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Analysis of Tech-Based and Telemental Health Approaches within the Adolescent and Young Adult Populations of Rural America

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Abstract

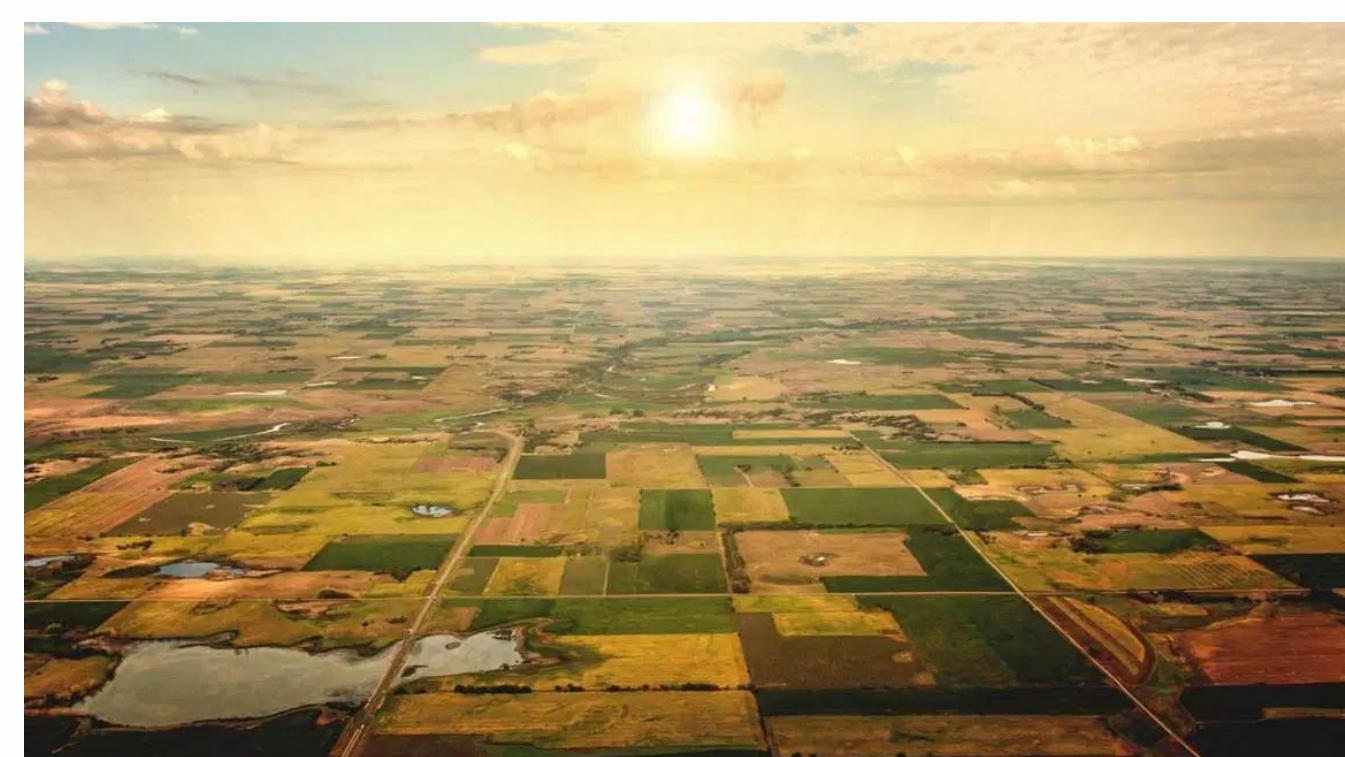
- The incidences of depression and anxiety among adolescent and young adult populations are intensifying, and resources remain limited for the management of these diseases within rural America.
- Evaluation on different interventions was completed to assess ease of access, efficacy, and patient adherence with the hope to decrease incidence of disease and increase availability of resources to rural areas.
- Based on the current completed research, there is a predominance of evidence that has shown moderate statistical data and promising outcomes from tech-based mobile applications and telemental health. Statistical evidence supports that technological based interventions are a potential treatment option that could assist in the management of mental health symptoms within the adolescent and young adult populations of rural America.
- Due to small study sample sizes and the lack of follow up, further longitudinal research is still needed in order to determine adherence and long-term outcomes compared to other methods used in mental health treatments and in-person assessments.

Introduction

- With the shortage of mental health specialists within the United States, there is a growing focus to evaluate specific evidence-based interventions to lessen the burden of mental health incidence in rural America, enhance access to mental health care, and improve patient outcomes.
- In 2019, National Institute of Mental Health (NIMH) estimated that 46.6 million or 18.9% of all U.S. adults, aged 18 or older, live with any mental illness (2019). This prevalence was amplified among women and young adults, aged 18 to 25 years, representing 25.8% of all U.S. adults that suffered from a mental illness. This data presents an “estimated 49.5% of adolescents, aged 13-18 years, had any mental disorder” (NIMH, 2019).
- The NIMH goes on to reveal that “60.1% of these patients did not receive treatment” (2019). Furthermore, rural areas of America, which the United States Census Bureau (2019) estimates to be approximately 19% of the U.S. population, remain chronically underserved and bestow a staggering burden in the diagnosis and treatment of mental health illnesses due to several barriers.
- This study provides a brief summarization of completed literature in terms of access to mental health in rural areas and explains how telemedicine is being incorporated into today’s healthcare practice of primary care providers. It offers an overview of a few different modalities of telemedicine to include telepsychiatry (TP) and tech-based interventions. Additionally, it identifies the efficacy, safety, and satisfaction of tech-based mental health interventions and how it has contributed to integrated care amongst providers.

Statement of the Problem

- Within the rural areas of America, access to mental health resources for children and adolescents remains a difficult task with the deficit of crucial services for mental health treatment.



Research Question

- In the adolescent and young adult populations of rural America, suffering from depressive disorders, does the use of a smartphone mental health applications or telepsychiatry, provide an efficacious means of treatment in comparison to in-person psychotherapies?



Literature Review

Research has demonstrated that telemental health (TMH) has statistical evidence to support its efficacy in decreasing depression symptoms (Benavides-Vaello et al., 2013; Hilty et al., 2018; Malas et al., 2018).

- Access, prevalence, & Primary Care Provider (PCP) involvement:**
 - Shortage of MH specialists is the primary barrier to adequate mental health services for rural areas. With approximately 20% of young people in the US having mental health disorders and lack of services, many patients do not receive adequate treatment” (Myers et al., 2017).
 - Several PCPs voice concern of lack of training and confidence in treating mental health disorders. TMH has provided a means of collaboration and training to improve PCP skills in diagnosing and management of common mental health conditions (Myers et al., 2017).
 - Integrating mental health services into existing practice such as within the PCP setting has provided the most promising means of increasing access to mental health care especially in rural areas (Hodgkinson et al., 2017).
- Comparison of different TMH methods:**
 - Strong evidence supported computerized cognitive behavioral therapy (cCBT) provided a “small to moderate effect ($g=0.16-0.62$) on depression outcomes, and moderate-to-large effects ($g=0.53-1.41$) for cCBT targeting anxiety” (Hollis et al., 2017).
 - Several studies found robust evidence affirming that a dual approach to include cCBT and access to other varying methods of evidence-based resources, based on patient symptoms, provides the most efficacious method and is found to be accepted amongst patients and healthcare providers (Hollis et al., 2017; Toscos et al., 2019).
 - No one TP model is found to be more superior than others and any one model may be fitting for every patient. Thus, *selection of TP models should be based patient needs and symptoms, provider’s comfort and expertise, specialist’s contributions, the clinic offering the service, and specific outcomes with the resources available* (Hilty et al., 2018).
- Efficacy, Safety, & Adherence:**
 - The *high-intensity model*, which involves an increased amount of continued consultation and collaboration, has demonstrated substantial evidence that TP is *as effective as in-person care* in terms of diagnosis and treatment, decreased hospital days, increased medication compliance, better communications, and improved outcomes for the patient (Hilty et al., 2018).

- Based on Malas et al.’s data regarding the use of the Michigan Collaborative Child Care (MC3) Program telepsychiatry design, 44% of survey responders elicited that MC3 as “strongly agree” for user-friendly nature, efficiency (mean of 1.11, SD of 0.33), and increase in PCP confidence in managing mental health disorders following MC3 consultation (mean of 1.19, SD of 0.43) while, allowing improved access to psychiatric healthcare (Malas et al., 2018).
- After using TMH for awhile, it was found that providers were using fewer telepsychiatry services over time and prescribing more adequate dosages of medications from 47.7% among the first 271 patients to an overall increase of 63.6% ($p < .001$) of adequate dosing in the latter consulted patients (Hilty et al., 2006).
- Implementing Collaboration of Care:**
 - Collaboration of care proved to show a reduction in mistakes, increased efficiency leading to less time needed by the PCP that could be spent with other patients, and improved patient outcomes (Hilty et al., 2018).

Perception and practice changes related to MC3 consultation

General	Responses	% Responses
Improved comfort and confidence in caring for youth with mental illness	131	30.9%
Ability to care for youth with complex mental health needs	32	7.5%
Improved access to mental healthcare for youth	98	23.1%
Enhanced efficiency of care for youth with mental illness	83	19.6%
Improved patient care and high utility for youth with mental health needs	192	45.3%
Evaluation		
Improved assessment and diagnostic approach	53	12.5%
Greater knowledge and education in pediatric mental health	64	15.1%
Management		
Greater comfort and understanding in the use and monitoring of psychotropics	110	25.9%
Increased understanding and access to psychotherapy services	10	2.4%
Improved understanding of non-pharmacologic approaches to management and referral services	13	3.1%

MC3 = Michigan Child Collaborative Care.
(N = 192 respondents with 424 responses, 256 themes elicited from the responses)
Figure 1. Adapted from “Exploring the telepsychiatry experience: Primary care provider perception,” by N. Malas, E. Klein, E. Tengeltitsch, A. Kramer, S. Marcus, and J. Quigley, 2018, *Psychosomatics*, 60, p. 384. Copyright: American Academy of Child and Adolescent Psychiatry.

Discussion

- Integrating PCPs with the use of a mental health specialist via TMH is providing a means of access to decrease this overwhelming need within rural areas; however, several areas of question remain on implementation.
- How can we adequately evaluate and compare different modalities of TMG and determine substantial evidence?** Further research needs to be completed using a rigid, nationally standardized guideline of tech-based telepsychiatry interventions in relation to the different modalities of mental health treatment within the adolescent and younger adult populations. Emphasis needs to be made on comparisons of each intervention based on efficacy, deliverance methods, satisfaction, adherence, and long-term outcomes
- What is the comparison of outcomes between in-person intervention with a mental health specialist versus care offered via TMH methods?** The advancements of *DHIs and TMH does not replace the medical provider or delivery of health care* but has shown to be a supplement in being able to provide a means to fill the gap of availability and assist in quicker consultations, referral, and earlier implementation of diagnosis and treatment. “TMH helps bridge the gap between specialist supply and demand” (Myers et al., 2017).



Applicability to Clinical Practice

- The effectiveness of TP relies heavily on the collaboration and integrated care (IC) between the patient, specialist, and PCP along with the competencies, guidelines, and protocols set up to ensure appropriate steps are being met in patient care and management.
- It is necessary for medical providers to stay up to date on the latest studies in order to provide optimal evidence-based practices that will be the most efficacious for their specific patient needs.
- TP allows the PCP to be better informed of their patient’s mental health care plan and assist with monitoring symptoms and treatments while having continued support from a specialist. Statistics has shown that TMH has increased educational opportunities amongst the PCP and better understanding of treatments and guidelines associated with mental health disorders. The TP approach has allowed for enhanced integrated care and collaboration with the care team to facilitate improved patient outcomes, increase efficiency, decreased costs and increased compliance (Hilty et al., 2018; Malas et al., 2018).

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