Information System/Technology and Patient Care Technology for the Improvement and Transformation of Health Care. Using technology to provide safe, efficient, patient-centered care. Telemental health technology has been cited as safe, effective, and delivering patient-centered care in rural and urban settings.

***Essential V.***

Health care Policy for Advocacy in Health care. This project identifies disparities in rural mental health services, and DNP-prepared nurses can advocate for this service.

***Essential VII.***

Clinical Prevention and Population Health for Improving the Nation's Health. This scholarly project evaluates care delivery models and strategies using concepts related to community, environmental and cultural, and socioeconomic dimensions of health.

***Essential VIII.***

Advanced Nursing Practice. This project identifies evidence-based practice strategies that can be used in rural communities to improve access to mental health care education and promote early intervention.

(AACN, 2006)

## SECTION TWO: COMPREHENSIVE AND SYSTEMATIC SEARCH

### Search Organization Reporting Strategies

A literature search was conducted using the following search terms: telemental health, mental health effectiveness, access rural mental health, and issues to community mental. The choice of the online search engine was Ebscohost, and the databases used included Cumulative Index of Nursing and Allied Health (CINAHL), MEDLINE (OVID), PubMed, and Cochrane. Peer-reviewed journal articles were used as resources regarding telemental health effects. Melnyk's level of evidence was used as a systematic review tool (Appendix B). Melnyk's level of evidence suggested that seven steps and principal components of a literature review can be referred to keep the articles consistent. After consulting Melnyk's order of evidence, 20 articles were appropriately synthesized using an abstracted literature matrix to organize the findings, appraise research quality, eligibility, and highlight results. 17 were used as secondary sources (appendix C). There was a range of evidence that existed among 15 with level V, where evidence was obtained from systematic reviews of descriptive and qualitative studies; two-level IV, where evidence was obtained from well-designed case-control and cohort studies; two-level II, where evidence was obtained from a well-designed randomized control trial, and one level III which was a controlled trial without randomization. The Preferred Items for Systematic Reviews and Meta-Analyses PRISMA (Page et al., 2020) is used to identify relevant articles (appendix D). Out of the 1138 articles found in the four databases, as mentioned earlier, 910 duplicate articles were removed, 118 were ineligible, and 30 did not match a research question. Of the 80 articles left were screened, 43 were excluded, and after assessing the remaining 37 for eligibility, 20 articles were used in the matrix.

**Terminology**

Databases such as CINAHL, MEDLINE, PubMed, and Cochrane were searched for peer-reviewed publications using chosen search terms. Search teams used include telemental health, mental health effectiveness, access to rural mental health, issues to community mental, and rural telepsychiatry. Toronto and Remington (2020) define a platform as the software used by database providers and often compatible with the term search engine. According to Toronto and Remington (2020), a database is an electronic, searchable collection of published materials from books, journals, and reports. According to Toronto and Remington (2020), limiters on the search interface allow for articles to be searched using choices such as language, age, published years, or publisher.

## SECTION THREE: MANAGING THE COLLECTED DATA

Using the previously mentioned databases, a systemic search was conducted to identify current literature on telemental health use in individuals living in rural communities. Twenty articles were synthesized using a literature matrix which helped avoid duplicate reports and determined eligibility criteria. The articles were screened for eligibility and were selected through an extensive filtering process modeled by the PRISMA (Page et al., 2020) flowchart (appendix D). One thousand, one hundred thirty-eight articles were identified, and titles were reviewed for topics discussing telemental health effectiveness in rural communities, cost, feasibility, barriers, and availability. After removing duplicate and ineligible articles, 80 articles and abstracts were left for screening. These 80 articles were reviewed using the inclusion and exclusion criteria to determine eligibility; 37 articles were found, 20 articles that met the inclusion criteria and were sufficiently relevant to the clinical question were used in the matrix, and 17 were used as supporting articles. This was an indication that the database search process

was sufficiently comprehensive within the given criteria (Toronto & Remington, 2020). The criteria used for article selection may be found in the Inclusion and Exclusion Criteria table. The 20 articles in the matrix were appropriately synthesized and organized to get to the findings.

## SECTION FOUR: QUALITY APPRAISAL

Evidence was examined using Melnyk's level of evidence (Appendix B), and articles were gathered in a literature matrix (Appendix C). According to Melnyk and Fineout-Overholt (2015), levels of evidence are assigned to studies based on the methodological quality of their design, validity, and applicability to patient care. The levels range from the highest being a one and the lowest being a six. The fact that a study is located lower on the hierarchy of evidence does not necessarily mean that the strength of the recommendation made from that study and other studies is low. Suppose the evidence is consistent across studies on a topic or very compelling. In that case, strong requests can be made from evidence found in studies with lower levels of evidence (Melnyk & Fineout-Overholt, 2015). The analysis was done to obtain descriptive and thematic analysis using Whittemore and Knafl's (2005) method.

### Sources of Bias

Bias can occur in the planning, data collection, analysis, and publication; therefore, understanding research bias is one of the priorities taken into consideration during the research process to review the scientific literature and avoid potentially biased treatments. Understanding bias and its impact on study results are essential for the practice of evidence-based medicine (Merino et al., 2018). The PRISMA (Page et al., 2020) guidelines helped identify relevant articles during the literature search (appendix D). During this integrated review, no recognizable

risks of bias were noted with the reviewed themes and acknowledged strategies in the discrete studies.

**Internal Validity**

Internal validity refers to the reliability or accuracy of the study results. A study's internal validity reflects the author's and reviewer's confidence that the study design, implementation, and data analysis have minimized or eliminated bias and that the findings are representative of the true association between exposure and outcome (Hammarstrom et al., 2016). This project used an enhanced table to collect and report on all the articles, and each column broadly addresses qualitative abstract detail to ensure the research question was addressed. Studies with a small sample size were examined for their validity, which suggested further research to decide the application of their results. Studies with high internal validity were those with descriptive experiments designed to evaluate the effectiveness of a particular intervention under idealized conditions. In a highly selected population, such as mental health, high internal validity often comes at the expense of the ability to be generalized (Hammarström et al., 2016). This project defined telemental health as a one-to-one patient–tele provider interviews utilizing live video interaction in a private examination set-up. The studies were designed to evaluate the effectiveness of the telemental health population.

**Appraisal Tools (Literature Matrix)**

The literature matrix was used as a tool for this project (appendix C). Using a literature matrix enabled the researcher to synthesize information and keep track of their sources for citation purposes. The appraisal was conducted using established guidelines detailed by Melnyk’s Level of Evidence. The articles that met the inclusion and exclusion criteria were

examined individually to ensure the information was specifically applicable to conferring on Melnyk's and Fineout-Overholt's (2015) standards.

**Applicability of Results**

Results revealed that mental health access is remarkably low in low-income individuals living in rural communities (Acharibasam & Wynn, 2018). According to Andrilla et al. (2018), 43.4 million Americans suffer from mental health issues closely associated with poverty or people living in low-income communities; and most of the people with mental health problems live in rural communities. An alternative strategy is needed to increase access to care and close this care gap. Several studies cited video conferencing, facetime, and synchronous services as effective strategies to deliver care in rural communities. Telemental health increases access to care, decreases cost, decreases wait time, and provides quality care while reducing stigma. These findings raise the need for increased access to mental health services in rural communities while aiming for improved health service delivery and guiding health care policies and reforms to improve health outcomes. This study recommends more integrated care with telemental health models in rural communities, a sustainable incentive for professionals to practice in rural areas, and strong policies that include affordable mental health insurance and services.

**Reporting Guidelines (Whittemore & Knafl)**

According to Whittemore and Knafl (2005), the integrative review may be reported in a table or diagrammatic form. The findings from the study indicating the effectiveness of telemental health in rural communities are reported in table form (Appendix E) with explicit details from primary sources.

## SECTION FIVE: DATA ANALYSIS AND SYNTHESIS

### Data Analysis Methods

The data analysis was done by extracting and coding data from primary sources to simplify, abstract, focus, and organize it into a thematic analysis using Whittemore and Knafl (2005). The approach provided the concise organization of the literature to facilitate the ability to compare primary sources on sample characteristics systematically. The original literature was limited to peer-reviewed journal articles published within the past five years. After comparison, conductive data analysis revealed common themes and patterns in the evidence, as Whittemore and Knafl (2005) recommended. The final process of data analysis took place after data mining, and the evidence was categorized, mounted into tables for visualization of trends, and then final synthesis took place. The trends and conclusions were then discovered with the data sources that supported them. At this point, bias was reviewed to determine the thoroughness of information to ensure essential data were included in the final synthesis, which also helped identify common themes.

### Descriptive Results

Findings revealed in the initial literature were validated in the subsequent research.:

Several studies revealed that mental health access has been remarkably low in low-income individuals living in rural communities. Using telemental health services for therapy and other mental illnesses improves access to care (Aikens et al., 2021). Telemental health services reduce care costs, as indicated by patients' and providers' high satisfaction ratings. Almost all the different technologies cited in the studies were effectively used to provide care, and telemental health services had the capabilities for imaging, synchronous and asynchronous psychotherapy, and consultation with clinicians in various settings. According to Shore et al. (2018), telemental

health services in interactive videoconferencing have become a critical tool in delivering mental health care. Telemental health services have proven their ability to increase access and quality of care. In some settings, they can do so more effectively than treatment delivered in person (RHI hub, 2020). These findings raise access to mental health services in rural communities while aiming for improved health service delivery and guiding health policies and reforms that improve health outcomes in rural communities. Several studies summarized into a unified and integrated conclusion that, while telemental health enhanced availability and affordability, and was well accepted in rural communities, challenges of reliable internet services, affordable devices, and the challenge of operating these devices remain a challenge for many mental health patients with physical or cognitive disabilities (Lau et al., 2021). Even though some studies cited confidentiality and privacy as an issue, Arafat et al. (2021) stressed that therapy took place on an appointment basis, and sessions were strictly abiding by confidentiality standards. A strong recommendation for incentives to increase strategies such as telemental health in rural communities is defensible.

**Synthesis**

Synthesis reviews are powerful knowledge tools because they evaluate current knowledge's strengths and weaknesses and seek to create a more informed understanding. An integrative review of the literature was conducted to examine the effectiveness of telemental health in rural communities. This integrative review sought to summarize past research and present a current state of knowledge that calls attention to issues not resolved in the study. This integrative review identified three themes (appendix E).

One unique theme in the literature is that telemental health services can be used to improve the gap in care in rural communities. Langarizadeh et al. (2017) described telemental

health services as multiple capabilities and technologies for effective intervention for patients with various mental illnesses. Telemental health services are ideally suited to the pandemic situation, giving people in rural or remote communities access to essential services without increasing the risk of infection, as in the case of COVID-19 (Reay et al., 2020). Steward et al. (2020) pilot confirmed that cognitive-behavioral therapy delivered via telepsychotherapy reduced posttraumatic stress disorder symptoms. Shore et al. (2018) revealed that videoconferencing-based services could increase care access and quality. Aikens et al. (2021) concluded that telemental health services facilitate self-management guidance and improve depression in many settings. Richards et al. (2018) revealed that telemental health services were very effective in providing cognitive behavioral therapy to patients with depression and anxiety, improving care, quality of services, and decreasing costs and travel time. Parisi et al. (2021) revealed that the video conferencing strategy was the most frequently used adaptation for telemental health services. Weiss et al. (2018) also supported the effectiveness and appropriateness of video teleconferencing for post-traumatic rural veteran women who experienced military sexual trauma. Hassan and Sharif's (2019) findings endorsed the efficacy of telemental health services due to their potential for delivering the same results as traditional in-person therapy for people living in refugee camps when resources were constrained. About 60% of US counties have a shortage of mental health providers. Telemental health services are becoming a widely accepted mechanism to help address mental health care provider shortages in many rural and urban communities (Fairchild et al., 2019); Weaver (2018) identified that telemental health has the potential for a gap in coverage and disaster response and has been used effectively for consultation and treatment modalities such as individual psychotherapies,

psychopharmacology management, and group and family psychotherapies in veterans living in rural communities.

The second key theme identified in the literature is increased telemental health usage and services**.** Acharibasam and Wynn **(**2018) revealed a rising trend in telemental health usage in low to-middle income rural communities. Both patients and providers expressed high satisfaction with using telemental health. Weaver (2018) cited that telemental health enhances outreach and access, augments staffing, provides services to underserved areas, meets veterans in their preferred location, and increases the quality of care. Researchers found that telemental health care is an extended domain supportive of conventional mental health services (Langarizadeh et al., 2017). Yazla and Senel (2021) noted that telemental health care usage had increased almost year since 1986 in the United States, Australia, and Canada. Hubley et al. (2016) revealed that providers and patients are consistently happy using telemental health services. Reay et al. (2020) also supported the effectiveness of online delivery of interpersonal psychotherapy due to more commitment to therapy and its psychodynamic approaches.

The third theme identified in the literature was cost and timesaving. The literature revealed that telemental health services are cost-effective because they cover critical staff shortages, reduce wait time, reduce stigma, decrease travel costs, increase provider and patient satisfaction, improve access to care and offer evidence-based psychotherapy and pharmacotherapy (Weaver, 2018). telemental health uses information and telecommunication technologies to deliver mental health services when the providers and the individuals with mental health problems are separated by geographical distance (Weaver, 2018). Increasing access to telemental health services can decrease emergency room visits, decreasing wait times for other patients (Fairchild et al., 2019). Yilmaz et al. (2018) confirmed that telemental health

structured with more pre-satellite patient encounters has lower costs in rural populations and significant economic benefits. Therefore, telemental health services may save valuable transportation time for professionals and free up resources to treat more patients (Koblauch et al., 2021).

**Challenges**

While telemental health has reduced travel time and increased access to services for many patients, it has posed several challenges, such as privacy during sessions conducted in the home and accessing reliable internet and devices for some families. Users need to be capable of operating the program used to receive services, and Langarizadeh et al. (2017) noted concerns regarding the operation of the necessary software or equipment might pose a challenge to mental health patients with physical or cognitive disabilities, which may reduce access to services and may require a caregiver to assist. Barriers to care, including lack of transportation, work or school schedules, stigma, long distances, and cost, were reported by Weaver, 2018.

**Ethical Considerations**

The Institutional Review Boards (IRBs) have the federally required accountability to review research concerning human subjects to certify that a suggested protocol meets the applicable ethical guidelines before issues may be registered in a study. Failure of IRBs to provide proper review and supervision can lead to severe consequences, as an abrogation by the investigator to place the well-being of the subjects as the primary responsibility in any research protocol (White, 2020). The project was approved by Liberty University IRB (appendix F). The researcher completed the Collaborative Institutional Training Initiative (appendix G) to promote quality in the integrative review setting (see appendix for certificates).

**TIMELINE**

- 11/8/21 to 11/20/21. Preliminary articles search and matrix
- 11/20/21 to 11/30/21. Preliminary literature review
- 1/2/22 to 1/6/22. Defend proposal
- 2/12/22 to 2/16/22. IRB approval
- 1/21/22 to 3/30/22. Detailed literature review, analysis, and writing of final proposal
- Defend in May 2022

## SECTION SIX: DISCUSSION

### Implication for Practice/Future work

This integrative review will help increase awareness of the disparity in mental health care in rural communities. Understanding the lack of access to mental health individuals will help providers redistribute resources and support health care policies or strategies that increase access to care in rural communities. Awareness, advocacy, and policies are needed to support care delivery in rural communities, especially for individuals with mental health problems. The findings from the review reinforce the importance of technology and the use of EBP to improve care quality or outcomes, reduce stigma, and increase care access or affordable care in rural communities**.** The project findings recommend future research on sustainable incentives for professionals to practice in rural communities and to develop and implement public stigma reduction campaigns in rural communities. In addition, further research is needed on how to effectively integrate other care models with telemental health care models and create policies that include affordable mental health services.

**Dissemination**

The result from this literature review was presented at Liberty University's research week using a poster method. This will be presented at LUSON research day, Fall 2022, and other local conferences. As knowledge and evidence derived from current research articles improve the way care is delivered and enhance clinical practice to meet the expectations of patients, families, and society, the findings may be used for organizational meetings or local conferences. A manuscript will be published in a peer-reviewed journal.

## Conclusion

While telemental health enhances availability and affordability and is well accepted in rural communities, the challenges of reliable internet services, affording devices, and the operating device remain a challenge for many individuals with mental health problems with physical or cognitive disabilities. Nevertheless, telemental health has the benefits of reducing the gap in care, eliminating travel time, and being cost-effective. However, further research is recommended to examine its effectiveness. Despite telemental health potential in rural areas, more research is needed to understand the factors that contribute to the practicality and acceptability of these services to these populations Advocating for policies that will require insurance companies to consider mental health or give equal coverage to mental health as they do with physical health might reduce some of the challenges and increase access to care.

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## List of Appendices

- Inclusion and Exclusion. Appendix A
- Melnyk levels of Evidence. Appendix B
- Matrix/critical Appraisal. Appendix C
- PRISMA Flow Diagram. Appendix D
- Thematic summary of Included Studies. Appendix E
- IRB Approval Letter. Appendix F
- CITI Training Certificate. Appendix G

## Appendix A

## Inclusion and Exclusion Criteria

| Inclusion | Exclusion |
|---|---|
| Adult with a mental health diagnosis | Children of 15 years or below |
| Must be using tele mental health | Not using tele mental health. |
| Articles published after 2015 | Articles published in 2015 or prior |
| Articles published in the English language | Articles that were published in non-English language |
| Peer-reviewed articles | Non-peer-reviewed or non-published articles |

## Appendix B

## Melnyk Levels of Evidence

Level 1 - Systematic review & meta-analysis of randomized controlled trials; clinical guidelines based on systematic reviews or meta-analyses

Level 2 - One or more randomized controlled trials

Level 3 - Controlled trial (no randomization)

Level 4 - Case-control or cohort study

Level 5 - Systematic review of descriptive & qualitative studies

Level 6 - Single descriptive or qualitative study

Level 7 - Expert opinion

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Modified from:

Melnyk, B.M. & Fineout-Overholt, E. (2019). "Box 1.3: A rating system for the hierarchy of evidence for intervention/treatment questions" in Evidence-based practice in nursing & healthcare: A guide to best practice (3rd ed.) (pp. 11). Philadelphia, PA: Wolters Kluwer Health

**Appendix C**

**Critical Appraisal/Level of Evidence**

| Article Title, Author | **Study purpose** | **Sample Characteristics/Demographics** | **Methods** | **Study Results** | **Level of Evidence (LOE) Melnyk Framework)** | **Study limitations** | **Use as Evidence to support change? (Yes or No) Provide Rationale.** |
|---|---|---|---|---|---|---|---|
| Article #1<br><br>Acharibasam, J. W., & Wynn, R. (2018). Tele mental health in low- and middle-income countries: A systematic review. *International Journal of Telemedicine and Applications. 2*018, 9602821. https://doi.org/10.1155/2018/9602821 | To evaluate the challenges such as inequality in care access and underfunding present in low middle-income countries and how the mental health services address it | 19 included studies, eight conducted in the Asian continent, three in South America, four in Africa, and one in Europe, and three were cross-continent collaborative studies | A systemic review of electronic databases including PubMed, PsycINFO, Web of Science, Springer link, Google articles | There is a need for mental health in the LMIC, but more research is needed on empirical and theoretical aspects of tele mental activity. | Level 5 | There might have been some articles that fit the inclusion criteria but were missed because some journals were published in developi | Yes. It could be used as a guide to replicate a study<br>Yes. To guide research on other chronic mental conditions. |

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| | | conducted between several developed and developing countries | | | | ng countries and not indexed by the major databases. Most of the interventions in the review had no replicate studies and utilized smaller samples, making it difficult to ascertain the validity of their findings. | |

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|---|---|---|---|---|---|---|---|
| Article #2<br>Andrilla, H. A., Patterson, D. G., Garberson, L. A., Coulthard, C., Eric, H., & Larson, E. H. (2018). Geographic variation in the supply of selected behavioral health providers. *American Journal of Preventive medicine. 54(*6). 199-207.https://doi.org/10.1016/j.amepre.2018.01.004 | To examine the accurate supply of psychiatrists, psychologists, and psychiatric nurse practitioners as demands for behavioral health care grows. | Providers from three classified geographic categories based on their practicing county | National Plan and provider Enumeration System and National Provider Identifier from the 2015 watershed to examine the supply of psychiatrist psychologists and psychiatric nurse practitioners. | Psychiatrists, Psychologists, and Psychiatric Nurse Practitioners are unequally distributed throughout the U.S. Disparities exist across Census Divisions and geographic categories. | Level 5 | A variety of providers, such as a psychiatrist,s are represented in the data than those who may bill under another provider's NPI or group and organization. Providers who are not actively practicing can still have an NPI number. The data | Yes. This can guide providers from different geographical areas to redistribute care and reduce disparities. |

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|---|---|---|---|---|---|---|---|
| | | | | | | do not allow for investigation of the availability of services to underserved populations provided via telehealth. The study did not include primary care providers. | |
| Article # 3<br>Aikens, J. E., Valenstein, M., Plague, A., Sen, A., Marinec, N., Achtyes, E., & Piette, J. D. (2021). Technology-Facilitated Depression Self-Management Linked with Lay Supporters and Primary Care Clinics: Randomized Controlled Trial in | To test whether technology-facilitated self-management support improves depression in primary care settings. | 204 low-income primary care patients who had at least moderate depressive | Research conducted a randomized trial, and research participants received 12 months of weekly | Tele mental health facilitated self-management guidance with lay support and clinician | Level 4 | The study only focused on depression and did not address | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| a Low-income sample. *Telemedicine and e-Health.28*(3).http://doi.org/10.1089/tmj.2021.0042 | | symptoms to intervention or control using Patient Health Questionnaire-9 (PHQ-9) | automated interactive voice response telephone calls that assessed their symptom severity and provided a self-management approach. | notifications improves depression for primary care patients. | | other mental conditions. The time for the reflection was too short, and the conclusion could not be reasonably determined or generalized. | |
| Article #4<br>Bishop, T. F., Seirup, J. K., Pincus, H. A., & Ross, J. S. (2016). The population of US practicing psychiatrists declined from 2003-to 13, which may help explain poor access to mental health care. *Health Affairs. 35*(7), 1271-1277. http://dx.doi.org/10.1377/hlthaff.2015.1643 | To examine why the supply of psychiatrists changed over ten years and how the change compared with other specialties | psychiatrist registered with MEPS between the period of 2003 to 2013. | A systematic review from Health resources files, county database maintained by HRSA.20, physician supply by specialty, population | The study revealed from 2003 to 2013; there was a 0.2% decrease in the number of practicing psychiatrists in the United | Level 5 | Data were based on the physician's Masterfile. The study examined only the supply | Yes. it can be used as a guide to be improving access to mental health |

| | | | | | | | |
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| | | | census data, physician Masterfile, US physicians supported by American Medical Association, and sample used data for 2003 to 2013. | States in contrast with 35.7% neurologists, 9.5% adult primary care physicians, and 14.2% all practicing physicians. | | of psychiatrists. The analysis examined only psychiatrists' collection within HRRs. | |
| Article # 5<br><br>Fairchild, R. M., Ferng-Kuo, S. F., Laws, S., Rahmouni, H., & Hardesty, D. (2019). Telehealth Decreases rural emergency department wait times for behavioral health patients in a group of critical access hospitals. *Telemedicine and e-health. 25*(12). 11541164.http://doi.org/10.1089/tmj.2018.0227 | The study was conducted to determine the effects of telehealth-based care delivery on clinical, temporal, and cost outcomes for behavioral health patients in rural emergency departments of four midwestern critical access hospitals | B*ehavioral health* patients were treated in four midwestern Critical Access Hospitals from 2015 *to 2017 (N = 28* | Observational matched cohort Telehealth study in which cases were compared 2:1 retrospectively to non-telehealth control cases based on gender, age ±10 years, diagnosis group, and Critical | Telehealth consultation in the ED for behavioral health cases was associated with decreased wait time and longer ED LOS. Like recent studies, the most common behavioral health cases | Level 4 | Utilizing an observational design, matched data were collected from previous years as case controls, which created a historical confoun | Yes. It could be used as a guideline to reduce ER wait time and increase patient satisfaction. |

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|---|---|---|---|---|---|---|---|
| | | | Access Hospital (CAH) before implementation of telehealth in the rural hospitals (2005–2013; N = 153 | involved mood and anxiety disorders | | ding factor. All cost data were aligned based on the 2016 U. S consumer price index. | |
| Article #6<br>Stewart, R. W., Orengo-Aguayo, R., Young, Y., Wallace, M. M., Cohen, J. A., Mannarino, A. P., & Arellano, M. A. (2020). Feasibility and effectiveness of a telehealth service delivery model for treating childhood posttraumatic stress. A community-based, open pilot trial of trauma-focused cognitive-behavioral therapy. *Journal of Psychotherapy Integration. 30*(2). 274-289.http://dx.doi.org/10.1037/int10000225 | To examine the effectiveness of Trauma-focused cognitive delivered via tele psychotherapy given to 70 trauma-exposed youth in 7 underserved communities. | The sample was 81.4% female, 58.6% Hispanic, 30%.0 African American, and 11.4% Caucasian. | participants were 70 children and adolescents aged 7 to 18 who were referred to a major medical center in South Carolina | findings revealed a potential for an increase in PTSD and offer one of the first evaluations of tele psychotherapy to deliver trauma-focused cognitive behavioral therapy in community-based | Level 4 | The study included only a female sample which may reduce the generalizability of the study results. The lack of comparison groups | Yes. The study could be used as guidelines for program evaluation and future randomized studies. |

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|---|---|---|---|---|---|---|---|
| | | | | locations remotely. | | and randomization are problematic in predicting the applicability of results in other environments. | |
| Article 7.<br>Hassan, A., & Sharif, K. (2019). Efficacy of telepsychiatry in refugee populations: A systematic review of the evidence. *Cureus, 11*(1), e3984.https://doi.org/10.7759/cureus.3984. | The aim is to evaluate the existing literature to determine telepsychiatry's clinical effectiveness and cost-effectiveness in resource-constrained environments. | Registry databases from 2000 to May 2017 with refugees populations | A literature search was conducted by searching Psych INFO, PubMed, Medline, EMBASE, Centre for Reviews and Dissemination, and the Cochrane Library Controlled Trial Registry databases | The study revealed the same results as traditional in-person therapy. Telepsychiatry is a valuable alternative when conventional treatment is not possible and recommends that countries | Level 5. | A few current studies were used, and limited evidence points toward the effectiveness of telepsychiatry in resource-constrained | Yes. This study is an RCT study with level one evidence. It could be used in rural areas and camps to increase and improve care access. |

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| | | | from 2000 to May 2017. | with substantial members of refugees living in resource-constrained areas such as camps be encouraged to develop telepsychiatry programs. | | environments. | |
| Article # 8<br>Hubley, S., Lynch, S. B., Schneck, C., Thomas, M., & Shore, J. (2016). Review of key telepsychiatry outcomes. *World Journal of Psychiatry*, *6*(2), 269–282. https://doi.org/10.5498/wjp.v6.i2.269 | To conduct a review of the telepsychiatry literature. | data on patient and providers satisfaction with telepsychiatry and 452 met the criteria | A systematic search of the literature on telepsychiatry, and our 1976 studies, obtained from PubMed (Medline database), Ovid Medline, Psycho | The study revealed that, in general, patients and providers are commonly happy with telepsychiatry services. | Level 5 | Over-reliance on self-report methodologies. Selection biases that over-represent patients amenable to telepsyc | Yes. The study could be used as a guide or guideline for provider and patient satisfaction. |

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|---|---|---|---|---|---|---|---|
| | | | Info., Embase, and EBSCO PSYCH 452, met the criteria. | | | hiatry and insufficient sample size. | |
| Article #9<br>Langarizadeh, M., Tabatabaei, M. S., Tavakol, K., Naghipour, M., Rostami, A., & Moghbeli, F. (2017). Tele mental health care, an effective alternative to conventional mental care: a systematic review. Acta Informatica Medica: AIM*: Journal of the Society for Medical Informatics of Bosnia & Herzegovina: canopies Drustva za medicinsku information BiH, 25*(4), 240–246https://doi.org/10.5455/aim.2017.25.240-246. | To examine the effectiveness of tele mental health on clients and therapists using synchronous and asynchronous interactions. | Client vs. therapists and synchronous and asynchronous interactions and client must develop mental health illnesses and prerequisite of mental health settings. | Data were obtained from significant databases, including, Webs of Sciences, PubMed, Embase, and Science Direct, and out of 156 articles published within that period, twenty-five met the primary database criteria, 55 were selected for review, and 55 were used for | The study revealed that mental health care is an expanded area of standard mental health services and has multiple capabilities and technologies for providing effective interventions to patients with various mental illnesses. | Level 4 | Concerns about required skills to use the technologies by the patients and the providers and services not covered by insurance. Also, unclear quality control standards. | Yes. The study can be used as a guide to trained staff in a research project that deals with technology. |

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| | | | support and complement ary facts to substantiate the presented study. | | | | |
| Article # 11<br>Lau, N., Colt, S. F., Waldbaum, S., O'Daffer, A., Fladeboe, K., Yi-Frazier, J. P., McCauley, E., & Rosenberg, A. R. (2021). Tele mental health for youth with chronic illnesses: Systematic Review. *JMIR Mental Health*, *8*(8), e30098. https://doi.org/10.2196/30098 | To examine the feasibility and efficacy of the mental health interventions for youth <25 years with chronic illness. | One hundred nine articles of 12studies that met the criteria of tele mental health interventio ns, five feasibility outcomes, seven efficacy outcomes, two pilot studies with a small sample based on cognitive behavior therapy, | Methods. Search PubMed, Embase, Web of Science, PsycInfo, and Cochrane Database of Systematic reviews from 2008 to 2020. Included experimental , quasi-experimental , and Observation al studies of tele mental health interventions designed for | The state of the science for tele mental health intervention s designed for youth with comorbid illnesses is in a nascent stage. Early evidence supports the feasibility of telehealth-based delivery of traditional in-person intervention s. | Level 5 | Studies were done only on mental health populati ons with comorbi d conditio ns. | Yes. It can be used to examine feasibility and efficacy in these age groups. |

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|---|---|---|---|---|---|---|---|
| | | and problem-solving therapy. | children, adolescents, and young adults aged <25 years with chronic illnesses in which feasibility or efficacy was measured. | | | | |
| Article # 12<br>Koblauch, H., Reinhardt, S. M., Lissau, W., & Jensen, P. L. (2018). The effect of telepsychiatric modalities on reducing readmissions in psychiatric settings: A systematic review. *Journal of Telemedicine and Telecare*, *24*(1), 31-36. doi:10.1177/1357633X16670285 | The purpose of the study was to conduct a systematic review of the literature on the effects of telepsychiatric modalities on readmissions in psychiatric settings. | The database search identified 218 potential studies, of which eight were eligible for review. | A systematic literature search in MEDLINE, CINAHL, Embase, Cochrane, PsycINFO, and Joanna Briggs databases in October 2015 | Some studies showed up to 86% reduction in readmissions, whereas others did not find any statistically significant difference. | Level 4 | Most studies were of low or moderate quality, likely introducing bias and resulting in an overestimation of study effects. T | No. the results of the interventions were insignificant. |
| Article # 13<br><br>Morales, D., Barksdale, C., & Beckel- | The study aims to highlight the National Institute on Minority | From a National Health Service | A retrospective analysis of | Rural residents in the USA disproportio | Level 5 | The research study did not | Yes. The study offers a helpful |

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|---|---|---|---|---|---|---|---|
| Mitchener, A. (2020). A call to action to address rural mental health disparities. *Journal of Clinical and Translational Science, 4*(5), 463-467. doi:10.1017/cts.2020.42 | Health and Health Disparities (NIMHD) research framework to conceptualize the complexity of rural mental health disparities and enhance the study designs that advance the rural mental health research agenda. | Corps (NHSC), which provides primary health care clinicians for the underserved | NHSC alumni | nately suffer the adverse effects of living with unmet or under-met mental health needs. | | address multiple levels of influence and areas of mental health access. | construction to guide study designs that can address the difficulties of distributing rural mental health care and recognize mechanisms underlying disparity and how best to remedy them. |
| Article #14<br>Patel, S. Y., Huskamp, H. A., Busch, A. B., & Mehrotra, A. (2020). Tele mental health and US rural-urban differences in specialty mental health use, 2010–2017. *American Journal of Public H Health, 110*(9), 1308-1314. http://dx.doi.org/10.2105/AJPH.2020.305657 | To examine whether the use of mental health has reduced the rural-urban gap in specialty mental health care in the United States | A random sample of Medicare beneficiaries throughout the United States, using Medicare 2010-2017 data to analyze | Medicare beneficiaries throughout the United States, using Medicare 2010-2017 data to analyze trends in the rural-urban differences in rates of | Level 5 | Among rural beneficiaries diagnosed with schizophrenia or bipolar disorder, mental | Analyses were limited to the Medicare population, and the care patterns may not translate to the | Yes. It could be used as a Medicaid guide to provide insurance to rural communities. |

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| | | trends in the rural-urban differences in rates of specialty visits. | specialty visits. | | health use grew by 425% over 8years, and in higher use, rural areas accounted for one-quarter of all specialty mental health visits in 2017 | Medicaid or commercially insured population. | |
| Article #15<br><br>Parisi, K. E., Dopp, A. R., & Questch, L. B. (2021). Practitioner use of and attitudes towards videoconferencing to deliver evidence-based tele mental health interventions: A mixed-methods study. *Internet Interventions. 26*(100470).2-8 | study aim at surviving mental health practitioners' attitudes regarding the video conference to deliver technology that is | 100 practitioners were sampled from several national and regional US practice | The researcher administered a quantitative survey to examine the relationship between practitioner- | Findings reported that the most frequently used adaptation for VCD was tailoring, | Level 5 | The study had barriers relating to the feasibility of implementation. | The study can be used as a guide to implement tele mental health or disseminate efforts to extend |

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| https://doi.org/10.1016/j.invent.2021.100470 | considered evidence-based. | organizations | level technology access, experience, training with technology frequency, and acceptability of using video conference (VCD). | and the practitioner education predicted attitudes towards evidence-based interventions. | | | services to populations not served well, such as rural communities. |
| Article # 16<br>Reay, R. E., Looi, J. C., & Keightley, P. (2020). Telehealth mental health services during COVID-19. Summary of evidence and clinical practice. *Australas Psychiatry*. *28*(5).514-516. doi:10.1177/1039856220943032 | To provide a rapid update on the evidence for telehealth in mental healthcare in the context of the COVID-19 pandemic public measures in rural communities. | With online lessons, homework assignments, printable summaries, and cognitive behavior therapy, children, adolescents, and adults. | A systematic review of clinicians with telehealth in mental healthcare using videoconferencing to provide psychotherapy assessment and medication management. | Findings revealed good evidence for the efficacy of online delivered interpersonal psychotherapy, acceptance and commitment therapy, and psychodynamic approaches. | Level 5 | Studies had small samples and could not be applied to other populations. | Yes. It could be used as a guideline to train providers and increase their attitudes towards technology. |

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| | | | | L | | | |
| Article # 17<br>Richards, D., Duffy, D., Blackburn, B., Earley, C., Enrique, A., Palacios, J., Franklin, M., Clarke, G., Sollesse, S., Connell, S., & Timulak, L. (2018). Digital IAPT: the effectiveness & cost-effectiveness of internet-delivered interventions for depression and anxiety disorders in the improving access to psychological therapies prog: study protocol for a randomized control trial. *BMC Psychiatry, 18*(1), 59. https://doi.org/10.1186/s12888-018-1639-5 | The study aims to evaluate the clinical and cost-effectiveness of internet-delivered interventions for depression and anxiety disorders symptoms. | NHS IAPT providers serve a population of 900,000 across seven clinical commissioning groups demographically and economically diverse, ranging from rural west Berkshire to urban commuter towns. | A randomized controlled trial examines the effectiveness and cost-effectiveness of CBT intervention for depression and anxiety disorders against a waitlist control group. | CBT interventions are viable options for patients with depression and anxiety symptomatology, improve the quality of the services, and benefit both in cost and time management. | Level 5 | Limitations. The study is limited to one country, and results might not apply to the same patient population in different countries. | Studies can be used as guidelines to evaluate the immediate and long-term impact of the effectiveness of internet-delivered interventions for depression and anxiety. |

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| Article # 18<br>Weiss, B. J., Azevedo, K., Webb, K., Gimeno, J., & Cloitre, M. (2018). Tele mental health delivery of skills training in affective and interpersonal regulation (STAIR) for rural women veterans who have experienced military sexual trauma. *Journal of traumatic stress, 31*(4), 620-625. https://doi.org/10.1002/jts.22305 | To assess the feasibility, acceptability, and initial efficacy of a skills-focused treatment delivered via video teleconferencing (VTC) to women veterans living in rural areas who had experienced military sexual trauma. | Data were collected as part of an assessment program reinforced by the VHA Office of Rural Health (ORH; All measures involved in the evaluation were reviewed and exempted by the local academic institutional review board (Stanford University, Stanford, CA). Contestants were enrolled | Participants were ten women veterans who had experienced MST, as determined by a positive MST screen, and who lived in Veterans Health Administration (VHA)–defined rural or highly rural areas and operationalized by the zip code of the veteran's home address. | This pilot revealed the preliminary effectiveness, appropriateness, and practicality of providing STAIR via VTC to rural women veterans who have experienced MST. The participants rated the program very highly and indicated that they would recommend it to others and that it had met the goals of helping them | Level 3 | The study was limited to VA rural women with MST. The sample size is small. | Yes. The study can be used as a guideline to manage the mental health of the rural populations with PSTD and implement guidance for other patients suffering from other Traumatic incidences. |

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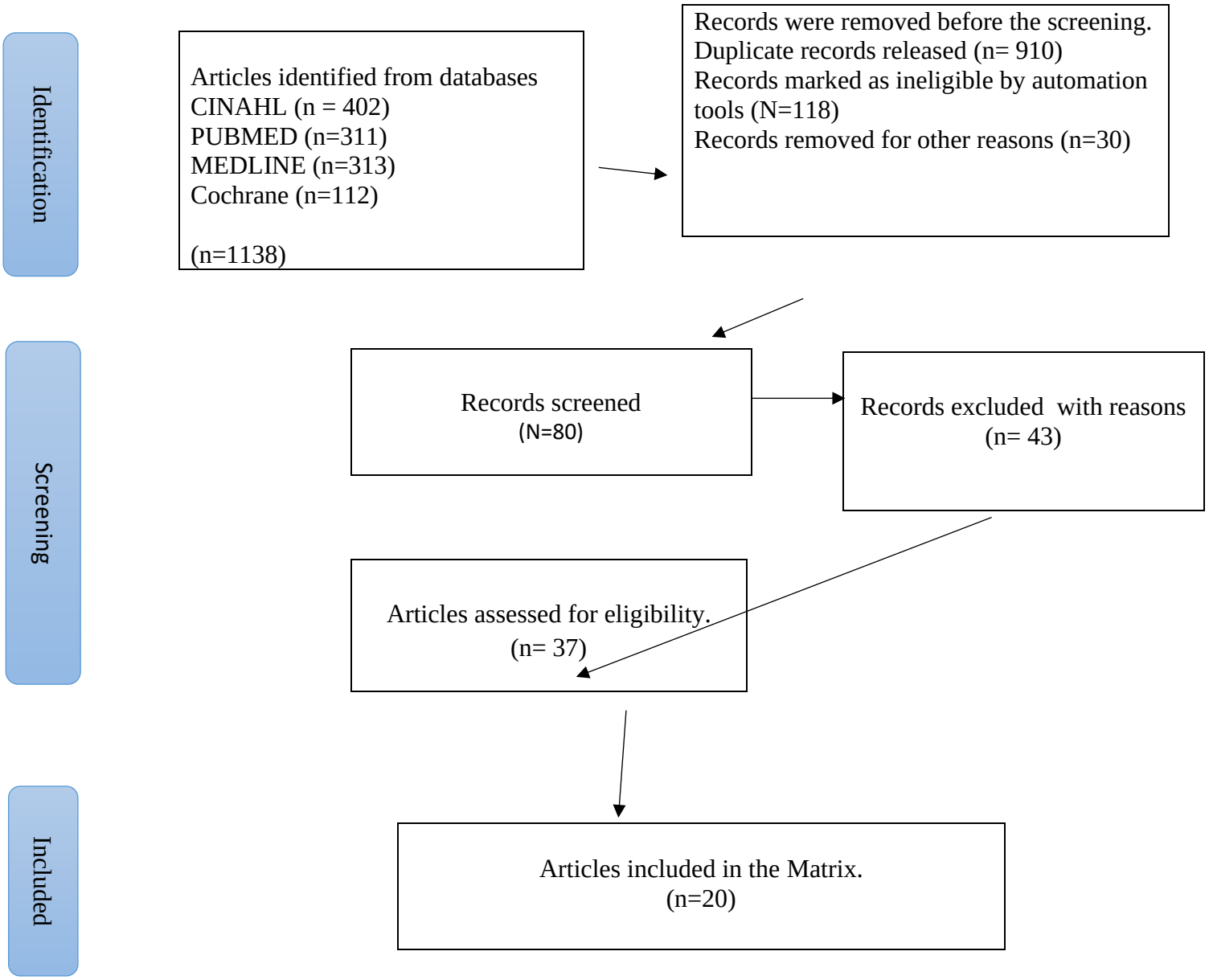
|---|---|---|---|---|---|---|---|
| | | via clinician referral or self-referral | | manage their emotions and improve their relationships. | | | |
| Article # 19<br>Yazla, E., & Senel, E. (2021). Evolution of telepsychiatry: Scient metric analysis of telepsychiatry publications between 1986 and 2019. *Telemedicine and e-Health. 28*(3).http://doi.org/10.1089/tmj.2021.0044 | This study aimed to perform a holistic analysis of telepsychiatry articles published between 1986 and 2019. | Data Collection between 1986 and 2019 revealed 1,020 articles, of which only 224 were open access. | The researcher used the "telepsychiatry" keyword for search and included all documents indexed in the Web of Science, such as Clarivate Analytics and the USA. | The peak year for publication was 2015, with 96 articles, and 8 of the leading institutions were from the United States**.** | Level 4 | The study lacks a systematic approach to revealing telepsychiatry practice's positive and negative features, especially in countries where telepsychiatry is widely used**.** | Yes. To introduce tele mental health in other rural communities with gaps in care or lack of care access. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Article #20<br><br>Yilmaz, S. K., Horn, B. P., Fore, C., & Bonham, C. A. (2018). An economic cost analysis of an expanding, multi-state behavioral telehealth intervention. *Journal of Telemedicine and Telecare.25*(6).353-364. https://doi.org/10.1177/1357633X18774181 | The study examined the economic costs of a growing, multi-state telepsychiatry intervention serving rural American Indian/Alaska Native populations and compared traveling costs to provide/receive in-person treatment. | Patient travel and a psychiatrist travel model were estimated using ArcGIS software, and unit costs were gathered from literature and government sources. | Compared to traveling, telepsychiatry costs were calculated using administrative, information-technology, equipment, and technology components. | Results suggest that telemedicine structures with a higher number of pre-satellite patient encounters have lower costs, and telemedicine regions delivering care to highly rural populations produce more significant economic benefits. | Level 5 | Research could not capture Rural communities that still do not have access to tele mental services. | Yes. As a guideline to modify the cost of in per-person consultation and tele mental health services |

**Appendix D**

**PRISMA Flow Diagram**



## Appendix E

## Thematic Summary of Findings

| Theme | Subthemes | Authors |
|---|---|---|
| Effectiveness/Improve care gap in rural communities. | Regular consultation<br>Family and group psychotherapies<br>Psychopharmacology management | Langarizadeh et al., 2017; Steward et al., 2020; Aiken et al., 2021; Richards et al., 2018; Parisi et al., 2021; Weiss et al., 2018; Hassan & Sharif, 2019; Shore et al., 2018; Reay et al., 2020; Fairchild et al., 2019; Weaver, 2018 |
| Increased telemental health usage and services over the years | Increased satisfaction in use<br>Increased care quality<br>Improved access | Archaribasam & Wynn., 2018; Weaver, 2018; Langarizadeh et al., 2017; Yazla & Senel, 2021; Hubley et al., 2016; Reay et al., 2020; Morales et al., 2020 |
| Cost and timesaving | Effective when staff shortages exist<br>Automated evaluation<br>Reduced travel cost<br>Flexible schedule | Weaver, 2018; Yilmaz et al., 2018; Koblauch et al., 2018; Fairchild et al., 2019 |

## Appendix F

**IRB Approval Letter**

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

February 21, 2022

Elizabeth Vebangsi
Rachel Joseph

Re: IRB Application - IRB-FY21-22-756 My study is on the Effectiveness of Tele Mental in Rural Communities. This is going to be an integrative review. This will involve a comprehensive search of databases to collect data using an integrated research scholarly project.

Dear Elizabeth Vebangsi and Rachel Joseph,

The Liberty University Institutional Review Board (IRB) has reviewed your application by the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as a human subject's research. You may begin your project with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study is not considered human subjects research for the following reason:

It will not involve collecting identifiable, private information from or about living individuals (45 CFR 46.102).

Please note that this decision only applies to your current application. Any modifications to your protocol must be reported to the Liberty University IRB to verify continued non-human subjects' research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

Also, although you are welcome to use our recruitment and consent templates, you are not required to do so. If you choose to use our documents, please replace the word *research* with the word *project* throughout both documents. If you have any questions about this determination or need assistance determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
*Administrative Chair of Institutional Research*
Research Ethics Office

## Appendix G

### CITI Training