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Increasing Provider Knowledge of Medication Adherence in Veterans with Serious Mental Illness (SMI): A Quality Improvement Project

Roston T. Moss Jr
Florida International University, rmoss005@fiu.edu

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**Increasing Provider Knowledge of Medication Adherence in Veterans with Serious Mental
Illness (SMI): A Quality Improvement Project**

By

Roston T. Moss, Jr.

MSN, Florida International University, 2020

BSN, Miami Dade College, 2014

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Health Sciences

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Supervised by:

Dr. Eric A. Fenkl, Ph.D., CNE

Approval Acknowledged: _____

DocuSigned by:
Michael Sanchez, DNP, APRN, FNP-BC, FAANP
_____, DNP Program Director
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Abstract

Background: Serious mental illness (SMI) among veterans represents a significant threat to individual and public health. Unfortunately, many mental health providers lack knowledge on the effective treatment of SMI, leading to potential gaps in patient care.

Purpose/Methods: The purpose of this quality improvement project was to increase provider knowledge of care practices for patients with SMI. Using a single site, quasi-experimental, pre-/post-intervention framework, provider knowledge of SMI and its treatment were assessed before and following an educational module. Comparison of pre- and post-intervention knowledge scores was undertaken in an effort to determine if changes in scores were statistically significant.

Results: A total of 10 providers at the practice site agreed to participate in the project including $n = 6$ females and $n = 9$ advanced practice nurses. Mean pre-test scores were 47% ($SD = 4.33$) and mean post-test scores were 92% ($SD = 2.39$). A Mann-Whitney U-test performed did indicate that the results were statistically significant. $z = -6.33$, $p < .000$, $n = 10$, based on an alpha of .05.

Conclusion: The results suggest that provider education at the practice site was correlated with knowledge gains that are statistically significant. Although the results suggest promising results for the educational program to increase provider knowledge of the treatment of SMI among veterans, the use of a single site and small sample limit the generalizability of the findings and indicate that further assessment of the educational intervention would be needed.

Keywords: Serious mental illness, SMI, nursing, injectable medications

Increasing Provider Knowledge of Medication Adherence in Veterans with Serious Mental Illness (SMI): A Quality Improvement Project

Mental illness represents a significant threat to individual and population health. Current statistics indicate that each year one in five people will be affected by a mental illness (Picco et al., 2018). Included in this population is a subset of patients who will develop a serious mental illness or SMI (Leonhardt et al., 2017). Serious mental illness is a term that is defined by the National Institute of Mental Health ([NIMH], 2022) as “a mental, behavioral, or emotional disorder resulting in serious functional impairment, which substantially interferes with or limits one or more major life activities” (para 4). Serious mental illness can include diagnoses such as severe depression, bipolar disorder, schizophrenia and related psychoses, Cluster B personality disorders, and posttraumatic stress disorder (PTSD) (Leonhardt et al., 2017). Data regarding the prevalence and incidence of SMI in the U.S. indicates that presently 11.2 million adults over the age of 18 years of age, or 4.5% of the population, currently has a diagnosis of SMI (Martinez-Martinez et al., 2020). Additionally, one in 25 people in the U.S. will receive a diagnosis of SMI each year (Martinez-Martinez et al., 2020). Specific demographic groups including those that have been exposed to trauma such as veterans have also been shown to have higher rates of SMI (Jahn et al., 2018).

Although patients with SMI have been identified as a unique subpopulation of individuals requiring unique provisions to help them manage their mental health issues, scholars note that research and related evidence-based practice for treating patients with SMI has lagged considerably (Smith et al., 2017). This is not surprising given the lack of attention given to mental health within the current medical system. Mental health parity in terms of insurance coverage and patient care has consistently been suboptimal even when legislation has been

passed to improve outcomes in this area (Scarborough, 2021). As a result, healthcare providers, who often lack knowledge for the diagnosis and treatment of mental health issues may find it difficult to be able to holistically meet the needs of a patient with SMI (Smith et al., 2017). This is particularly true when it comes to managing certain elements of patient care including medication compliance.

Medication compliance in patients with serious mental illness remains a significant issue of concern. Although psychiatric medications have been shown to markedly reduce patient symptoms and improve patient quality of life, symptoms associated with the patient's mental illness may adversely limit or impact the ability of the patient to self-administer medications (Tessier et al., 2017). When this occurs, the patient's symptoms can be exacerbated or compounded by withdrawal symptoms if the patient has been taking their medication regularly (Tessier et al., 2017). Patients may also become noncompliant with medications due to medication side effects, which can also impact patient functioning and quality of life (Montejo et al., 2018). A meta-analysis conducted to assess medication compliance in patients with SMI found that 49% of patients were nonadherent when it came to their medication (Semahegn et al., 2020). Of these individuals, 56% were being treated for schizophrenia, 50% were being treated for major depressive disorder, and 44% were being treated for bipolar disorder (Semahegn et al., 2020).

Synthesis of this information suggests that while SMI is a recognized diagnostic classification, providers lack critical insight, knowledge, and understanding of this group. Consequently, addressing treatment issues such as a lack of medication and nonadherence within the population is of particular concern. Current evidence suggests that almost half of all patients with SMI do not regularly take their medications (Semahegn et al., 2020). Increasing provider

knowledge of SMI and what can be done to improve medication compliance would be imperative to improve the delivery of mental health services to patients. This training would be of particular importance for clinicians working in settings where patients are more likely to present with symptoms of SMI, including South Florida Psychiatry (SFP). Hence, building a quality improvement project to provide clinician training to enhance care and treatment of patients with SMI would have practical relevance for improving patient care.

Purpose and PICO Question

The background provided in the introduction to this work facilitates a broader understanding of the problem of medication noncompliance among patients with SMI. Because the focal point of this Doctor of Nursing Practice (DNP) quality improvement project is improving some aspects of patient care, the decision was made to enhance provider education about medication noncompliance in patients with SMI. To ensure the relevance of the project, the decision was made to use a clinical setting where patients are commonly seen for the treatment of serious mental illness, i.e., South Florida Psychiatry. Synthesis of these elements indicates that the purpose of this quality improvement project was to increase the knowledge of healthcare providers working at South Florida Psychiatry regarding SMI and methods for managing medication noncompliance in patients with this diagnosis. Increasing provider knowledge of the topic should foster a change in practice such that patients are provided with the most timely and relevant evidence-based care.

The purpose statement for this quality improvement project provides a bridge for formulating the PICO (population, intervention, comparison, and outcome) clinical question. The proposed question is as follows:

- Among mental health providers working at South Florida Psychiatry outpatient clinic (**P**) does the use of a provider education module (**I**) increase provider knowledge of improving medication adherence among patients with serious mental illness (SMI) (**O**) as compared with baseline (**C**)?

Based on this PICO question, it is possible to see that the population included mental health providers working at South Florida Psychiatry. As noted, veterans are more likely to develop SMI (Jahn et al., 2018). The intervention involved provider education. Provider education regarding SMI has been noted to be limited and could adversely impact the ability of the clinician to deliver effective evidence-based care (Smith et al., 2017). The comparison for this project included provider knowledge at baseline to compare following the educational intervention. The outcome being sought was an increase in provider knowledge which was assessed using a pre- and post-test format.

Problem Statement

Formulation of a problem statement is noted by Moran et al. (2020) to be a foundational component of building the Doctor of Nursing Practice final project. According to Moran and coauthors, the problem statement consists of several elements that help to focus the project and identify a pragmatic evidence-based solution. The elements of the problem statement addressed in this work include, problem identification, background, scope of the problem, consequences of failing to address the problem, gaps in knowledge, and the proposed solution for addressing the problem in practice.

Problem Identification

The problem identified for this project and articulated in the introduction to this work is a lack of provider knowledge to provide effective pharmacological management for patients with

serious mental illness. The pharmacological management of patients with serious mental illness is often noted in the literature to be the focal point of treatment (Bright, 2018). Evidence does indicate that when patients are first prescribed medications for SMI, providers, family members, and even patients themselves often believe that patients are capable of managing their health (Bright, 2018). Despite this persistent belief, nearly half of all patients with SMI discontinue psychiatric medications within a month of beginning treatment (Bright, 2018). Unfortunately, the presence of SMI can disrupt family relationships, leading to the patient and family relying on healthcare providers to help them meet their unique needs (Velligan et al., 2017). Without medications to help stabilize the patient with SMI, actions taken by the provider as well as those taken by friends and family may not have a significant impact on improving outcomes for the patient (Velligan et al., 2017). What this effectively demonstrates is that pharmacological management of the patient with SMI will be critical for managing the patient and their symptoms.

The problem is exacerbated when providers lack knowledge of SMI and how to effectively manage patients with these mental health issues. Current evidence indicates that patients with serious mental illness are much more difficult to engage in treatment (Jochems et al., 2017). Poor engagement of patients in their treatment can lead to increased relapse rates as well as more frequent symptom exacerbations and disease progression (Jochems et al., 2017). Ineffective management of patients with SMI can, therefore, have a devastating impact on patient health and quality of life over the long-term. For providers who lack knowledge of these specific issues and their implications for patient health and well-being, this lack of knowledge can clearly lead to poorer outcomes for the patient (Woodberry et al., 2022). Consequently, the

problem of provider lack of knowledge is one that must be addressed in order to improve the quality of care delivered to patients with SMI.

Background

Serious mental illness as defined by the NIMH (2022) in the introduction to this work includes mental health issues that have a significant impact on patient daily functioning. As described in the literature SMI can impact all aspects of individual functioning, making it difficult for the affected individual to maintain employment, complete formal education, and/or maintain healthy psychosocial relationships with other people (Adnanes et al., 2019). These outcomes for patients diagnosed with SMI create a significant burden for those impacted by these conditions as well as their family members. However, epidemiological evidence reviewed in the introduction to this work does indicate that SMI has implications for public health as well. In particular, evidence indicates that as many as 11.2 million people in the United States or 4.5% of the population currently suffers from SMI (Martinez-Martinez et al., 2020). Tragically, one in every 25 individuals in the U.S. is diagnosed with an SMI each year (Martinez-Martinez et al., 2020).

Data regarding SMI further indicates that this condition increases patient risk of early death by 2.6 times that of peers with no mental illness (Iturralde et al., 2021). Patients with SMI are likely to die, on average, 6.3 years sooner than their healthy counterparts (Iturralde et al., 2021). Deaths in patients with SMI are largely attributable to cardiovascular disease and its related complications including stroke and myocardial infarction (Iturralde et al., 2021). Unfortunately, the root causes of serious mental illness have not been fully delineated in the literature to promote SMI prevention (Dickerson et al., 2018). However, scholars speculate that SMI has a similar etiology to other mental illnesses including family history, environmental

factors, and exposure to trauma (Dickerson et al., 2018). Identifying the root cause of SMI proves challenging as individual differences in disease development will play a role in shaping both the development of SMI and its trajectory for the patient (Dickerson et al., 2018).

Treatment of SMI can prove challenging for providers due, in large part, to a lack of medication compliance among patients (Bright, 2018). Medication compliance remains a significant problem for patients with SMI for myriad reasons. Evidence indicates that patient symptoms can interfere with decision making for health promotion, limiting the willingness and ability of the patient to engage in regular medication use (Tessier et al., 2017). Side effects for psychiatric medications have further been noted in the literature to represent a significant barrier to medication compliance among patients with SMI (Montejo et al., 2018). If providers do not recognize these issues and further fail to integrate these issues into the care of the patient, this could lead to suboptimal treatment and the inability of the patient to effectively manage care. Without medication compliance, patients, families, and healthcare providers will face notable obstacles in managing the symptoms of SMI.

Scope of the Problem

The scope of the problem can be identified in quantitative terms that relate to both the number of people impacted by SMI and the social and economic implications of SMI for individual and population health. Current data indicate that as many as 17.6% of the global population has a diagnosable mental illness (Gil-Rivas et al., 2019). However, global epidemiological data does not evaluate the number of people diagnosed with an SMI. Data provided by Depp et al. (2017) does show that, globally, 1% of the world's population is affected by schizophrenia. In the United States, however, data indicate that 4.5% of the current population is struggling with some type of SMI (Martinez-Martinez et al., 2020). This number continues to

increase as one in 25 people are newly diagnosed with SMI each year (Martinez-Martinez et al., 2020). Although the number of patients with SMI continues to increase, in certain population groups, SMI is often reported more frequently. In particular, evidence indicates that of the more than 1.3 million veterans who received mental health services in the past year, 18% had a diagnosis of serious mental illness and were being provided with intensive case management services (Bhalla et al., 2020). This high percentage of individuals with SMI compared with only 4.5% of the population does demonstrate that SMI rates are notably higher among veterans when compared with the general population.

While the significant number of individuals with SMI does illustrate the reach of the problem, it is also helpful to consider what has been noted about the economic and social costs associated with SMI. The social and economic impacts of SMI can be seen when reviewing the impact of SMI on health and the financial costs associated with providing treatment. Scholars note that SMI can result in a markedly shorter lifespan for those impacted (Depp et al., 2017; Iturralde et al., 2021). While the average number of life-years lost to disability has been previously reported in this work to be six years (Iturralde et al., 2021), scholars note that for those with long standing illness, the number of life-years lost to disability can be as high as 25 years (Depp et al., 2017). Depp and coauthors (2017) go on to note that the cost to provide direct care for patients totals more than \$63 billion annually. SMI has also been associated with an average of \$16,000 annual reduction in salary due to challenges associated with maintaining employment (Seabury et al., 2019).

Serious mental illness has also been noted in the literature to have a devastating impact on the patient and their ability to maintain healthy relationships with others (Koenders et al. 2017). As noted, family relations can become strained when individuals are diagnosed with an

SMI (Velligan et al., 2017). Conflicts in the home can lead to an increased risk for homelessness and suicidal ideation (O'Hare et al., 2018). For patients with SMI who are able to remain stably housed within the community, social relationships may be adversely affected, further impacting the mental health of the patient (Koenders et al., 2017). Collectively these issues can exacerbate patient symptoms while also contributing to costs to provide care for the patient. Effective management of the patient in clinical practice will be instrumental in reducing care costs as well as disease burden for patients with SMI and their family members and loved ones.

Consequences of the Problem

With the background and scope of the problem provided, it is possible to consider the consequences of the problem or what will happen if some effort is not made to fix the problem. When looking at the evidence presented thus far, it becomes clear that while SMI has been identified as a significant health issue of concern for the population in the U.S., at the global level, recognition of SMI continues to lag, limiting epidemiological data regarding this diagnostic group (Depp et al., 2017). While it is evident that SMI is a relatively new classification of mental health disorders, the implications of SMI are notably unique and do require healthcare providers to understand the specific needs of those who struggle with these conditions (Bright, 2018). This would suggest that persistent gaps in provider knowledge will have a significant impact on outcomes for patients as well as the healthcare system and public health as those with SMI may lack access to providers who have expert knowledge regarding the unique needs of patients.

This situation is exacerbated by the fact that one in 25 people are diagnosed with SMI each year (Martinez-Martinez et al., 2020). As the number of individuals with SMI in the population increases, providers will be required to deliver health services that are capable of

meeting the specific needs of this group. A lack of provider knowledge of SMI and a lack of formal education on the topic will have an impact on those who develop SMI in the future as well as the overall costs to provide care for patients. As noted, the direct care costs of treating SMI total more than \$63 billion in the U.S. (Depp et al., 2017). As the number of patients with SMI increases and further as the number of providers lacking knowledge on proper treatment of SMI increases, the gap in delivering care for patients will only continue to expand.

What is also important to note regarding the consequences of failing to address the problem is the impact that this situation will have on patients and the healthcare system over the long term. Bright (2018) provides some important insight into the topic noting that poor medication adherence among patients with SMI is a serious concern that can lead to “more rapid disease progression, increased disease complications, poorer functional outcomes, lower quality of life, increased violent behavior, increased suicide attempts, and earlier/more frequent rehospitalization” (p. 209). Bright goes on to note that increased noncompliance with medication in patients with SMI has been associated with failure of the patient to seek follow-up care, treatment relapse, and increased mental health care costs. This would suggest that by failing to educate providers about medication compliance in patients with SMI, providers could be contributing to the ill-effects experienced by patients with SMI as well as increased healthcare costs.

Knowledge Gaps

The gap in knowledge can be seen when examining both the implications of SMI for patient health and the current state of practice as it relates to healthcare provider management of patients with SMI. As previously reported, SMI is a specific subset of mental illness that is noted for its substantial and adverse impact on patient functioning and quality of life (Depp et al.,

2017). Scholars reviewing the impact of SMI on the patient argue that the functional impairment associated with SMI places a significant burden on patients and family members (Depp et al., 2017). Patients with SMI continue to face ongoing challenges and disability that persists even when treatment is optimized for the patient (Fitzgerald & Ratcliffe, 2019). In many instances, it can be difficult for the patient with SMI to achieve a healthy quality of life (Fitzgerald & Ratcliffe, 2019). Mental health symptoms typically pervade day-to-day functioning, leading to the inability of the patient to participate in typical activities of daily living including work and attending school (Depp et al., 2017). The impact of the problem can be more clearly understood when reviewing data from the (World Health Organization [WHO], 2020) regarding the global burden of disease. Information provided from this organization indicates that schizophrenia and bipolar disorder are among the top 10 contributors to life-years lost due to disability.

Despite the significant challenges that patients with SMI face, most healthcare providers, including those working in community care, often lack knowledge and understanding of the specific needs of this patient population (Knaak et al., 2017). Current evidence indicates that most providers working in community health settings have negative attitudes toward patients with mental health issues (Knaak et al., 2017). When patients with SMI present for treatment, providers often engage in stigmatizing behavior and attitudes that can alienate the patient from care (Ghuloum et al., 2022). In many instances, community care providers believe that patients with SMI have few options for treatment or recovery, leading to disengagement in care when it comes to treating patients with SMI (Ghuloum et al., 2022). Evidence also suggests that provider training to deliver care for patients with SMI is limited (Smith et al., 2020). Consequently, providers are adversely impacted by a lack of formal training and negative social views and

attitudes toward individuals with SMI. This helps to explain why many providers are unable to provide effective care for patients with serious mental illness.

When the lack of knowledge of providers is juxtaposed against the problem of SMI the gap between what patients need in terms of care and what is being provided becomes more evident. SMI is highlighted in the literature to have a significant and devastating toll on patients and their families. Additional research provided in this problem statement further demonstrates the impact of the problem on public health and the healthcare system. Optimizing care for the patient SMI is necessary to help ensure that the patient can achieve his or her highest level of functioning. This cannot be done without effective management of patient symptoms. While various forms of psychotherapy can be utilized to improve patient outcomes, medication compliance is clearly the centerpiece of treatment. Consequently, the lack of provider knowledge regarding the effective pharmacological management of SMI can adversely impact the ability of patients to manage their care to improve daily functioning.

Proposed Solution

A review of the evidence provided to this point demonstrates that SMI is a growing threat to individual and public health. Serious mental illness impacts patient and family functioning and quality of life, as well as the ability of the patient to manage care in terms of regular medication use (Semahegn et al., 2020). While healthcare providers have been identified as an important resource for improving outcomes for both medication compliance and symptom reduction (Bright, 2018), current evidence does indicate that providers may lack knowledge and expertise to effectively manage the patient including addressing the problem of medication compliance (Woodberry et al., 2022). This insight indicates that there is a significant gap in care which can

be ameliorated through the use of provider education to help augment the ability of providers to effectively manage the medication needs of patients with serious mental illness.

The use of provider training or education to increase medication adherence has been widely reviewed in the current literature (Pakpour et al., 2017; Sany et al., 2020; Zullig et al., 2018). Zullig et al. (2018), for example, conducted a systematic review of the literature to identify specific programs or policies that would increase medication compliance among patients. The results of this analysis were drawn from 30 studies which indicated that addressing individual patient factors, aligning incentives between providers and payers, and educating providers about the issue and the importance of addressing it in practice were among the most effective means for increasing medication compliance among patients. Zullig and coworkers argue that by recognizing medication compliance as a specific issue impacting patient care, providers should be able to proactively address this issue when addressing patient health needs.

A review of the literature also indicates that there are well-constructed randomized controlled trials (RCTs) using provider education to increase medication compliance in various patient groups. This literature supports the proposed quality improvement project to use education to increase provider knowledge of medication compliance in patients with SMI (Pakpour et al., 2017; Sany et al., 2020). For instance, Sany et al. (2020) utilized an RCT framework to compare provider education for increasing medication compliance in patients with hypertension. The educational program focused on content as well as methods of communicating with patients to raise their awareness of the importance of regular medication compliance. The results of the study conducted by Sany et al. (2020) demonstrated that in providers that had undergone the training, medication adherence for patients with hypertension was higher than for

patients of providers that had not undergone the training. The results of this study support the use of provider education to help improve medication compliance.

An additional randomized controlled trial completed by Pakpour et al. (2017) shows similar outcomes. In particular, Pakpour et al. (2017) provide a review of a randomized controlled trial undertaken to promote medication adherence among patients with bipolar disorder. In this intervention patients were randomly assigned to a care as usual (control) group or intervention group to increase medication adherence. Clinicians at a selected facility were provided with education and support to foster medication adherence among patients in an effort to increase medication adherence rates in the population. The results of the project indicate that patients in the intervention group had a higher rate of medication compliance at three months when compared with patients who were enrolled in the care as usual group. These gains were maintained at six months, suggesting that the actions taken by providers as a result of their education were effective for enhancing patient ability and willingness to comply with medication recommendations.

This brief review of the literature provides some insight into the impact of provider education on medication compliance. What is made clear through the literature is that when providers have the training and knowledge needed to deliver effective care, the issue of medication compliance can be addressed, and rates of medication compliance will increase for patients. Based on this evidence, there is an impetus to expand exploration of the topic and to translate the evidence into practice through the development of this quality improvement project. Through the use of provider education, it should be possible to provide mental health providers with the knowledge and skills needed to effectively address medication compliance in patients with serious mental illness.

Summary

The purpose of this DNP quality improvement project was to increase provider knowledge of medication compliance in patients with SMI. The PICO clinical question that supports this project was as follows: Among mental health providers working at South Florida Psychiatry outpatient clinic (**P**) does the use of a provider education module (**I**) increase provider knowledge of improving medication adherence among patients with serious mental illness (SMI) (**O**) as compared with baseline (**C**)? This question can be answered through an application of current evidence-based literature which indicates that provider education can be quite helpful for increasing medication compliance among different patient groups. Translation of this evidence into practice made it possible to implement an evidence-based quality improvement project that was focused on not only improving provider knowledge of the topic, but also improving medication compliance leading to better individual and population health outcomes over the long-term.

Section Two: Literature Review

The problem investigated for this quality improvement project was a lack of provider knowledge regarding how to enhance medication adherence in patients with serious mental illness (SMI). The proposed solution for this problem was the use of provider education. To substantiate the need for this quality improvement project and the proposed solution, a thorough review and critique of the literature was warranted. Included in this section is a comprehensive review of the literature to support this quality improvement project including, an overview of the PICO (population, intervention, comparison, and outcome) clinical question, a review of the literature search process, a statement of the inclusion and exclusion criteria used for selecting literature, a literature appraisal matrix, characteristics of the included studies, and a synthesis of the literature.

PICO Question

The PICO clinical question developed for this project was as follows: Among mental health providers working at South Florida Psychiatry outpatient clinic (**P**) does the use of a provider education module (**I**) increase provider knowledge of improving medication adherence among patients with serious mental illness (SMI) (**O**) as compared with baseline (**C**)? The population investigated included mental health providers working at South Florida Psychiatry and the intervention involved the use of a provider education module. The decision to use a provider educational module was based on current literature supporting the use of provider education to increase knowledge and medication adherence among patients with SMI and other chronic health conditions (McDermott et al., 2022; Sany et al., 2020; Verloo et al., 2017). The comparison included baseline knowledge of providers regarding how to promote medication adherence in patients with SMI. Although the outcome being measured is provider knowledge, it

was assumed that improvements in provider knowledge would result in practice changes that help increase patient medication adherence over the long-term.

Literature Search Process

The literature search process began with an identification of scholarly peer-reviewed databases that could be used to locate information on the problem and solution. Five academic databases focused on nursing and healthcare were selected including Academic Search Complete, CINAHL, Ovid, PubMed and Sage. Following the selection of databases, search terms for the project were identified. The search terms used are reviewed in Table 1 below. Search terms were selected based on the core elements of the PICO question along with identified synonyms as summarized in Table 1.

Table 1

Search Terms Used for Literature Search

PICOT Element	Population	Intervention	Outcome
	Healthcare providers	Education	Knowledge
Synonym 1	Healthcare workers	Educational Module	Learning
Synonym 2	Nurses	Instruction	Skills
Related Terms	Physicians		Medication Adherence

To increase the number of relevant returned results, search terms were combined with Boolean operators “AND” and “OR.” Initial searches included the PICO elements connected with the Boolean operator “AND.” Subsequent searches included the addition of synonyms connected with the Boolean operator “OR.” For example, the first search in each database included “healthcare providers” AND “education” AND “knowledge.” The second search included “healthcare providers” OR “healthcare workers” AND “education” OR “educational module” AND “knowledge” OR “learning.”

The search strategy employed for locating literature on the topic was further optimized through the use of limiters on the search. To ensure the acquisition of the most timely and relevant data, each search was limited by the following criteria: article published within the last five years (2017-2022), article available in full-text, article published in a peer-reviewed scholarly journal, and article written in English only. These search criteria resulted in the identification of 345 articles. Evaluation of the articles began with the removal of duplicates which left 289 articles remaining. Each article abstract was initially reviewed to determine if the article contents were relevant to the project including focusing on provider education for improving medication compliance. From the abstract review 118 articles were retained for full-text review. Following full-text review applying the inclusion and exclusion criteria, a total of eight articles were identified for inclusion in this literature review. A full review of all of the articles can be found in Appendix A.

Inclusion and Exclusion Criteria

A total of 118 full-text articles were reviewed through an application of the following inclusion and exclusion criteria. Articles were included if they: involved a quantitative methodology or interventional/mixed methods approach, were Level I or II evidence and of A or B quality as per the Johns Hopkins Evidence Level and Quality Guide (Dang & Dearholt, 2017), and provided positive results indicating the scope of the issue and/or benefits of using provider education. Articles were excluded if they: involved a qualitative methodology, included a literature review or narrative review, did not provide robust results to support the project, and/or had a Level III or higher evidence level or C quality rating.

Literature Appraisal and Literature Matrix

A literature appraisal matrix was created for this project and can be found in Appendix A. The matrix includes a brief overview of the major components of the studies identified for inclusion in this literature review. The matrix is alphabetically organized, and each article was evaluated using the Johns Hopkins Level of Evidence and Quality Guide (Dang & Dearholt, 2017). Level I evidence includes randomized controlled trials (RCTs) as well as systematic reviews and meta-analyses (Dang & Dearholt, 2017). Level II studies include quasi-experimental, cross-sectional, and retrospective studies while Level III studies include qualitative investigation as well as non-experimental studies without quantitative data (Dang & Dearholt, 2017). Quality level under the Johns Hopkins assessment focuses on three classifications: A (high), B (good), C (low) (Dang & Dearholt, 2017). High quality evidence is consistent and generalizable with definitive results and conclusions (Dang & Dearholt, 2017). Good quality evidence is reasonably consistent with adequate sample sizes and consistent recommendations while low quality evidence has inconsistent results and insufficient sample sizes (Dang & Dearholt, 2017).

Characteristics of the Included Studies

With a review of the literature search process provided, it is now possible to review the results of the literature search. Included in this section is an overview of each of the studies addressing critical issues such as purpose, methodology, procedures, data collection, results, strengths and weaknesses, and the relationship of the study to the proposed quality improvement project. Three specific themes were identified when reviewing the literature. For the purposes of organizing the literature on this topic, a general review of all of the studies included is provided along with a detailed review of each article by theme.

General Overview

A general overview of the literature included for this project indicates that there were six Level I studies (Loots et al., 2021; Pakpour et al., 2017; Sany et al., 2020; Semahegn et al., 2020; Velligan et al., 2017; Verloo et al., 2017) and two Level II studies included (McDermott et al., 2022; Stockbridge et al., 2021). Among the Level I studies, there were four systematic reviews/meta-analyses (Loots et al., 2021; Semahegn et al., 2020; Velligan et al., 2017; Verloo et al., 2017) and two randomized controlled trials (Pakpour et al., 2017; Sany et al., 2020). Among the Level II studies there was one quasi-experimental study (McDermott et al., 2022) and one retrospective analysis (Stockbridge et al., 2021). Among the articles included seven were noted to have a quality level of A (Loots et al., 2021; Pakpour et al., 2017; Sany et al., 2020; Semahegn et al., 2020; Stockbridge et al., 2021; Velligan et al., 2017; Verloo et al., 2017) and one had a quality level of B (McDermott et al., 2022). Overall, the evaluation of the literature based on the Johns Hopkins framework indicates that the literature included is of high quality and good strength.

Medication Nonadherence in SMI

Three of the articles selected focused on medication nonadherence in patients with SMI (Semahegn et al., 2020; Stockbridge et al., 2021; Velligan et al., 2017). Semahegn et al. (2022) completed a systematic review and meta-analysis of five different electronic article databases (PubMed, Embase, CINAHL, PsychINFO, and Web of Science) to identify medication adherence rates and factors for nonadherence in patients with SMI including depression, bipolar disorder, and schizophrenia. A total of 46 studies were identified for inclusion in the project and articles were included up to 2017. A PRISMA flow diagram was used along with independent article reviews from two of the researchers. Disagreements over article inclusion were solved by

consensus with a third researcher. The results of this study indicated that 49% of all patients included were nonadherent with their medications. This included 56% of patients with schizophrenia, 50% of patients with depression, and 44% of patients with bipolar disorder.

The strengths of the study by Semahegn et al. (2022) include the fact that the study is methodologically strong, and the results are robust. The weaknesses of the study are that there were a limited number of databases used as some of the information included may be outdated given the timeframe for article searching. The article highlights the problem being investigated for this quality improvement project. Specifically, this article demonstrates that medication adherence among patients with SMI is a significant problem. A large number of patients fail to take their medications. This is concerning as medication for SMI is typically needed to stabilize the patient. This article was classified as being a Level I study with an A quality rating as per the Johns Hopkins framework.

Stockbridge et al. (2021) also investigated the scope of the problem through a retrospective analysis of claims data for patients with SMI and diabetes. Specifically, Stockbridge et al. sought to assess medication adherence in patients with SMI and comorbid diabetes as well as demographic factors that may result in higher rates of nonadherence for the patient. This was done by reviewing claims data for 5,504 patients with diabetes and SMI enrolled in a Florida specialty Medicaid program. Data collection was completed through a claims audit of records from September 2014-December 2015. The results indicated that of 3,705 enrollees that had been diagnosed with schizophrenia, 48% were not adherent to their medication. Further, Hispanic patients, patients with low levels of education, and patients that did not speak English as their first language had higher rates of medication nonadherence.

The strengths of this study are related to the fact that the results do demonstrate the scope of the problem indicating that almost half of all patients with schizophrenia are nonadherent with their medication. The data further highlights subpopulations that may benefit from specialized intervention. This research supports the proposed quality improvement project by highlighting the significant need to address medication compliance in patients with serious mental illness. Based on the results and findings, the authors conclude that action is needed to address this problem. This article was classified as a Level I study with an A quality rating as per the Johns Hopkins framework.

The final study on this topic located for inclusion in this project was undertaken by Velligan et al. (2017). These authors sought to evaluate the scope of nonadherence to medication in patients with SMI as well as the factors contributing to the problem. Velligan et al. (2017) utilized a systematic review methodology and obtained 36 articles from MEDLINE. All articles had been published between January 2005 and September 2015. A PRISMA flow diagram was used to organize the articles which were reviewed interpedently by two of the study's authors based on predetermined eligibility criteria. The results of the project indicated that among patients with SMI, 49% were nonadherent with their medication. Poor insight as well as negative attitudes toward medication use were noted to be significant factors contributing to medication nonadherence across most studies.

This article was classified as a Level I study with an A quality rating. The strengths of the article include the use of a rigorous methodological framework and the results of the study which do demonstrate that almost half of all patients with SMI are medication nonadherent. The weaknesses of the study include the limited number of databases and limited timeframe for article retrieval. It is possible that there are additional studies that were not included that would

alter the final results of this study. The article supports the proposed quality improvement project by highlighting the scope of medication nonadherence in SMI, demonstrating the true severity of the problem.

Provider Education to Improve Medication Adherence

The second topic of focus for the literature review was provider education to improve medication adherence as it related to all patient population groups. Three articles were located on this topic (McDermott et al., 2022; Sany et al., 2020; Verloo et al., 2017). McDermott et al. (2022) conducted a quasi-experimental one-group, pre-/post-intervention design to evaluate a provider education program to increase knowledge of medication adherence in patients with cardiovascular disease. This experimental study was conducted at a large integrated academic medical center. A total of 34 advanced practice providers were included. Survey assessment of provider knowledge before the intervention was collected followed by a 12-week educational module for providers. Following the educational modules, providers were again surveyed regarding their knowledge.

The results of this study indicated that provider knowledge of medication adherence increased by 37.3% following education. The mean score following the intervention was significantly higher and the results were statistically relevant: mean difference $M = 10.7$, $SD = 5.9\%$, $t(15) = 7.279$, $p < 0.001$. The strengths of this research include the positive results and the statistically significant findings. The study is methodologically weak and prone to threats to internal and external validity. The sample is relatively small, and this limits the generalizability of the findings. Although this article does not focus on patients with SMI, it does indicate that provider education to increase knowledge of medication adherence does work, supporting the

proposed intervention for this quality improvement project. This article was classified as a Level II study with a B quality rating.

Sany et al. (2020) further evaluated provider education as a means to address medication nonadherence in patients with hypertension. More specifically, Sany and coauthors used a randomized controlled trial framework to deliver a provider education program to evaluate outcomes for patient health literacy, disease self-efficacy, and medication adherence. A total of 240 hypertensive patients and 35 providers working at two healthcare clinics between 2013 and 2014 were included in the study. Providers were randomly assigned to either an education (experimental) or practice as usual (control) group. For the primary outcome measure of medication compliance, electronic health record data was tracked for patients who were cared for by providers in both the experimental and control groups. Outcomes for patients were measured at baseline and at six months.

The results of this study did indicate that on all measures, statistically significant improvements were noted for the intervention group. With regard to medication adherence, the authors found that patients treated by physicians that had received training had higher rates of medication adherence after six months: $\beta = 0.19$, $p = 0.001$. The strengths of this study included the fact that a rigorous experimental methodology was used, the results demonstrate positive outcomes for provider education, and the results are statistically significant. Weaknesses for the study stem from the small sample size, the inability to generalize the results, and the use of a population other than patients with SMI. This study supports the primary intervention proposed for this quality improvement project and indicates that provider education should increase provider knowledge as reflected in practice changes that increase medication adherence among

patients. This study was classified as Level I evidence with an A quality rating. As per the Johns Hopkins framework.

The final study located on this topic was a systematic review completed by Verloo et al. (2017). This Level I study was noted to have an A quality level and its primary aim was to evaluate nursing interventions that can be used to improve medication adherence in discharged older adults. This systematic review included 14 studies that involved 2,028 patients. Of these 995 nurses were enrolled in different interventions to increase medication adherence and 1,033 were enrolled in control groups where no intervention was provided. Data collection occurred through the use of the Cochrane Collaboration Handbook and reported results according to the PRISMA statement.

The results of this study indicated that nurse education was integrated into all programs aimed at improving medication adherence among older adults. In eight of the 14 included studies, the results were statistically significant ($p < 0.001$), indicating that nurse education influenced patient medication adherence rates. If nurses were educated about how to help patients with medication adherence, patient medication adherence increased. This systematic review was methodologically rigorous and does demonstrate that provider education does influence outcomes for patients. The study utilized a limited number of databases for article retrieval. This serves to limit the analysis and may skew the results. Even though the patient population used in this study does not include patients with SMI, the results definitively demonstrate that provider education to improve medication adherence can work. Because this is the intended intervention for this quality improvement project, this study does support the proposed project.

Provider Education, Medication Adherence, and SMI

Two additional articles on the topic of provider education for improving medication adherence were located. These articles were specifically focused on patients with SMI including those with schizophrenia and bipolar disorder (Loots et al., 2021; Pakpour et al., 2017). Loots et al. (2021) conducted a systematic review and meta-analysis to compare the effectiveness of interventions to improve medication adherence in patients with schizophrenia or bipolar disorder. This study included 23 articles that were acquired from PubMed and Web of Science and published between 2009 and 2019. Data was collected through the GRADE approach using two different reviewers for article assessment. The results of this project demonstrated that all interventions, including those aimed at provider education, were similar and efficacious in improving medication adherence in patients: ($p = 0.29$; $I^2 = 19.9\%$).

The article's strengths are rooted in the use of a rigorous methodology and the fact that the results are statistically significant to support the use of provider education to increase medication adherence. However, it is important to note that the data analysis was based on the results of articles from only two databases. Other information may be available which may skew the results. Although all interventions tested to improve medication adherence in patients with SMI were effective, this research demonstrates that provider education is effective for improving medication adherence in patients with SMI and is an important component of addressing this problem. The article was classified as a Level I study with an A quality rating.

An additional study by Pakpour et al. (2017) was also identified for inclusion in this literature review. Pakpour and coauthors utilized a multicenter cluster randomized, observer-blind, controlled, parallel-group trial to evaluate the outcomes of a multifaceted intervention to increase medication adherence among patients with bipolar disorder. The multifaceted

intervention included staff education as an integrated component to help increase medication adherence among patients. The study was conducted across 10 academic medical centers.

Patients with bipolar were assigned to an experimental group (N = 136) or a control group (N = 134). The experimental group was provided with care using the intervention and the control group received care as usual. For the primary outcome measure, data was collected based on patient reports of medication adherence via the Medication Adherence Rating Scale.

The results of this study indicate that medication adherence improved in the treatment group and was statistically significant ($p < 0.001$). In addition, the treatment group fared better in terms of quality of life and symptom reduction. The study was classified as Level I evidence with an A quality rating. The strengths of the study stem from the use of rigorous methodology and robust support for the intervention of provider education in the target population.

Weaknesses of the study stem from the use of a small sample which may impact the generalizability of the results and the use of a self-report measure to collect data. This evidence supports the proposed quality improvement project demonstrating that provider education can be beneficial for increasing medication adherence in patients with SMI.

Synthesis of the Literature

The information included in the previous section provides a comprehensive overview of the evidence that was located to support the proposed quality improvement project. Although the evidence is thoroughly reviewed in terms of the content of each study, the analysis provided above does not provide a synthesis or integration of the evidence to demonstrate areas of agreement and contention. A thorough review of the literature should consider how the evidence being used for practice changes collectively and shapes understanding of the topic. Included in

this section is a synthesis of the literature collected to provide an integrated understanding of what the evidence shows regarding the topic and proposed solution.

Research Synthesis: Medication Adherence in SMI

As noted, when reviewing the topic of medication adherence in SMI, or the problem of focus for this quality improvement project, three articles were identified demonstrating the scope of the problem (Semahegn et al., 2020; Stockbridge et al., 2021; Velligan et al., 2017). When looking at the patient populations used, it is evident that there were differences in the samples based on the source of the information. For instance, Semahegn et al. (2022) and Velligan et al. (2017) collected data from previously published reports and integrated the data in a systematic review. Stockbridge et al. (2021), on the other hand, utilized electronic claims data from a Florida specialty Medicaid program to determine rates of SMI.

Although the differences in the types of populations used for evaluating medication nonadherence in patients with SMI, the results surprisingly demonstrate that medication nonadherence rates in patients with serious mental illness are relatively similar. Semahegn et al. (2020), for example, reported that in their sample 49% of patients with SMI were nonadherent to their medications. These authors included patients with depression, schizophrenia, and bipolar disorder. Similarly, Velligan et al. (2017) reported the exact same rate of medication nonadherence in patients with SMI. These authors focused specifically on patients with schizophrenia and bipolar disorder. Results obtained from Stockbridge et al. (2021) in their primary analysis of claims, data for patient treatment indicate that the rate of medication nonadherence was 48%, in line with what nonadherence rates reported by Semahegn et al. (2020) and Velligan et al. (2017). In the study conducted by Stockbridge, only patients with schizophrenia were included.

Synthesis of this data suggests that regardless of the sample used or the SMI profiled, approximately half of all patients with serious mental illness are medication nonadherent. This both justifies the need to act and substantiates the severity of the problem. When patients are nonadherent with their medications, treatment outcomes are adversely impacted and the costs to provide care increase. As demonstrated from this data, it is reasonable to argue that many patients with SMI are not able to realize the full benefits of treatment, leading to systemic implications for adverse patient health outcomes, provider care, and for improving population health outcomes.

Research Synthesis: Provider Education

An additional three articles were identified detailing the use of provider education to help increase medication adherence in diverse patient groups (McDermott et al., 2022; Sany et al., 2020; Verloo et al., 2017). In particular, McDermott et al. (2022) evaluated provider education to increase medication adherence among patients receiving care for cardiovascular disease. Similarly, Sany et al. (2020) considered the same topic in a group of patients with hypertension. Verloo et al. (2017) focused their research on improving medication adherence in discharged older adults. Although each of the articles utilized a patient population different from the target population for this quality improvement project—i.e., patients with SMI—the intervention used—i.e., patient education—was noted to have a statistically significant impact on improving medication adherence in all patient care groups. What these results suggest is that provider education could be used in any patient population to help increase medication adherence among patients.

Even though there is notable congruity in the results, there are some areas of concern that must be noted for translating the evidence into practice. In particular, of the educational

interventions reviewed, there is no consensus regarding which program works best. McDermott et al. (2022) and Sany et al. (2020) utilized specific interventions that were investigated through the use of experimental frameworks to test the fidelity of their interventions. Both programs were effective; however, both programs were different. This makes it difficult to know for sure which methods of provider education would be helpful. The situation is exacerbated when looking at the systematic review completed by Verloo et al. (2017). In particular, the study by Verloo et al. (2017) used a systematic review of the literature to include various educational programs. In this study, the specifics of the educational programs are not detailed making it difficult to compare the interventions used to those used by McDermott et al. (2022) and Sany et al. (2020)

Discrepancies are also noted in this literature regarding the duration of education and the follow-up periods for assessment. McDermott et al. (2022) do not specify the duration of education for providers while Sany et al. (2020) report that the educational module was provided over three sessions and two workshops. Verloo et al. (2017), on the other hand, report that education was provided in 12 weekly one-hour sessions. In terms of translating the evidence into the practice site this creates some challenges for determining how to structure the educational program. Follow-up periods also varied. While McDermott et al. (2022) and Verloo et al. (2017) used a three-month follow-up period to assess medication adherence, Sany et al. (2020) utilized a six-month follow-up period. Evaluating outcomes over the long-term is imperative as this will indicate if and when providers need reinforcement for their learning.

Also, important to note when synthesizing this literature is that each of the authors measured different outcomes with regard to their educational programs. McDermott et al. (2022) directly measured provider knowledge, while Sany et al. (2020) and Verloo et al. (2017) measured changes in patient medication adherence. It is assumed that in the studies by Sany et al.

(2020) and Verloo et al. (2017) the resultant change in behavior to help patients increase medication adherence was the end result of an increase in provider knowledge. However, because this outcome was not directly measured, it is possible to state with certainty that this was the case.

Research Synthesis: Provider Education in SMI

The final literature topic evaluated for this project also involved provider education to improve medication adherence. However, the two studies located for this topic focused specifically on the population of interest for this quality improvement project: patients with serious mental illness (Loots et al., 2021; Pakpour et al., 2017). A synthesis of this research does indicate that similar study populations—including patients with SMI—were used. Further, both studies included focused on provider education. Loots et al. (2021) utilized a systematic review framework to pool results from 23 studies on the topic while Pakpour et al. (2017) utilized a randomized controlled trial to evaluate the results of an educational intervention for providers. In the study conducted by Pakpour et al. (2017), the educational intervention for providers was included as part of a larger multifaceted program for increasing medication adherence among patients with SMI. Both studies represent a high level of evidence and high-quality evidence. Both clearly support provider education through statistically significant results.

Much like the research on provider education for improving medication compliance in all patient populations reviewed above, there are some notable challenges noted when integrating these sources. Neither article demonstrates which method of provider education works best nor what content is needed to foster improvements in medication adherence among patients. Further, there is a lack of data on follow-up periods or the duration of educational programs. The systematic review provided by Loots et al. (2021) does not include any relevant information

regarding the structure, duration, or content used for provider education. This may create some challenges for translating the evidence into the clinical setting and may require the identification and review of evidence-based practice guidelines to improve patient medication adherence.

Conclusion

An integration of the evidence reviewed for this proposed quality improvement project indicates that the problem of medication nonadherence in patients with SMI is widely supported with a consensus that approximately half of all patients with these mental health issues will not take their medication as prescribed. Further, the literature supports the need for provider education to improve medication compliance both in all patient population groups and in patients with serious mental illness. Based on this data, the intervention for this quality improvement project is also supported. Given the findings of the literature review, there is a strong foundation upon which to undertake practice change, indicating that this quality improvement project is truly evidence based.

Section Three: Methodology

This quality improvement project sought to increase provider knowledge of effective treatment for patients with serious mental illness (SMI). To implement this project in practice, a methodological framework was needed. For the purposes of this proposed project, a quality improvement framework was selected. Quality improvement projects focus on standardizing care processes to improve outcomes for patients and healthcare systems (Schalock et al., 2018). Quality improvement projects typically measure outcomes before and after the implementation of change to determine if desired results have been achieved and, if not, what can be done to further improve quality (Schalock et al., 2018). To facilitate understanding of how this quality improvement methodology was applied to the proposed project, this section reviews the various elements of the methodology that were utilized to guide project implementation. More specifically, this section includes a review of the primary Doctor of Nursing Practice (DNP) project goal, SMART (specific, measurable, achievable, relevant, and timebound) objectives for the project, the theoretical framework for the project, setting and participants, procedures, participant recruitment, data collection, data analysis, protection of human subjects, data management, and a discussion of the results in the context of advanced practice nursing.

Primary DNP Project Goal

The primary DNP project goal was increase provider knowledge of treatment for patients with serious mental illness. Current evidence indicates that due to the nature of SMI, patient adherence with medication and treatment recommendations is often suboptimal (Semahegn et al., 2022). In fact, evidence indicates that as many as half of all patients with SMI are nonadherent with medication recommendations (Semahegn et al., 2022). The problem is one that could be augmented through provider education including information about long-acting injectable

medications that can be highly effective for improving medication adherence among patients with SMI (Loots et al., 2021). By providing clinicians with education regarding the optimal management of patients with SMI, it should be possible to positively influence practice as clinicians will be better prepared to meet the care needs of this population group.

SMART Objectives

SMART objectives include those that are specific, measurable, assignable, realistic, and time bound. For the purposes of this proposed quality improvement project, the primary goal was to increase provider knowledge of medication adherence and effective treatment of patients with SMI. To achieve this primary project goal, three SMART objectives were identified to guide the project and are included here as follows:

1. SMART Objective #1: Obtain Institutional Review Board (IRB) approval for the proposed project from Florida International University by the Spring of 2023.
2. SMART Objective #2: Collect provider knowledge of SMI adherence before and following an educational module by June 2023.
3. SMART Objective #3: Create and present an educational module to improve provider knowledge of increasing medication adherence in patients with SMI by June 2023.

Theoretical Framework/Conceptual Underpinning

Conceptual and theoretical frameworks are often used in nursing research to help guide philosophical inquiry while also providing a useful framework for evaluating project results (Nibbelink & Brewer, 2018). Frameworks not only facilitate a deeper understanding of what is being investigated but also these tools can augment understanding of how data collected fits together to facilitate scientific knowledge and understanding (Nibbelink & Brewer, 2018). With these issues in mind, it is helpful to discuss the theoretical framework that underpinned this

quality improvement project. Specifically, Roy's Adaptation Model (RAM) was selected for use in this project. Included in this section is an overview of the theory, a consideration of its clinical fit to the project, and an evaluation of the theory using Peterson and Bredow's (2013) theory evaluation framework.

Theory Overview

As noted, the theoretical framework selected to underpin this project was the Roy Adaptation Model. Roy hypothesized that patients were in constant interaction with their external environments and that the process of adaptation was an integral part of how individuals responded to the need for change (Alimohammadi et al., 2022). In some instances, including matters related to health, adaptation can be difficult for the patient (Almasloukh & Fahs, 2021). When adaptation becomes challenging for the patient, nursing care can ameliorate the gaps that exist for the patient in terms of being able to adapt to change (Almasloukh & Fahs, 2021). While nursing care can mean the restoration of the patient's health, scholars do note that when it comes to the RAM, Roy conceptualized health and illness along a continuum (Alimohammadi et al., 2022). As a result, if health cannot be fully restored for the patient the nurse can facilitate the adaptation of the patient such that the patient is able to optimize functioning and quality of life (Alimohammadi et al., 2022).

Although the concept of adaptation is critical to understanding Roy's model, RAM also emphasizes the mechanisms by which action is taken to foster adaptation by nurses. In particular, scholars note that under the model, there are often six steps that are used to guide nursing practice. These steps include assessment of the patient's behavior, assessment of the stimuli impacting the patient, diagnosis of the patient, goal setting for the patient, identifying interventions needed to meet goals, and evaluating the goals (Almasloukh & Fahs, 2021). Based

on the outcomes that result in conjunction with the stated goals, it should be possible to determine if the patient was able to adapt and what, if any, additional support will be needed to help restore the patient to health. Under this model, it is not enough to simply recommend care for the patient. Success under this model requires the nurse to eliminate barriers to caring for the patient such that the nurse can connect the patient directly with the care needed to adapt to changing health needs.

Theory/Clinical Fit

With a review of the model provided, it is now possible to consider how the theory fits with the quality improvement project. A closer review of the theory does demonstrate the role and importance of the concept of adaptation in providing nursing care. Not surprisingly, adaptation was critical to the current project in myriad ways. In addition to the fact that patients with SMI are continually challenged to adapt to the changing nature of their illnesses, healthcare providers must be willing to adapt to the unique needs of this patient group. Evidence indicates that treating patients with SMI can be a notable challenge and one that can be quite difficult for healthcare providers (Lamb & Weinberger, 2017). Issues such as a lack of adherence to treatment recommendations remain a significant concern (Lamb & Weinberger, 2017). However, providers must reconcile these issues with a recognition that the patient is often not responsible for their behavior due to the symptoms of their illness (Lamb & Weinberger, 2017). Adaptation in treating patients with SMI will be needed to help ensure that providers remain abreast of the best standards of care.

Additional areas of fit for the model to the project could be seen when considering how RAM would shape nursing care. In particular, RAM is focused on improving nursing care through fostering the adaptation of the patient to help address changing health needs

(Alimohammadi et al., 2022). By acquiring the knowledge and expertise needed to best manage medication adherence in patients with SMI, providers will be able to use evidence-based approaches that should augment the care of the patient. Over time this should lead to the adaptation of care practices used when providing care for patients with SMI as well as the adaptation of the patient to regularly use medication for the treatment of their illness. What is highlighted here is that adaptation is a key component of not only the care that can be provided to patients with SMI through increased provider knowledge but also adaptation is a key component of the behavior change that should result for patients as they become better able to self-manage their health.

Theory Evaluation

Theory evaluation is considered here using Peterson and Bredow's (2013) framework for theory evaluation. The first question in the model focuses on how the theory is operationalized to the clinical issue. A review of the topic of treatment for SMI in the context of Roy's Adaptation Model does indicate that the framework has been used to guide the care of individuals with SMI. This includes the development of programs aimed at improving care for individuals with serious mental health issues (Russo et al., 2019). Roy's adaptation model has also been used to help guide the analysis of different studies investigating the impact of SMI on patients and family members (Mathews et al., 2019). Research also indicates that RAM has been used to improve treatment and medication adherence in patients with various chronic health issues including heart failure (Shariatpanahi et al., 2019). Thus, the theory has been operationalized when reviewing SMI and medication adherence, which were the focus of this quality improvement project.

The second question in Peterson and Bredow's (2013) framework focuses on where the theory has been applied in the past while the third question focuses on how well the theory has

performed at explaining the phenomenon to which it relates. A review of the past application of the theory has been utilized to explore various medical phenomena including quality of life (Almasloukh & Fahs, 2021), the functional status of women following a diagnosis of cancer (Sheikhalipour et al., 2021), and treatment adherence for adolescents diagnosed with epilepsy (Alimohammadi et al., 2022). What this suggests is that the theory has been applied to better understand the health behaviors of different population groups experiencing challenging circumstances or diagnoses. In terms of how well the theory measures outcomes, scholars do note that RAM is a grand nursing theory (Callis, 2020). As such, the theory is suited for explaining phenomenon but not for predicting the specific clinical results that will be obtained (Callis, 2020). RAM provides a means for guiding the care of the patient.

Questions four and five in the Peterson and Bredow (2013) framework focus on the relationship of the theory to the clinical problem and the congruency of the theory's assumptions with the clinical problem. The clinical problem focused on adaptation in terms of the ability of the patient to adapt to changing self-care needs and the ability of providers to adapt to the specific needs of patients with SMI. Patients with SMI face ongoing challenges for managing their health and practical supports for self-care would improve the ability of patients to best manage their aspect of their care (Semahegn et al., 2020). Providers that acquire new knowledge should adapt their practice to reflect this new knowledge. Assumptions made under RAM include that the patient is continually in direct contact with the environment and that human beings have the capacity for integrating information for creative processes (Alimohammadi et al., 2022). The first assumption demonstrates why patients and providers need better knowledge to adapt to changing health needs. The second assumption demonstrates that by building creative

solutions to complex problems—such as through this quality improvement project—it is possible to enhance care quality. Thus, both assumptions appear to be supported through this project.

The final theory evaluation question from Peterson and Bredow's (2013) framework focuses on whether there are tools that can be used to measure or evaluate theory outcomes. A review of the literature regarding the application of Roy's theory to practice demonstrates that outcomes measured are typically focused on the phenomenon being investigated. For example, Robinson-Lane (2017) completed an ethnographic study of patients coping with pain to learn how patients adapted to this health issue. The mechanisms used for coping as well as how coping influenced pain were evaluated. RAM was used as the basis for guiding an understanding of behavior and how it would be influenced in the context of pain. This suggests that RAM does not have specific tools for evaluation with the focus of the model on building an understanding of behavior and what factors shape behavior.

Setting and Participants

The practice site for this quality improvement project was South Florida Psychiatry, an outpatient clinic that provides care for veterans with a broad range of chronic health issues. Research does indicate that veterans have one of the highest rates of mental illness and SMI (Brown et al., 2017). Consequently, providers working with this population would benefit from education to augment their knowledge and care practices. The practice site is located in a large urban/suburban community and provides care for veterans from South Florida and surrounding communities. The mission of the organization is to provide the highest quality veteran-centric care to augment the health of both the patient and the community. To achieve this mission, the organization is seeking to become a provider of choice for veterans in the community. The organization follows a highly bureaucratic structure; however, the culture is focused on the

application of evidence to improve practice including the use of collaboration among all healthcare providers.

The project sponsor at the practice site was Dr. Ernesto L. Sarduy, DNP, APRN, PMHNP-BC. This sponsor was identified as having the correct credentials to provide oversight of this project and agreed to supervise the practice change over the course of the project's duration. The project sponsor was responsible for reviewing the scholarship being acquired through the DNP program and for providing feedback regarding the application of this evidence into practice. Staff support at the practice site as well as the support of managers and leaders within the facility were helpful for fostering project success. These individuals needed to participate in the project in order to acquire the skills and knowledge needed to improve care for patients with serious mental illness. A site letter of approval for conducting the project at the practice site can be found in Appendix B.

Presently, there are 20 medical providers working at the practice site including physicians, advanced practice nurses, and physician assistants. While the ideal sample for this proposed project would have included all 20 medical providers, it was not viewed as practical or feasible to include all providers in this initial project. Consequently, a smaller sample including at 10 providers was sought and obtained for this project. Although the sample was too small to ensure the statistical significance of the findings, the sample was appropriate for the setting and provided important insight regarding the efficacy of this educational program to increase provider knowledge.

Procedures

The methodology selected for use in this project is a quality improvement framework. Quality improvement involves a stepwise approach to standardize processes in order to reduce

variation and achieve predictable results (Schalock et al., 2018). In the context of healthcare, quality improvement should lead to the ability to standardize care processes such that the best possible outcomes result for patients. This has systemic implications for improving care quality, patient safety, and patient health outcomes (Schalock et al., 2018). While a quality improvement framework was utilized, it involved a one-group pre-/post-test design. In this design, baseline measures were taken for a single group, an intervention was trialed, and outcomes for the group were measured (Stratton, 2019). A review of how this framework was applied to the project is considered here.

Participant Recruitment

Participant recruitment occurred following the acquisition of site approval to conduct the quality improvement project as well as Institutional Review Board (IRB) approval from Florida International University (FIU) (Appendix C). Using an internal staff email directory from the practice site, all medical providers including physicians, nurse practitioners, and physician assistants were contacted about participation in the quality improvement project. More specifically, an email recruitment letter (Appendix D) was sent to all medical providers working at the practice site. The email recruitment letter provided information about the project, what would be required of participants, and contact information for the principal investigator and the site preceptor.

Medical providers at the practice site who were interested in participating in the quality improvement project were asked to return an email to the principal investigator within one week. Medical providers indicating their desire to participate in the project were emailed an informed consent letter. Providers were asked to electronically sign the document or to print it, sign it, and return it within one week. The informed consent form can be found in Appendix E. The form

includes all pertinent information regarding the project and outlines participant expectations and rights. Once providers had signed the informed consent form, they were officially enrolled in the project as participants.

Data Collection

Data collection for the project occurred at baseline and following the educational module. At baseline, providers agreeing to participate in the project were asked to complete a simple demographic form (Appendix F) and a knowledge test on the topic of treatment for patients with serious mental illness (Appendix G). The demographic questionnaire included questions that allow for the acquisition of data that described the characteristics of the sample including age, gender, race, etc. The knowledge test was created based on the educational module developed for the project. The test was evaluated by three content experts including a psychiatric mental health nurse practitioner, a family nurse practitioner, and a nurse educator. All recommendations made by the content experts were incorporated into the knowledge test.

After providers returned the informed consent forms, indicating their voluntary participation in the project, participants were sent the demographic and pre-intervention knowledge assessments via email. The forms were fillable, and participants were asked to download the forms, save them to their computer, complete them, and return them. Participants were asked to return the completed forms within one week via email. Once the forms were returned, participants were emailed a link to the training module. The training module was delivered as a YouTube video that included a voiceover PowerPoint presentation of the educational module. Participants had two weeks to view the training module and to send an email to the principal investigator to indicate that the educational module had been completed.

In the final stage of the project, post-intervention data was collected. Participants completing the educational module were emailed the post-knowledge assessment. This assessment included the same questions as the pre-intervention knowledge assessment (Appendix G). The questions were reordered to help minimize test bias. All participants were emailed the fillable knowledge questionnaire and asked to complete it within one week. Data from the pre-intervention phase of the project was compared with data from the post-intervention phase to determine if any change in participant knowledge of the topic resulted in following the educational module.

Data Analysis

Data analysis for this project included descriptive and inferential statistics. Descriptive statistics were used to analyze the demographic data collected for the project. This included statistics such as mean, standard deviation, range, and frequency (percent). Descriptive statistics were used to evaluate the mean knowledge scores before and following the educational intervention. Evaluation of the mean knowledge scores before and following the intervention were assessed to determine whether knowledge increased or decreased following the educational intervention.

Inferential statistics were used in this project to analyze the pre-/post-intervention knowledge scores. Specifically, inferential analysis of the data was undertaken to determine if the changes in knowledge scores that result are statistically significant. The specific test that was used to evaluate statistical significance was the Mann-Whitney U-test. This particular test is the non-parametric equivalent of the paired t-test and can be used to evaluate the differences in median between the pre- and post-intervention knowledge scores (Mishra et al., 2019). Non-parametric tests are used when the data is not normally distributed (Mishra et al., 2019). It was

estimated that the sample size for this project would be less than 30, indicating that the data would not be normally distributed. An alpha value of 0.05 was used to assess the statistical significance of the data.

Protection of Human Subjects

Although this quality improvement project did not appear to have any significant risks for participants, the use of human subjects in research does require consideration of the steps that were taken to protect the rights of participants. As previously noted, IRB approval for the project was sought from FIU and was awarded on April 6, 2023 (Appendix C). The principal investigator for the project was changed and an IRB amendment was sought and granted on May 1, 2023. This letter is also included in Appendix C. IRB approval was sought to ensure that the quality improvement project was ethically sound and did not violate the rights of participants. Further, all participants were asked to sign a letter of informed consent (Appendix D) indicating their voluntary participation in the project.

Additional actions that were undertaken to ensure that participant privacy and confidentiality are protected. Specifically, the project utilized a staff email directory to recruit providers at the practice site and to conduct the project. To protect the privacy of participants, the blind carbon copy (bcc) email feature was used on all email communications. Further, all emails for the project were sent using an encrypted email server and an email account that was password protected, accessible only by the principal investigator, and established specifically for use in this quality improvement project. To limit the amount of personal participant information collected, no data collection forms required any personal identifying information such as full name, telephone number, etc. All data from the project was aggregated such that it will not be possible to associate a specific participant with an individual piece of datum.

To protect participant identity associated with email addresses, each provider agreeing to participate in the project was assigned a random three-digit code. The code was placed on all forms returned by the participant including the demographic form and knowledge tests. A master list with the three-digit codes and participant email addresses was stored in a password protected Excel file. This file was stored on a password protected laptop to which only the principal investigator had access. Pre- and post-intervention knowledge assessment scores were matched for participants based on their three-digit codes, enabling the principal investigator to make an inferential comparison of the data.

Data Management

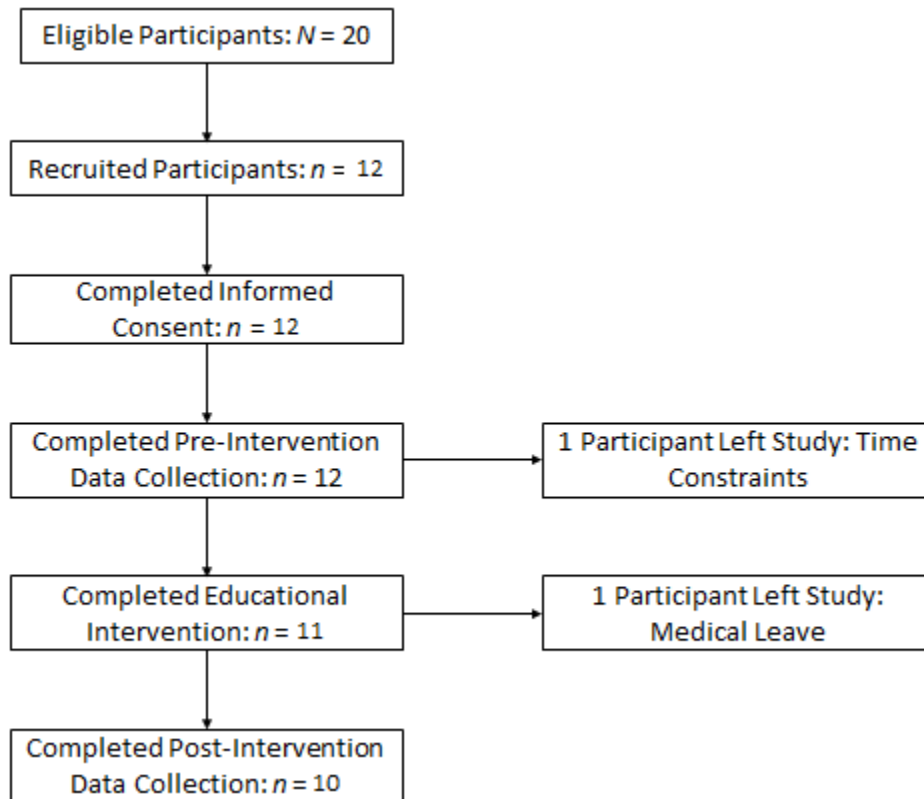
Data management for the project included several steps that were designed to also protect participant privacy and confidentiality. All data for this project was collected electronically. Consequently, data management focused on ensuring that all electronic data is secure. All data was stored on a password protected laptop to which only the principal investigator had access. Further all relevant project files were password protected on the laptop. The laptop was stored at the practice site in a locked filing cabinet to which only the principal investigator and site preceptor had access. Any forms that needed to be printed for this project and included participant names or email addresses were stored in the same locked filing cabinet at the practice site. All project data will be retained for five years following the completion of the project. After which, all hard copy data will be shredded, and all electronic data will be professionally removed from the laptop's hard drive.

Section Four: Results

The purpose of this DNP quality improvement project was to increase provider knowledge of the treatment of patients with SMI. Increasing provider knowledge of the topic was viewed as a means to improve medication adherence in patients with these mental health issues. The project was implemented over a six-week period including recruitment, pre-intervention data collection, provider education, and post-intervention data collection. The data was entered into SPSS v.29 and all relevant descriptive and inferential statistics were tabulated. This section provides a review of the results including an explanation of the statistical tests performed. More specifically, this section includes a descriptive review of the demographic and knowledge data as well as an inferential comparison of the pre- and post-intervention knowledge scores of participants.

Demographic Data

The demographic data for this quality improvement project was collected using a standard demographic form (Appendix F). Questions included on the form included age, gender, race, position in the organization, years worked in mental health care, previous training in managing patients with SMI, and whether or not providers had used injectable medications for the treatment of SMI in the past. A total of 12 providers initially agreed to participate in the project. However, two participants were lost to attrition. One participant withdrew from the study citing time constraints that prohibited his participation. A second participant began the program and was unable to complete the final knowledge assessment due to medical leave. Figure 1 below includes a flow chart illustrating participant enrollment in and attrition from the study. From the flow diagram it is possible to see when participants left the project and that 10 providers were retained throughout the project.

Figure 1*Participant Flow Diagram*

Descriptive statistics were used to assess the demographic data including mean, frequency, standard deviation, and range. A summary of the data can be found on the following page in Table 2. The data indicate that participants in the project had the following age ranges: 25-34 ($n = 4, 40\%$), 35-44 ($n = 4, 40\%$), and 55-64 ($n = 2, 20\%$). Further, there were 4 males (40%) and 6 females (60%) who participated in the project. Of the 10 participants 2 (20%) were White, 1 (10%) was African American, 5 (50%) were Latino/Hispanic, 1 (10%) was Asian/Pacific Islander, and 1 (10%) reported their race as “other.” Further, 9 (90%) of the participants were advanced practice nurses, 1 (10%) was a student. Among providers participating in the project, the range of employment in mental health spanned 5 to 15 years ($M = 8.7, SD = 2.87$).

Education level and employment status were also assessed through the demographic survey, 1 (10%) participant reported having a bachelor's degree while 6 (60%) reported having a master's degree and 3 (30%) reported having a doctoral degree. Additionally, a majority of the sample included seven staff members (70%) who were self-employed, and one staff member (10%) in each of the following employment categories: part-time, student nurse, and self-employed.

Table 1

Demographic Data for Sample (n = 10)

Characteristic	Result
Age	
25-34	4 (40%)
35-44	4 (40%)
55-64	2 (20%)
Gender	
Male	4 (40%)
Female	6 (60%)
Race	
White	2 (20%)
African American	1 (10%)
Latino/Hispanic	6 (50%)
Asian/Pacific Islander	1 (10%)
Other	1 (10%)
Current Position	
Advanced Practice Nurse	9 (90%)
Student Nurse	1 (10%)
Years Working in Mental Health (<i>M, SD</i>)	8.7, 2.87
Education Level	
Bachelor	1 (10%)
Masters	6 (60%)
Doctoral	3 (30%)
Employment Status	

Full-time	7 (70%)
Part-time	1 (10%)
Student	1 (10%)
Self-employed	1 (10%)

Pre-/Post-Intervention Data

Pre- and post-intervention knowledge scores were also evaluated using descriptive statistics. As previously noted, the knowledge test (Appendix G) included 20 questions. The questions were scored on a scale from 0 to 100 with correct answers awarded five points and incorrect answers awarded zero points. Because the data was scaled, descriptive statistics used included mean and standard deviation as well as range. Table 3, on the following page, includes a summary of the scores. The data indicates that the pre-intervention knowledge scores ranged from 20 to 65 ($M = 47$, $SD = 4.33$). Scores were noted to increase in the post-intervention phase of data collection. During this period of data collection, knowledge scores ranged from 65 to 100 ($M = 92$, $SD = 2.39$). Figure 2 includes a comparison of the mean scores for the pre- and post-intervention phases of the project, indicating that the mean knowledge scores of providers did indeed increase following the educational intervention.

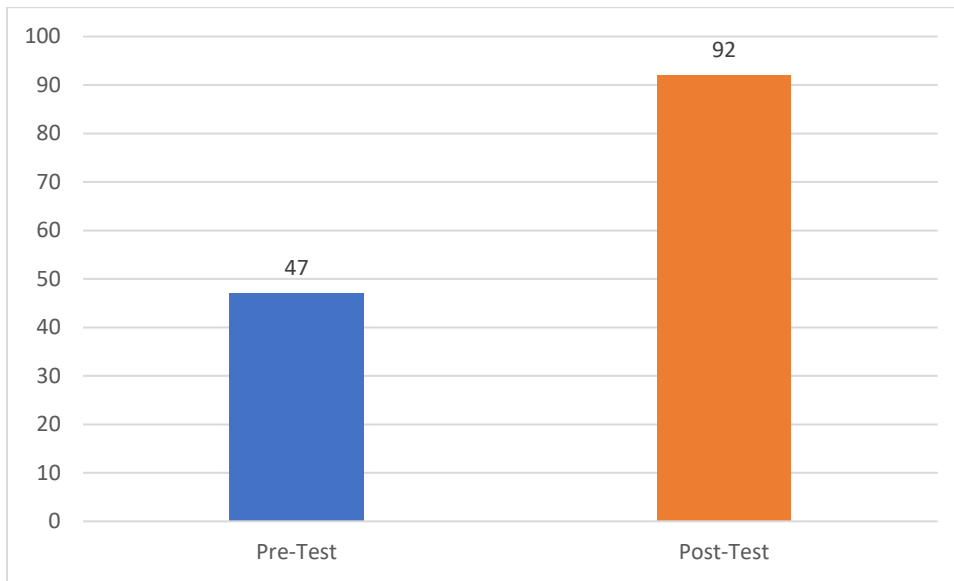
Table 2

Pre- and Post-Knowledge Scores (n = 10)

	Mean	Standard Deviation	Range
Pre-Intervention Knowledge Score	47	4.33	20-65
Post-Intervention Knowledge Score	92	2.39	65-100

Figure 2

Comparison of Pre- and Post-Test Knowledge Scores for Participants (n = 10)



The descriptive data clearly indicates that there was an increase in the mean knowledge score for participants following the educational intervention. Although the data suggests that the change in scores was meaningful, evaluation of the data using inferential statistics is needed to evaluate statistical significance in the data. Upon reviewing the data, it was evident that because of the size of the sample ($n = 10$) the data would not be normally distributed. Consequently, a nonparametric test was needed to inferentially evaluate the data. Specifically, a Mann-Whitney U-test was selected to compare the median of the knowledge scores before and following the intervention. The results of this statistical test produced were as follows: $z = -6.33$, $p < .000$, $n = 10$. Comparing the p-value to an alpha of .05, it is possible to argue that the change in scores from the pre- to post-intervention phases of the project was statistically significant.

Section Five: Discussion

Serious mental illness (SMI) represents a significant challenge for clinical management of the patient. In particular, medication adherence in patients with SMI remains a significant problem for clinicians to effectively treat patients with these health issues. To enhance provider care of patients with SMI, a quality improvement project was implemented to increase provider knowledge of approaches and tools that can be used to effectively treat patients and increased medication adherence. From the data analyzed in the previous section, it was noted that the educational program was effective for increasing provider knowledge of SMI and its treatment. Even though the results support the evidence base used to develop this project, it is imperative to discuss the data in the context of the literature and practice. This section includes a complete discussion of the results, examining outcomes in terms of what has been previously reported on the topic, how the results should be pragmatically interpreted, plans for dissemination, and the implications of the results for advanced nursing practice.

Discussion of the Results

To begin this discussion of the results, it is first helpful to review the data in the context of the current literature on the topic. A review of the literature on the topics of medication adherence in patients with SMI, provider education to increase medication adherence in general practice, and the role of provider education in expanding knowledge and changing practice when working with patients diagnosed with SMI were included in this document. Looking first at the evidence regarding medication adherence in patients with SMI, the literature clearly demonstrated that this was a concern when providing care for most patients with this diagnosis (Semahegn et al., 2020; Stockbridge et al., 2021). In fact, current data on the topic indicates that

almost half (49%) of all patients with SMI have difficulty with medication adherence (Semahegn et al., 2020).

Although patient medication adherence was not formally assessed through the measures used in this project, when discussing the project at the practice site, many of the providers who subsequently enrolled in the project did note that medication adherence in patients with SMI was a significant issue of concern. Providers stated that when patients do not adhere to their medication this can result in an adverse sequela of outcomes which typically includes symptom exacerbation and the need for emergency care and, typically, hospitalization, to stabilize the patient. The issues noted by practitioners at the clinical site were noted in the literature. In particular, scholars note that medication is the mainstay of treatment for patients with SMI (Tessier et al., 2017). However, cognitive impairments caused by SMI can make it difficult for patients to adhere to regular medication use (Tessier et al., 2017). When this occurs, the patient can decompensate, necessitating the need for acute medical intervention (Tessier et al., 2017).

The second theme identified from the literature and reviewed in this project was the role of education for increasing provider knowledge of medication adherence. What was highlighted in the literature is that provider education has been shown to foster changes in practice that enable providers to increase patient medication adherence (McDermott et al., 2022; Sany et al., 2020; Verloo et al., 2017). As demonstrated by Verloo et al. (2017), when medication adherence is identified as a problem of concern for delivering patient care, providers must proactively address the problem by first understanding the needs of the patient and then identifying barriers to medication adherence that can be addressed through clinical practice. Taking these steps should serve as the basis for expanding provider knowledge of the problem and for implementing patient-centered programs that can effectively improve medication adherence in specific

population groups. This approach was foundational to this quality improvement project and, based on the results, the data does support provider education as a means to increase knowledge, change practice, and improve outcomes for patients struggling with SMI.

The final theme identified in the literature was with regard to specific studies investigating the use of provider education to improve outcomes for patients with SMI (Loots et al., 2021; Pakpour et al., 2017). In this research it was noted that not only do provider education programs work to increase provider knowledge, but also these programs are effective for increasing medication adherence among patients (Loots et al., 2021; Pakpour et al., 2017). The educational models and programs used in this literature were reviewed to help construct the educational presentation for this project. Although the impact of the educational module on provider practice and patient outcomes was not assessed during this quality improvement project, provider knowledge gains made as a result of the project were evaluated. In comparison with the literature, it is possible to see that this quality improvement project did result in outcomes that were similar to what was reported in the literature regarding knowledge gains from educational programs (Loots et al., 2021).

Collectively, this data demonstrates the integrity of evidence-based change as a means for improving clinical practice. The results alone indicate that education did increase provider knowledge of the topic. While this is an important and relevant outcome, when this outcome is juxtaposed against the evidence, the true importance of undertaking evidence-based practice can be seen. Through the careful translation of evidence into practice, it is possible to enhance patient care and to highlight the importance of data-driven decision making in healthcare. By using current research as a foundation for improving practice it is possible to ensure that what works is utilized as the standard of care for all patients.

Implementation Discussion

While a consideration of the results of this project in the context of the literature is essential to consider, it is also important to evaluate what occurred during the project and the pragmatic implications of implementing this educational program in practice. As noted, when reviewing the results for this project, the initial sample of participants was $n = 13$. Two of the participants were lost during the project period. The first participant withdrew citing time constraints. The second participant withdrew due to medical leave from the facility. The sample population (or number of clinicians at the practice site eligible for participation in the project) was relatively small: $N = 20$. While an effort was made to recruit all 20 clinicians, this was not possible due to scheduling and time constraints. Although the acquisition of a sample of 13 was initially viewed as being quite good, the attrition of participants from the project made the participation rate for the project 55%. This is actually commensurate with evidence that suggests that in any given study, participation rates vary between 40 and 60% (Booker et al., 2021). However, the small sample and population do have implications for interpreting the results and will be discussed later in this section.

Even though study attrition should be expected, it was not anticipated for this project. Consequently, the decision of study participants to leave the project did initially cause concern. It was believed that increased study attrition would lead to the decision of other participants to leave the project. Study attrition is noted in the literature to be a significant issue that can impact the research process, the interpretation of results, and the conclusions that can be drawn from research (Nicks et al., 2017). However, a review of the approved IRB application and informed consent forms did indicate that participants could leave the project at any time for any reason. Consequently, there was not much that could be done to prevent these participants from leaving

the project. Further, while concerns were noted over the impact of participant attrition on data analysis, it was noted that the small size of the sample would limit the types of inferential tests that could be performed to analyze the data. The loss of two participants from the study would not have a significant bearing on the procedures for data analysis.

Influencing Factors

Influencing factors that shaped the course of the project are also important to consider in terms of their impact on project implementation. The first influencing factor noted for this project was with regard to acquiring IRB approval from FIU. Although the IRB application process was streamlined through a training program and through planning, the process took more time than initially anticipated. This reduced the amount of time available to recruit providers from the practice site. Given that the population of clinicians for the project was small and further, that only 13 providers initially agreed to participate in the project, having more time to recruit participants may have been helpful for increasing the number of providers who actually participated in the project. Because IRB requirements limit recruitment until after the project has been approved, it is reasonable to believe that the delays caused by waiting for approval did have an adverse impact on the ability of the principal investigator to recruit participants.

An additional influencing factor was identified following the educational program. In particular, feedback provided by participants in the project indicated that alternative methods for providing the educational program may be helpful for increasing learning among participants. In particular, it was noted by participants that having a live educational presentation may have been helpful for fostering their learning. One issue that has not been clearly delineated in the literature involves determining what methods work best to provide education in this particular setting. While education was noted as an effective means to increase provider knowledge of the topic

(Loots et al., 2021), the specific manner of providing education has not been clearly defined. Thus, the methods for providing education—i.e., via a YouTube video—may not have supported the unique learning styles for all project participants. This may have had an impact on post-intervention knowledge assessments, resulting in lower scores for some providers.

Monitoring

Project monitoring occurred across the entire process of implementation and was guided by two supports: regular meetings with the site preceptor during project implementation as well as the use of a clearly organized project schedule. The site preceptor worked closely with the principal investigator during the entire project. However, during project implementation, the site preceptor was available for regular weekly meetings and for questions via text or email during the week. Meetings with the project mentor occurred weekly every Friday for six weeks during project implementation. During these meetings, the project activities completed in the past week and the project activities planned for the upcoming week were discussed. When problems were encountered such as the attrition of project participants, the site preceptor was contacted and collaboration was used to determine next steps and to evaluate the impact of change on the project and its outcomes. Through these weekly meetings, it was possible to acquire insight regarding what actions were needed to successfully complete the project. The insight gained ensured that all project activities could be completed during the implementation process.

Also, important to project monitoring was the use of a project schedule. The project schedule was established as part of planning for the IRB application and provided a weekly calendar of specific activities that would enable data collection and project completion. Through the use of this schedule, it was possible to implement specific activities in sequence and to collect the data in a concise manner. While the project schedule was helpful, it is important to

note that the project schedule was an integral part of the strategic planning that had been undertaken to build the project. Before IRB approval was acquired, project planning included creating the educational video, developing the pre-/post-intervention knowledge tests and other forms for the project, and identifying a plan for recruitment of participants. Each of these steps had to be executed in a systematic manner to ensure that the project could be completed in the six-week time period allotted. By using this approach to project planning it was possible to visualize the results and ensure that each stage of the project was properly coordinated.

Project Maintenance

The success of this project does warrant some consideration of what steps will be taken to maintain the project over the long-term. Scholars note that program evaluation is often needed to determine if the project was successful, its impact on stakeholders, and the feasibility of continuing the program in its current state (Hurteau wet al., 2020). The results reviewed in the previous section do indicate that the project was successful as knowledge scores for providers increased with the results indicating that the change in scores was statistically significant. Therefore, it would stand to reason that there is empirical support to maintain the project over the long-term. Although the results demonstrate positive outcomes, what has not been assessed in terms of the project are how stakeholders (providers) felt about the training and if the continuation of the project is feasible.

To address the aforementioned issues, the first step that would need to be taken is to debrief or survey staff to understand their views on the project. Assessing staff perceptions of the program and further, measuring outcomes in terms of changes in practice as a result of the project, would be necessary. Project maintenance must, therefore, begin with an assessment of outcomes as well as the implementation of infrastructure to monitor practice change for

providers over a period of time, i.e., six months. During this time, it will be helpful to review medication adherence rates for patients as well as frequency of use of injectable medications for patient care. Fully assessing the program will provide insight into whether or not changes to the educational program are needed to ensure its success over the long-term.

Project maintenance will also require a consideration of the feasibility of maintaining the project over the long-term. Although the project was approved as a one-time intervention, maintaining the project will require a consideration of when and how the education will be provided to staff. Leaders will need to determine if the education will be provided each year as part of continuing professional development and how new hires within the organization will be trained using the program. Leaders could opt to implement an organizational policy requiring annual training for staff. This policy will carry with it the need to provide ongoing evaluation of project outcomes, to establish a procedure for reporting project results, and to designate responsibility for data collection, analysis, and reporting. Each of these actions will serve to establish an internal infrastructure within the project to ensure that it is maintained as part of organizational discourse.

Project Limitations

Despite the robust and statistically significant results indicating that the educational program worked to increase provider knowledge of the topic, there are some important limitations of the project that need to be addressed to fully understand the implications of the project and the recommendations that can be made. The first limitation of concern for the project is with regard to the sample size. As noted, the sample size was relatively small ($n = 10$). Further the sample was selected using a convenience approach and all participants were from the same practice site. These factors indicate that the sample was not representative of the larger

population of mental health providers delivering patient care at the present time. Consequently, generalizing the results to the population is limited. It is not possible to state with certainty that other mental health providers outside of those enrolled in this project would be able to benefit from the educational program.

The second limitation of the project is related to the methodology employed. As noted, a quality improvement framework using a single group pre-/post-intervention design was employed to complete this project. This approach is noted in the literature to have various weaknesses including the inability to demonstrate causality (Gopalan et al., 2020). Evidence indicates that in a single group pre-/post-intervention design a true comparison or control group is not used (Gopalan et al., 2020). As a result, the investigator does not have access to data to definitively demonstrate that the intervention was solely responsible for the outcomes achieved during the project (Gopalan et al., 2020). In this quality improvement project, it is not possible to state with certainty that there was a cause-effect relationship between the intervention and the outcomes. Without a control group it is not possible to demonstrate causality in the findings, indicating that the change in knowledge scores reported in the results may have been the result of other factors that were not measured or controlled in the context of this project.

The final limitation for the project was the timeframe for implementation following IRB approval. The project duration was quite short in duration and, as a result, it was not possible to measure the impact of increased provider knowledge on practice outcomes. From the evidence reviewed from the literature, it would stand to reason that the use of provider education should have a direct impact on practice. More specifically, evidence does indicate that education can improve patient adherence to their medications (Pakpour et al., 2017; Verloo et al., 2017). However, this outcome was not measured in this quality improvement project. Because the

change in provider practice will be the most important outcome for educating providers, having the time to assess this outcome would have been helpful for justifying and maintaining the project over the long-term.

Areas for Future Research

Areas for future research must also be discussed and a review of the project challenges and limitations does provide some insight regarding what specific action should be taken to further investigate the topic. When reviewing the limitations of the project, methodological weaknesses including a small sample and the lack of a control or comparison group were noted as significant factors impacting the project. To address these issues moving forward, a structured randomized controlled trial could be considered. In this trial, staff would be randomly assigned to a control (no education) or intervention (education) group. The intervention would be applied (education) and the knowledge scores of the two groups would be compared. However, as also noted when discussing the results, the practice site only had 20 providers from which to recruit participants. With these issues in mind, an additional area for expanding the project would be to compare educational outcomes among different practice sites. Expanding the reach of the program and increasing the number of participants in the project will enhance the statistical relevance and strength of the results.

In addition to expanding the scope and methodology of the project, future research should also consider long-term follow-up to assess outcomes for providers. In particular, an effort should be made to determine if increased knowledge of the topic results in a higher medication adherence rate among patients. This could be measured through patient need for emergency care or patient prescription refill rates. This could also be measured through the number of patients receiving injectable medications to help treat their illness. Measuring long-term outcomes from

the project, especially with regard to improvements in patient care will be critical for demonstrating the true impact of the project and acquiring leadership support for maintain the project.

Recommendations Based on the Findings

Recommendations based on the findings indicate that while the results should be viewed with optimism, the limitations of the project will restrict how the project is managed moving forward. What is demonstrated through this discussion is that there is a need to evaluate both provider response to the project as well as long-term project outcomes associated with changes in practice that improve outcomes for patients. Based on this insight, it would seem that the primary recommendation that would be made would be to extend the project at the practice site such that additional data needed to assess the long-term outcomes and feasibility of the project can be determined. Once the true implications of the project have been determined, in terms of impact and feasibility, the project structure should be re-evaluated to determine if additional improvements to the project are needed. Changes should be made as needed and documentation of these changes along with documentation of the results should be considered.

While caution is needed at the practice site to ensure that the project is properly stewarded, the results from this project should be shared beyond the practice site to augment the current evidence base supporting the use of provider education to improve medication adherence in patients with SMI. Combining the results of this project with other evidence supporting provider education would serve as the basis for improving general knowledge of the topic while also potentially supporting evidence-based practice change at other facilities to improve staff knowledge of the treatment of SMI. Ensuring that the results of this project are disseminated to healthcare and nursing professionals will help to ensure that other facilities can work to improve

the management of patients with SMI while also building on the success of this project to enhance outcomes for both providers receiving education and patients receiving care. Hence, while the application of the findings of this study to altering practice at the clinical site are still limited at this point, the results from this project can be combined with the evidence to create a foundation upon which to improve education while also expanding the reach and impact of provider education.

Interpretation of the Results

A discussion of the results from this project must also include a consideration of how the findings should be interpreted. More specifically, interpretation of the findings from this project requires a consideration of how the results may shape patient care and the healthcare setting in the future. Based on this assessment, this section includes a review of the interpretation of the results in the areas of changes in patient care and the healthcare setting, the transferability of the results, cost effectiveness, and the recommendations for the project based on an interpretation of the results.

Changes in Patient Care/Healthcare Setting

The changes in patient care and the healthcare setting that should be made to ensure that the results of this project are realized include expanding out the duration of the project to measure long-term outcomes, evaluating patient and provider response to the program, and increasing the reach of the project to include other practice sites including those in which mental health and physical healthcare providers both work. Expanding out the duration of the project would provide critical insight into the impact of the project on patient care and provider practice. This data will be helpful for continuing the project at the practice site as long-term program

evaluation will highlight weaknesses and strengths, enabling change agents at the practice site to address weaknesses and capitalize on strengths.

A thorough program evaluation in terms of patient and provider response should also be considered. Efforts are needed to evaluate staff satisfaction with education to determine if there are other methods for providing education that would best meet the learning needs of staff members. Additionally, it is anticipated that increases in provider knowledge should result in a change in practice including the use of new techniques to better counsel the patient and family as well as recommendations for patients to use long-term injectable medications to help control symptoms and reduce medication non-adherence. However, understanding patient experiences as a result of changes in practice must be considered to ensure that patient needs are being comprehensively met through efforts to reduce medication non-adherence. Insight garnered from patient experiences could potentially be used to augment the educational program for providers. Hence, staff and patient evaluation of the program is needed to ensure that it is optimized for use in the practice setting.

Expanding the program beyond the boundaries of the current practice site is also needed. This will extend the reach of the program into other practice sites and will provide an opportunity for comparison. In particular, it would be feasible to evaluate the provider impacts on knowledge for the program at different practice sites and then to compare long-term follow-up data regarding changes in provider practice. If the educational program has similar results across different practice settings, this could indicate that the intervention is effective and can be implemented in its current state. However, if there are differences in outcomes for providers and patients at separate practice sites, this may indicate that the educational program for providers needs to be revised to fit the unique environment of a specific practice site. This will fill an

important gap in the current literature regarding which educational approach would work best to optimize provider learning in this program.

Transferability of the Results

The transferability of the results can be viewed through the discussion of the generalizability of the findings noted as a significant weakness for this project. When reviewing the generalizability of the findings from this study, it was noted that there were some significant barriers to applying or transferring the results of this project to other practice sites. In particular, it was noted that the project utilized a small convenience sample from a single practice site. While the intervention was shown to be effective and statistically significant in this site, the small sample size coupled with a lack of causality in the results, indicate that based solely on the project results, this educational program could not be implemented at other practice sites with a guarantee of success.

Even though the results from this specific project should not be transferred to other practice settings, when the results of this project are combined with the evidence supporting the use of provider education to improve SMI treatment and medication adherence in patients could be applied in other settings. The results of this project support the evidence base and demonstrate that the application of the evidence base to practice can be successful. This would suggest that other practice sites seeking to implement a provider education program based on the evidence should be able to achieve outcomes similar to those obtained through this quality improvement project. However, it would take the combined evidence to support a change in practice. Additionally, based on the content of the presentation, providing the educational program in settings outside of mental health care may prove challenging. The presentation does include information with which those working in mental health should be familiar. Providers working in

other areas of specialization may not find the educational program helpful for managing patients with SMI who are seen in their practice.

Cost Effectiveness

Cost issues involved with the project were addressed through the creation of a budget for this project. The budget indicated that all costs for the project would be covered as an in-kind donation by the principal investigator. What was demonstrated through the budget was that the project does not require special equipment or expertise to implement in the practice setting. Advanced practice nurses working in the clinical setting should have both the leadership and evidence-based practice skills to implement provider education programs at their practice sites at low or no cost. Therefore, the project should not result in significant costs for the organization and should have the added benefit of improving patient care and actually reducing the costs of care for patients. Improving medication adherence should enable the patient to remain stable and to prevent symptom exacerbation. This should reduce the need for acute care or hospitalization for the patient. Over time, the stability of the patient's symptoms may lead to the ability of the patient to maintain regular employment or education to enhance their well-being and quality of life.

As noted in the introduction to this work, SMI results in a significant number of life-years lost to disability with estimates being as high as 25 years (Depp et al., 2017). In addition, providing direct care for patients with SMI totals more than \$63 billion annually (Depp et al., 2017). It is important to note that these costs are specifically for patients with SMI who comprise only 4.5% of the total population of patients that have mental health issues (Martinez-Martinez et al., 2020). SMI is highlighted in the literature to be a high impact health issue indicating that even though only a small number of people in the population may be impacted by SMI, the costs

to provide care for patients with these illnesses are quite high (Martinez-Martinez et al., 2020). What this data indicates is that provider education program costs are quite diminutive when compared with the overall costs to treat SMI each year. Based on this data, it seems reasonable to argue that the project is indeed cost effective.

Recommendations Based on Interpretation of Results

When reviewing the interpretation of the results, the primary recommendation made is for the project implementor to both extend and expand the project while also disseminating the results. Expansion of the project to include provider and patient outcomes and/or to increase the number of providers and/or sites involved in the project would help identify the systemic implications of the project. These results could also be reported by the principal investigator to further fortify the evidence base used to recommend practice change. Additionally, dissemination of the project results would enable other advanced practice nurses and change agents working at practice sites across the U.S. and globally to benefit from the evidence in terms of improving care in their clinical environment. Although the project results would not, by themselves, support practice change, when combined with the existing evidence base, there is a strong foundation upon which to support a change in practice that should improve provider practice, patient care, and patient health outcomes.

Plans for Dissemination

As part of this discussion, the role of dissemination of the work has been consistently noted with extensive support provided for disseminating the results beyond the current practice site. While efforts should be made to disseminate the project results externally, and these efforts will be discussed here, it is also important to consider what steps will be taken to disseminate the findings within the organization. Disseminating the findings of this project within the

organization would begin with a detailed project report emailed to all staff and leaders within the organization. Additionally, a presentation regarding the project would be scheduled at the practice site. This presentation will enable staff and leaders to review the project and to ask questions including those focused on expanding and/or extending the project at the practice site.

External dissemination of nursing research is noted in the literature to focus on podium presentations, posters, and publications or the three Ps (Bindon, 2017). To disseminate the findings from this project to other nurses and practice sites, publication of the work in a peer-reviewed journal would be sought. More specifically, publication of the work would be sought in *Issues in Mental Health Nursing*. The journal's focus is on mental health and nursing, providing nursing professionals with a platform to review and discuss critical issues involved in mental health nursing (Taylor & Francis, 2023). Publication of this project in the journal would provide nurses with access to the project to combine with other evidence on the topic or to apply as part of a quality improvement project. By publishing this project in a journal, it may be possible to expand awareness of the topic, promoting not only the development of evidence-based practice but also nursing research to further explore the topic.

In addition to disseminating the results through a peer-reviewed publication, an effort would also be made to share the results of the project at a national nursing conference. In particular, the American Psychiatric Nurses Association ([APNA], 2023) is holding its 37th annual conference between October 4-7, 2023 in Lake Buena Vista, Florida. The conference seeks to bring mental health professionals from all over the globe together to explore and review innovation in mental health nursing and practice. At this conference, a poster presentation would be sought to speak with professionals personally about the project, its importance, and its results. Information from the APNA does indicate the any attendee presenting at the conference will

receive a discounted registration, making this opportunity one that could potentially enhance provider awareness of this topic for improving practice.

Implications for Advanced Nursing Practice

Based on the evidence obtained to support this project, it is anticipated that the results will indicate an increase in provider knowledge as a result of the educational module. Increases in provider knowledge will have implications beyond the project and need to be considered. Consequently, it is helpful to consider the implications of this project for advanced practice nursing in the areas of education, practice, administration, and leadership.

Nursing Education

Considering first the implications of the project for education in advanced practice nursing, it seems feasible to argue that the success of this project would reinforce the current literature, emphasizing the need for provider education to enhance knowledge of the treatment of serious mental illness. Advanced practice nurses can provide education to help augment provider knowledge with the idea that this will have a positive impact on provider behavior, i.e., increased knowledge should lead to better patient care as knowledge is integrated into provider practice (Forsetlund et al., 2021). Further, the project highlights the importance of educating nurses about evidence-based practice. The project utilized an evidence-based intervention, demonstrating the importance of encouraging nurses to learn about this process and to apply it in practice. The education of nurses to engage in evidence-based practice and quality improvement is considered to be an important foundation for building advanced nursing practice (Horntvedt et al., 2018).

Clinical Practice

The implications of the project for advanced nursing practice can, to some extent, be extrapolated from the implications of the project for education. As noted, the project should

result in a change in provider practice as the knowledge from education is integrated into what the provider does at the practice site. The success of this practice change should signify the need to expand the project to include all providers at the practice site or to include providers from other practice sites who may benefit from the knowledge provided in the educational module. Advanced practice nurses are expected to champion evidence-based practice change to improve the care of patients and to augment population health outcomes (Clarke et al., 2021). Consequently, the advanced practice nurse should continue to advocate for practice change including expanding the current program, maintaining the current program, and identifying new areas where evidence-based practice or quality improvement could potentially be implemented to enhance patient care.

Nursing Administration

The project also has implications for advanced nursing practice at the administrative level. DNP-prepared nurses working in administrative roles will need to balance the practical elements of healthcare practice—i.e., finances, reimbursement, etc.—with the needs of patients and providers in the healthcare setting. The success of this project may warrant the implementation of a new facility policy to provide training to all new hires or to provide training as part of annual staff professional development. Enacting a policy change would codify the change and would help to ensure that provider knowledge gains are uniformly retained across the organization. Administrators working in nursing could utilize the findings from the current project along with existing evidence on the topic to advocate for broader policy changes such as integrating the evidence into practice guidelines or establishing policy to have this content taught more thoroughly in higher education. DNP-prepared nurses should have the knowledge and

skills to navigate the policy domain to help fortify gains made through practice change (Mundinger & Carter, 2019).

Leadership

The implications for the project in terms of leadership in advanced nursing practice must also be discussed. DNP-prepared nurses are expected to function as leaders within the healthcare environment to enhance patient care and advance the healthcare system (Nordick, 2019). In a leadership role the advanced practice nurse should recognize the bigger picture perspective for improving care quality and patient safety. The success of the proposed DNP project should result in nursing leaders working to not only expand the project but to encourage other nurses at the practice site to engage in quality improvement and evidence-based practice change. Encouraging providers to take an active role in improving the healthcare setting and further working to provide the material supports needed to make practice change and to improve care at the practice site will help to ensure that staff are able to make practice change. Leadership support during quality improvement and practice change is vital to the success of these projects (Nordick, 2019). Therefore, advanced practice nurses working in leadership roles must be aware of how they can support practice change, including the proposed project.

Conclusion

Serious mental illness is a growing concern for patients, families, providers, and the healthcare system in general. Patients with SMI consume a disproportionate amount of healthcare resources and often require complex care. Medication adherence is an important component of effective treatment and failure to achieve this goal in patient care can have a deleterious impact on the patient's health and quality of life as well as the patient's course of treatment. Although medication non-adherence in patients with SMI represents a challenge, new

approaches to care along with the use of long-acting injectable medications have been shown to improve outcomes for patients including increasing medication adherence.

To augment efforts among mental health providers to treat patients with SMI, an educational program to increase provider knowledge was proposed for this quality improvement project. The project utilized a one-group pre-/post-intervention design to evaluate baseline provider knowledge of the topic and compare this level of knowledge after the completion of an educational module on the topic. Although the methodology used for this project does have several important limitations, the results of this project did indicate that the education of providers on the topic did result in an increase in provider knowledge from baseline. Further, gains in knowledge made during this project were statistically significant. Recommendations based on the project include disseminating the results, combining the results with the current evidence base to promote practice change at other clinical sites, and expanding the current project to measure long-term results including the impact of the project on provider practice and patient outcomes.

Because the provider education program had such a meaningful and purposeful impact on provider knowledge, maintaining the project at the practice site would seem to be justified. Through the dissemination of the results, it should be possible to promote evidence-based practice change to improve the care of patients with SMI throughout the entire healthcare system. This project demonstrates the value of evidence-based practice change and further highlights the role of the advanced practice nurse in implementing change in the practice setting. Although there are numerous next steps for this project, the results clearly indicate that there is a need to make this change in practice and further to continue working to build the evidence base regarding best practices for meeting the needs of patients with serious mental illness.

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Appendix A: Literature Matrix

First Author/Year	Purpose/ Problem/ Objective/ Aims	Study Design	Sample (Setting)	Data Collection Measures	Results	Strengths/ Limitations	Relationship to Project	Level of Evidence/ Quality Ranking
Loots et al. (2021)	The aim of this research was to compare the effectiveness of interventions to improve medication adherence in patients with schizophrenia or bipolar disorder.	Systematic review/Meta-analysis	23 articles acquired from PubMed and Web of Science and published between 2009 and 2019	Data was collected through the GRADE approach using two different reviewers for article assessment.	The results of this project demonstrated that all interventions, including those aimed at provider education were similar and efficacious in improving medication adherence in patients: (p = 0.29; I2 = 19.9%).	Strengths: Demonstrates the utility of provider education, high level of evidence, quality results. Weaknesses: Drawn from only 2 databases in the last 10 years, additional results may be available.	Although all interventions tested to improve medication adherence in patients with SMI were effective, this research demonstrates that provider education can be effective for improving medication adherence in patients with SMI.	Level I Quality A
McDermott et al. (2022)	The purpose of this research was to evaluate a provider education program to increase knowledge of medication adherence in patients with cardiovascular disease.	Quasi-experimental pre/post-intervention design	The study was conducted at large integrated academic medical center. A total of 34 advanced practice providers were included.	Survey data of provider knowledge before and following the 12-week educational module.	“APP knowledge of medication adherence increased by 37.3% after the intervention. For the primary outcome, the mean score significantly increased from pre-intervention (M = 28.7, SD = 4.8%) to post-intervention (M = 39.4, SD = 3.3%). The mean difference between the pre- and post- scores (M = 10.7, SD = 5.9%) was found to be statistically significant, t (15) = 7.279, p < 0.001” (p. 90).	Strengths: Education works to improve provider knowledge of medication adherence, statistically significant findings. Weaknesses: Methodologically weak, no comparison group, lack of generalizability.	Although this article does not focus on patients with SMI, it does indicate that provider education to increase knowledge of medication adherence does work.	Level II Quality B
Pakpour et al. (2017)	The purpose of this research was to evaluate the outcomes of a multifaceted intervention to	Multicenter, cluster randomized, observer-blind, controlled,	The study was conducted across 10 academic medical centers. Patients with bipolar were assigned to an experimental	The intervention included provided education among other supports to enhance patient medication	Medication adherence improved in the treatment group and was statistically significant (p < 0.001). In addition,	Strengths: Article demonstrates provide education is effective, results are statistically	The results demonstrate that provider education is important to improving medication	Level I Quality A

	increase medication adherence among patients with bipolar disorder.	parallel-group trial.	group (N = 136) or a control group (N = 134).	adherence. Data was collected based on patient reports of medication adherence via the Medication Adherence Rating Scale.	the treatment group fared better in terms of quality of life and symptom reduction.	significant, control group used. Weaknesses: Small sample, lack of generalizability, use of patient self-report measure to assess outcomes.	adherence in patients with bipolar disorder. This is the intervention being evaluated in this project.	
Sany et al. (2020)	The purpose of this article was to evaluate provider training to improve health literacy, self-efficacy, and medication adherence in patients with hypertension.	Randomized controlled trial	The sample included 240 hypertensive patients and 35 providers working at two healthcare clinics between 2013 and 2014.	Physicians were randomly assigned to an education or no education group. Education was provided over three sessions and two workshops. Electronic health records were used to track medication compliance over a six-month period for patients treated in both groups.	Patients treated by physicians that had received training had higher rates of medication compliance after six months ($\beta = 0.19$, $p = 0.001$). Improvements were also noted in self-self-efficacy ($\beta = 0.14$, $p = 0.023$), DBP ($\beta = 0.13$, $p = 0.032$) and SBP ($\beta = 0.12$, $p = 0.03$)	Strengths: Strong methodology, demonstrates positive results, statistically significant, demonstrates causality. Weaknesses: Small sample size, short follow-up period, not focused on SMI.	Although this study does not focus on patients with SMI, the study does demonstrate the positive impact of provider education on medication adherence suggesting that this intervention be used to improve outcomes for patients.	Level I Quality A
Semahegn et al. (2020)	The purpose of this study was to assess medication nonadherence in psychiatric patients.	Systematic review/Meta-analysis	Using PubMed (MEDLINE), Embase, CINAHL, PsycINFO, and Web of Science, 46 studies were identified for inclusion covering three major psychiatric disorders: schizophrenia, depression, and bipolar disorder. Articles were in English and published any time up until 2017.	PRISMA flow diagram was used and articles were reviewed 2 independent reviewers using predetermined eligibility criteria.	“Overall, 49% of major psychiatric disorder patients were non-adherent to their psychotropic medication. Of these, psychotropic medication non-adherence for schizophrenia, major depressive disorders, and bipolar disorders were 56%, 50%, and 44%, respectively” (p. 1).	Strengths: Methodologically strong, robust results. Weaknesses: Limited use of databases.	This study demonstrates the problem of medication adherence in patients with serious mental illness highlighting the prevalence of the problem and the need to take action.	Level I Quality A
Stockbridge et al. (2021)	The purpose of this study was to assess medication adherence in patients with SMI and comorbid diabetes.	Retrospective analysis of claims data for patients with diabetes and SMI.	Claims data from 5,504 patients with diabetes and SMI enrolled in a Florida specialty Medicaid program.	Data collection was completed through a claims audit of records from September 2014-December 2015.	“Of 3705 enrollees with schizophrenia and two or more antipsychotic medication dispensing events in 2015, 1778 (48%) were not adherent to medication” (p. 4).	Strengths: Demonstrates scope of the problem, highlights the need for action in subpopulations. Weaknesses: Noninterventional	This study demonstrates the problem of medication adherence in patients with serious mental illness highlighting the prevalence of the	Level II Quality A

					Hispanic race, low educational levels, and non-English speaking patients had higher rates of nonadherence.	study, does not address education, limited sample size.	problem and the need to take action.	
Velligan et al (2017)	To evaluate nonadherence factors in patients with SMI	Systematic review	A total of 36 articles retrieved from MEDLINE from January 2005 through September 2015 were included.	PRISMA flow diagram was used and articles were reviewed 2 independent reviewers using predetermined eligibility criteria.	Among those included in the study, 49% of patients were nonadherent with their medication. Poor insight and negative attitudes toward medication were noted as reasons for nonadherence	Strengths: Demonstrates scope of nonadherence in patients with SMI, methodologically rigorous. Weaknesses: Limited use of databases, limited timeframe for retrieval.	Although this article does not focus on education, it demonstrates the scope of the problem and the need to address medication adherence in patients with SMI	Level I Quality A
Verloo et al. (2017)	Evaluate nursing interventions that can be used to improve medication adherence in discharged older adults.	Systematic review.	A total of 14 studies including 2,028 patients including 995 in different interventions and 1033 in care as usual groups.	Data collection occurred through the use of the Cochrane Collaboration Handbook and reported results according to the PRISMA statement.	Nurse education was noted in all interventions as integral to improving patient medication adherence. In eight of the 14 included studies, the results were statistically significant ($p < 0.001$).	Strengths: Methodologically rigorous, demonstrates significance. Weaknesses: Limited number of databases reviewed.	This article demonstrates the importance of nurse education to help enhance medication adherence in discharged older adults. Although not the target group for this project, this is the target intervention	Level I Quality A

Appendix B: Site Letter of Approval**NOT RESEARCH**

DATE: March 17, 2023

FROM: South Florida Psychiatry (SFP) Human Studies Subcommittee

To: Roston T. Moss, Jr., MSN, APRN, PMHNP-BC

PROJECT TITLE: Increasing Provider Knowledge of Medication Adherence in Patients with SMI: A Quality Improvement Project

REFERENCE #: 1601013-2

SUBMISSION TYPE: Other – Quality Improvement

REVIEW TYPE: Administrative Review

ACTION: NOT RESEARCH

The following items were administratively reviewed on 03/17/2023.

After review of the submitted documents, a determination was made that the activity described does not constitute research and no further research regulatory review is required. This review will be reported to the fully convened Human Studies Subcommittee (IRB) on 03/17/2023.

• SFP - Project Cover Sheet - Increasing Provider Knowledge of Medication Adherence in Patients with SMI: A Quality Improvement Project (UPDATED: 03/17/2023)

In order to ensure appropriateness of any poster/presentation or publication that may result from this activity, you must submit a copy of the materials to the Research Service IRB Office for approval prior to submission to the society/journal.

Considering recent events regarding data security, I take this opportunity to impress upon you the requirements of maintaining all information containing sensitive information behind the SFP firewall and on SFP servers. This should be standard practice for all SFP employees, regardless of whether the activity is related to clinical duties, program evaluation or any other related activities.

If you have any questions, please contact Dr. Ernesto L. Sarduy at 786-637-0907, or southfloridapsychiatry@outlook.com. Please include your project title and reference number in all correspondence with this committee.

This letter has been issued in accordance with all applicable regulations, and a copy is retained within South Florida Psychiatry Group, PA Human Studies Subcommittee's records.

Appendix C: IRB Approval Letter and Amendment Letters**MEMORANDUM**

To: Dr. Arturo Gonzalez

CC: Roston Moss

From: Carrie Bassols, BA, IRB Coordinator

ceb

Date: April 6, 2023

Proposal Title: “ Increasing Provider Knowledge of Medication Adherence in Veterans with Serious Mental Illness (SMI): A Quality Improvement Project”

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #: IRB-23-0155

IRB Exemption Date: 04/06/23

TOPAZ Reference #: 112826

As a requirement of IRB Exemption, you are required to:

- 1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
- 2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
- 1) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.


Special Conditions: N/A

For further information, you may visit the IRB website at <http://research.fiu.edu/irb>.



Office of Research Integrity
Research Compliance, MARC 414

MEMORANDUM

To: Dr. Eric Fenkl
CC: Roston Moss
From: Maria Melendez-Vargas, MIBA, Coordinator 
Date: May 1, 2023
Proposal Title: “Increasing Provider Knowledge of Medication Adherence in Veterans with Serious Mental Illness (SMI): A Quality Improvement Project”
Approval # IRB-23-0155-AM01
Reference # 112826

The Florida International University Office of Research Integrity has approved the following modification(s):

- 1) Study personnel changed: Replaced Principal Investigator from Dr. Arturo Gonzalez to Dr. Eric Fenkl.

Special Conditions:

For further information, you may visit the FIU IRB website at <http://research.fiu.edu/irb>.
MMV/em

Appendix D: Email Recruitment Letter

Greetings Staff and Prospective Participants,

My name is Roston T. Moss Jr., and I am currently enrolled as a Doctor of Nursing Practice (DNP) student at Florida International University. As part of my education, I am required to complete a quality improvement project to improve some aspects of patient care in my practice setting. For my project, I chose to focus on provider education to increase knowledge of medication adherence in patients with serious mental illness or SMI. More specifically, I have created an education module for staff to increase knowledge regarding medication adherence issues and treatment strategies for reducing non-adherence in patients with SMI. The goal of the project is to increase your knowledge of this topic such that you can integrate this knowledge into care to help patients and their caregivers better manage SMI.

It is my hope that you will be willing to participate in this project. In order to participate you will be asked to sign a letter of informed consent; to complete a demographic survey; to complete a pre- and post-intervention assessment of knowledge; and to view an online educational module regarding the topic. It is anticipated that the project will take eight weeks to complete. However, all of these activities that you are required to participate in should only take 20-40 minutes to complete over this time period. This educational project has been approved by the Florida International University Institutional Review Board and the presentation should benefit you in terms of improving your knowledge of the topic and ability to provide effective care for patients with serious mental illness.

If you are interested in participating in this project, I would request that you respond to this email within one week to confirm your interest. An informed consent form for participating in the project has been attached to this email. If you are interested in participating, please read and return a signed copy of the informed consent form when replying to participate in the project. By participating in this project, you will have the opportunity to improve patient care and expand your understanding of a very important topic. If you have any further questions about the project, I can be contacted by email at rmoss005@fiu.edu or by phone at (786)-486-4543. I look forward to hearing from you and educating you about this important and timely topic.

Very Respectfully,

Roston T. Moss Jr.

Roston T. Moss Jr., MSN, APRN, PMHNP-BC

Appendix E: Informed Consent**ADULT CONSENT TO PARTICIPATE IN A RESEARCH STUDY****Increasing Provider Knowledge of Medication Adherence in Veterans with SMI: A Quality Improvement Project****SUMMARY INFORMATION**

Things you should know about this study:

- **Purpose:** The purpose of this quality improvement project is to increase the knowledge of healthcare providers working at South Florida Psychiatry regarding SMI and methods for managing medication nonadherence in patients with this diagnosis.
- **Procedures:** If you choose to participate, you will be asked to complete a demographic questionnaire, a pre-test assessment of knowledge and to review an educational module, and to complete a post-test assessment of knowledge.
- **Duration:** Your participation in this project will take between 20-40 minutes over the course of an eight-week period.
- **Risks:** The main risk or discomfort from this research is the potential for you to become uncomfortable while completing the educational module.
- **Benefits:** The main benefit to you from this research is to increase your knowledge of how to reduce medication nonadherence in patients with SMI allowing you to enhance patient care.
- **Alternatives:** There are no known alternatives available to you other than not taking part in this study.
- **Participation:** Taking part in this research project is voluntary.

Please carefully read the entire document before agreeing to participate.

PURPOSE OF THE STUDY

The purpose of this quality improvement project is to increase the knowledge of healthcare providers working at South Florida Psychiatry regarding SMI and methods for managing medication nonadherence in patients with this diagnosis.

NUMBER OF STUDY PARTICIPANTS

If you decide to be in this study, you will be one of 10-15 people in this research study.

DURATION OF THE STUDY

Your participation will involve 20-40 minutes total over the course of an eight-week period.

PROCEDURES

If you agree to be in the study, I will ask you to do the following things:

1. Provide your email address and consent to being contacted via email for the project. All data collection and education will occur remotely in your home or a place that is comfortable to you, via Qualtrics, an online survey product for which the URL link is provided.
2. Complete a demographic form and pre-test knowledge assessment via email. This should take approximately 5-10 minutes via Qualtrics, an online survey product for which the URL link is provided.
3. Participants will view a 10-minute virtual educational PowerPoint based on the results of a related systematic review, via Qualtrics, an online survey product for which the URL link is provided.
4. Participants will be asked to complete the virtual post-test knowledge assessment, which will be identical to the virtual pre-test knowledge assessment. The virtual post-test survey is expected to take approximately 5 minutes to complete. Data will be collected using the virtual pre-test and post-test survey via Qualtrics, an online survey product for which the URL link is provided.
5. The total study duration will take place during a 4-week interval which is expected to span a total of approximately 2 months. During this time, you will need to spend about 20-40 minutes engaged in activities related to the project.

RISKS AND/OR DISCOMFORTS

This project involves minimal physiological, physical, social, legal, and economic risks. Risk is the same as if participants were in their home filling out an online questionnaire or viewing an online video, However, if they become fatigued during the online session, they can opt out.

BENEFITS

The study has the following possible benefits to you: increased knowledge about the topic, the ability to provide better patient care, enhanced confidence in managing patients with SMI. Benefits to society include reducing SMI symptom relapse, reducing healthcare costs, and improving family outcomes.

ALTERNATIVES

There are no known alternatives available to you other than not taking part in this study.

CONFIDENTIALITY

The records of this study will be kept private and will be protected to the fullest extent provided by law. In any sort of report, we might publish, we will not include any information that will make it possible to identify you. Research records will be stored securely, and only the researcher team will have access to the records. However, your records may be inspected by authorized University or other agents who will also keep the information confidential.

USE OF YOUR INFORMATION

Your information collected as part of the research will not be used or distributed for future research studies even if identifiers are removed.

COMPENSATION & COSTS

There are no costs to you for participating in this study.

RIGHT TO DECLINE OR WITHDRAW

Your participation in this study is voluntary. You are free to participate in the study or withdraw your consent at any time during the study. You will not lose any benefits if you decide not to participate or if you quit the study early. The investigator reserves the right to remove you without your consent at such time that he/she feels it is in the best interest.

RESEARCHER CONTACT INFORMATION

If you have any questions about the purpose, procedures, or any other issues relating to this research study you may contact Roston T. Moss Jr. at Florida International University, (786)-486-4543, rmoss005@fiu.edu.

IRB CONTACT INFORMATION

If you would like to talk with someone about your rights of being a subject in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT

I have read the information in this consent form and agree to participate in this study. I have had a chance to ask any questions I have about this study, and they have been answered for me. I understand that I will be given a copy of this form for my records.

Signature of Participant

Date

Printed Name of Participant

Signature of Person Obtaining Consent

Date

Appendix F: Demographic Form

Instructions: Please complete the following form by circling the correct answer or entering the correct answer on the lines provided.

1. Please enter your randomly assigned participant ID number which can be found in the invitation email sent you (Ex: APRN-1) _____
2. What is your age in years?
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - 65+
3. What is your gender?
Male Female Non-Binary Prefer Not to Say
4. Please specify your ethnicity. (Select all that apply).
 - White/Non-Hispanic
 - Black or African American
 - American Indian or Alaska Native
 - Hispanic/Latino
 - Asian or Pacific Islander
 - Other
5. How many years have you been working in mental health care? ____ years
6. What is your highest level of education? *If currently enrolled, highest degree received.*
 - Associate degree
 - Bachelor's degree
 - Master's degree
 - Professional degree
 - Doctorate degree
7. What is your current position? Please circle one.
 - Physician (MD, OD, etc.)
 - Advanced Practice Registered Nurse (APRN)
 - Physician Assistant (PA)

- Registered Nurse (RN)
 - Student Nurse (RN/APRN)
 - Other
8. What is your current employment status?
- Employed full time (40 or more hours per week)
 - Employed part time (up to 39 hours pe week)
 - Student
 - Retired
 - Self-employed
 - Unemployed
9. Do you have any training or experience in managing veterans with serious mental illness (SMI)?
- ___ Definitely yes ___ Probably yes ___ Might or might not ___ Probably not
___ Definitely not
10. Have you administered injectable medications for the treatment of serious mental illness (SMI)?
- ___ Definitely yes ___ Probably yes ___ Might or might not ___ Probably not
___ Definitely not

We thank you for your time spent taking this survey.

Your response has been recorded.

Appendix G: Pre-/Post-Knowledge Test

True and False: Please review the statement and check the correct box indicating if the statement is true or false.

1. Veterans with serious mental illness (SMI) are four-times as likely to commit suicide than the general population.
 True False*
2. Intensive psychotherapy is typically the primary intervention used in the treatment of serious mental illness (SMI).
 True False*
3. Patient symptoms are often the most significant factor impacting medication non-adherence in patients with serious mental illness (SMI).
 True* False
4. There are currently 22 million people over the age of 18 with a serious mental illness (SMI).
 True False*
5. This year, one out of every 25 people will be diagnosed with serious mental illness (SMI).
 True* False
6. Support for families/caregivers of veterans with serious mental illness (SMI) is generally lacking.
 True* False
7. Generalized anxiety disorder is typically classified as a serious mental illness (SMI).
 True False*
8. Most veterans with serious mental illness (SMI) will be able to function without the need for caregiver support.
 True False*
9. Serious mental illness (SMI) can be cured in many veterans.
 True False*
10. Serious mental illness (SMI) is progressive and patient symptoms will worsen over time.
 True* False

Multiple Choice: Review each question/statement and check the box with the correct answer.

11. What percentage of veterans with serious mental illness (SMI) are non-adherent to their medications?

- A: 30%
- B: 40%
- C: 50%*
- D: >60%

12. What clinical supports should be used to increase medication adherence in veterans with serious mental illness (SMI)? (Select all that apply).

- A: Text messages*
- B: Psychoeducation*
- C: Family involvement*
- D: Group/peer therapy
- E: No support is needed

13. Approximately what percentage of veterans with serious mental illness (SMI) live below the poverty line?

- A: <10%
- B: 10-20%*
- C: 20-30%
- D: >30%.

14. What mental health issues are generally classified as serious mental illness (SMI)? (Select all that apply).

- A: Phobias
- B: Bipolar disorder*
- C: Severe depression*
- D: Schizophrenia*
- E: Psychosis*

15. When medication non-adherence occurs in veterans with serious mental illness (SMI) what are some of the potential implications? (Select all that apply).

- A: Arrest/legal involvement*
- B: Job loss*
- C: Increased risk of accidents
- D: Hospitalization*
- E: Increased suicidal ideation

16. Which of the following diagnoses accounts for 90% of all cases of serious mental illness (SMI)?
- A: Schizophrenia and Severe Depression
 - B: Bipolar Disorder and Personality (Cluster B) Disorders
 - C: Schizophrenia and Bipolar Disorder*
 - D: Schizophrenia and Personality (Cluster B) Disorders
17. Serious mental illness (SMI) can be diagnosed if which of the following are present (Select all that apply).
- A: A diagnosis of a mental health disorder affecting activities of daily living and/or work capacity*
 - B: A diagnosis of schizophrenia or borderline personality disorder.
 - C: A diagnosis of a mental health disorder and suicidal ideation. *
 - D: All of the above.
18. Long-acting injectable medications for the treatment of SMI typically last between ___ and ___ weeks.
- A: 2 and 8 weeks.
 - B: 4 and 8 weeks.
 - C: 2 and 12 weeks. *
 - D: 4 and 12 weeks.
19. What percentage of the population currently has a diagnosis of serious mental illness (SMI)?
- A: 2.9
 - B: 4.5%*
 - C: 11.2%
 - D: 14.9%
20. Which factors can influence medication non-adherence in patients with serious mental illness (SMI)? (Select all that apply).
- A: Symptoms of the disease that impact cognitive function. *
 - B: Family pressure to stop medication use.
 - C: Medication side effects. *
 - D: Social stigma toward mental illness and treatment seeking. *