Cost-effectiveness of telemedicine-based integrated care for treating mental illness in rural FQHCs

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Mental Health Services for Rural FQHC Patients

Federally qualified health centers (FQHCs) are non-profit facilities that receive federal funding to provide primary and preventative care to a large proportion of low-income patients, relative to populations served by other medical centers. Many FQHC patients are uninsured, reside in rural areas, and are members of racial and/or ethnic minority groups [1]. There is a large disparity in health outcomes for these populations when compared to high income, insured, urban or suburban white populations, particularly for chronic physical and mental illness [2]. Consequently, these populations often have complex medical needs and are burdened with excessively high medical expenses, due in part to lack of access to adequate primary care, preventative care, and chronic disease management services [3]. FQHCs are not permitted to deny services based on patients' ability to pay; therefore a large portion of FQHC patients' medical expenses are paid for by Medicaid, Medicare, and grants from public and private sources [4].

Mental health services are a particular concern for rural FQHC patients, because there is a severe shortage of rural mental health providers throughout the United States [5]. As a result, many rural primary care providers are responsible for diagnosing and treating mental illness [6-8]. This can be problematic because primary care providers are not always adequately trained to treat all forms of mental illness, and patients with complex mental health needs may not be able to obtain appropriate care if they do not have access to specialists [7, 9].

Solutions: Integrated Care and Telemedicine

Current best practice for high-quality delivery of mental health services is through the use of integrated care treatment models. These models merge typical health care services with mental health services and strive to promote communication and collaboration between all providers that are responsible for patients' physical and mental health [10-13]. However, integrated care can be expensive to implement and is not always possible in rural settings due to health care provider shortages [6, 10, 14].

To overcome these barriers, integrated care models could be implemented with telemedicine, which utilizes information technology (e.g., video conferences) to provide health care services to patients from a distance [6, 10, 11, 13-15]. There is substantial evidence that telemedicine has been effective for expanding access to mental health services and for treating mental illness in rural populations [6, 7, 9-11, 13-17].

Furthermore, there is some evidence that combining telemedicine with integrated care (i.e., telemedicine-based integrated care [TBIC]) is more effective than on-site integrated care (OSIC) for treating mental illness in rural patients [6, 10, 11]. Specifically, the TBIC model resulted in significantly decreased depression severity [6] and increased quality-adjusted life years [10, 11] in rural patients, relative to the OSIC model. TBIC also led to a greater increase in depression-free days, relative to OSIC, when applied to rural FQHC patients [11]. Evidence suggests that TBIC does not result in greater primary care or mental health care costs or utilization, but total outpatient costs are higher relative to OSIC [14]. Overall, TBIC appears to be more effective, yet more expensive, than OSIC for treating depression in rural [10] and rural FQHC patients [11].

Discussion and Further Research

While these findings are promising, these studies examined depression only and did not explore other forms of mental illness or comorbidities. Furthermore, despite the initial findings that TBIC is more expensive than OSIC, it is possible that the opposite pattern could be true if the cost-effectiveness analyses were more comprehensive (e.g., if it included measures such as decreased work-related productivity) and were performed over longer periods of time than 18 months. To address these

gaps in the literature, further research should be conducted to investigate the long-term comprehensive cost-effectiveness of treating various forms of mental illness among rural FQHC patients.

Given the high prevalence of chronic physical and mental health conditions among rural FQHC patients [2] and the barriers to care that these patients face (e.g., uninsurance, low-income, health care provider shortages) [18], novel solutions to these problems, such as TBIC, should be thoroughly explored and implemented if found to be effective. By combining integrated care with telemedicine, rural FQHCs could potentially improve the health and well-being of their complex, medically underserved patients and reduce the health disparities that these patients face.

Appendix I: Literature Search Methods and Selection Criteria

The literature search was conducted using the database Ovid Medline. The following MeSH words were used in the search: telemedicine; delivery of health care, integrated; comprehensive health care; mental health; rural health; hospitals, rural. In addition, the following keywords were used: federally qualified health center, FQHC, collaborative care, integrated care, comprehensive care, mental health, rural health, telemedicine. All keywords were followed by ".mp." in order to search the articles for the keywords in multiple places as opposed to just the titles and abstracts.

The MeSH words and keywords that are directly related or synonymous were combined with "or", resulting in five different variable combinations that were searched for (i.e., federally qualified health center or FQHC; telemedicine; collaborative care or comprehensive care or integrated care or delivery of health care, integrated; mental health; and rural health or hospitals, rural). For simplicity, I will refer to these five variable combinations as FQHC, telemedicine, integrated care, mental health, and rural health. Three different combinations of the MeSH words and keywords were searched for: FQHC and telemedicine and integrated care; FQHC and integrated care and rural health; and telemedicine and integrated care and mental health and rural health. These searches produced 3, 5, and 28 articles, respectively. Of these articles, 12 were chosen for this review based on their relevance to the topic of interest (i.e., mental illness, integrated care, telemedicine, and FQHCs), the population of interest (i.e., rural patients), and their publication dates, as only articles published within the last nine years (2010-2018) were considered.

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