Improving Antipsychotic Adherence Rates in an Outpatient Psychiatric Setting: A Quality Improvement Project

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Abstract

Problem: The incidence of non-adherence to antipsychotics is prevalent in clinical settings in patients prescribed antipsychotics. This quality improvement (QI) project aimed to improve antipsychotic adherence using evidence-based guidelines and the Medication Adherence Rating Scale (MARS) in an outpatient mental health clinic to improve the rate of adherence to antipsychotics in adults.

Background: Literature indicates that 30-40% of patients with the first episode of psychosis become non-adherent to medication within six months of treatment, leading to higher rates of relapse, hospitalization, and increased healthcare costs (Steger et al., 2018).

Methods: Evidence-based Guidelines and toolkit that outlines the process providers should follow when prescribing antipsychotics to enhance antipsychotic adherence and the use of evidence-based Medication Adherence Rating Scale (MARS) rating scale to assess for non-adherence to medication.

Intervention: Provider education on the evidence-based protocol, toolkit, and MARS scale was provided. The MARS was used to assess medication-taking behaviors to help improve antipsychotic adherence. A paired t-test was conducted to evaluate the impact of the intervention on adherence rates to antipsychotics.

Results: There was a statistically significant increase in the rate of adherence to antipsychotics from the pre-MARS scores (M =5.16 SD =2.58) to post-MARS score (M =2.56 SD =1.61), t (24) =5.46, p <0.001 (two-tailed). The mean decrease in the MARS score was 2.60, with a 95% confidence interval ranging from 1.62 to 3.58. The eta squared statistics (0.55) indicate a large effect size. A chart audit showed an 83.3% provider compliance rate with the antipsychotic adherence protocol toolkit at the project site.

Conclusions: This QI project demonstrates that using an evidence-based practice protocol and toolkit can improve the rate of adherence to antipsychotics in an outpatient clinical setting.

Implications for nursing practice/further research: Addressing non-adherence to antipsychotics is essential in improving a patient's quality of life and symptoms.

Keywords: Quality improvement, Antipsychotics, medication adherence, Antipsychotics toolkit, Antipsychotic adherence protocol, Psychosis. antipsychotic treatment in outpatient's settings.

Significance of the Problem

Psychosis is a characteristic feature of Schizophrenia, other psychotic disorders, mood disorders, substance use disorders, and some neurologic and medical conditions (Calabrese & Al Khalili, 2022). The rate of nonadherence to antipsychotics is high among patients with psychiatric disorders. Existing data indicate that 30 % to 40 % of patients with the first episode of psychosis become non-adherent to medication within six months of treatment, leading to a higher rate of relapse, hospitalization, and increased healthcare costs (Steger et al., 2018).

Several factors have been identified that influence nonadherence to antipsychotic therapy, which includes self-medication to alleviate symptoms, substance use, poor insight into diagnosis and antipsychotic side effects (Caqueo-Urízar et al., 2020).

Problem Identification

Nonadherence to medication is a common problem with a diverse patient population. Medication adherence refers to the degree a person takes prescription medication as prescribed by their provider (Aldeer et al., 2018). Improving adherence rates to antipsychotics has significantly improved patients' quality of life (Caqueo-Urízar et al., 2020). Per Steger et al. (2018), 30% to 40% of patients with the first episode of psychosis become non-adherent to

medication within six months of treatment. It is essential in any clinical setting to assess for adherence to antipsychotic treatment, encourage treatment adherence, and assess for causes of nonadherence to antipsychotics to improve adherence rates.

The problem identified at the project site for this QI project is the lack of evidence-based guidelines to assess adherence to antipsychotic therapy in adult patients with mental health disorders.

The project site has 75% of the adult patient population on antipsychotic therapy, with 50% adhering to treatment. Nonadherence to antipsychotics is noticed during follow-up visits with the provider, and the problem has been persistent for the last two years. The desired state is to have at least 80 % of the patient population on antipsychotic treatment adherent to treatment. Guidelines from the National Institute for Clinical Excellence (NICE) and the American Psychiatric Association (APA) highlight the significance of adherence to antipsychotics and undisturbed treatment therapy antipsychotics to prevent psychiatric decompensation (American Medical Association, 2021).

Some of the identified issues regarding nonadherence to antipsychotics at the project site include socioeconomic status, adverse effects, cognitive functioning, illness insight, alcohol and illicit substance use, and patient attitudes.

The proposed solution for this DNP QI project at the project site is implementing a comprehensive Antipsychotic Adherence protocol through providers and medical staff education. This QI project will focus on educating mental health providers, including Nurse practitioners, Nursing staff, Counselors, and Certified Medication Aids, on using evidence-based guidelines to assess adherence to antipsychotics and determine if this method would improve antipsychotic

adherence rate. The medical staff will educate patients on adherence to antipsychotic therapy and assess factors responsible for nonadherence to antipsychotic therapy.

Project Question: Will the implementation of a comprehensive antipsychotic medication adherence protocol improve the adherence rates in adult's patient ages 18 to 50 years by 5% within four weeks of the project implementation phase?

Population: Providers who care for this population will include Nurse Practitioners (NPs), Nursing staff and Certified Medication Assistants (MAs)

Intervention: Develop and implement a comprehensive adherence protocol for antipsychotic medication, utilizing best practice guidelines and incorporating a multidimensional approach.

Comparison: The improvement project will compare the antipsychotic adherence rate prior to the comprehensive adherence protocol to after the implementation of the adherence protocol.

Outcome: Increase adherence to antipsychotic medications by 5%

Time: Four weeks

Search Methods

This comprehensive literature review will serve as a foundation for best practices regarding adherence to antipsychotics, guided by the question, will applying evidence-based guidelines on antipsychotic adherence improve the rate of antipsychotic adherence in an outpatient mental health care setting? The inclusion criteria for this literature review included adult population > 18 years of age, outpatient mental health care setting, English Language, peer-reviewed literature, research published within five years, patients with psychosis, prevalence, mental health disorders, and assessment of adherence and nonadherence to antipsychotics. The

exclusion criteria included adolescents, children, research literature older than five years, specific ethnicity, and articles in a foreign language. The keywords used were pharmacological guidelines for prescribing antipsychotics, psychosis, antipsychotic, medication adherence, antipsychotic guidelines, Schizophrenia, antipsychotic nonadherence, antipsychotic treatment in outpatient settings, and intervention for antipsychotic adherence. The search engines utilized included PubMed and the Cochrane Library database. A total of 30 articles were reviewed, and the search was narrowed to 18 eligible studies. A careful analysis of each article suggested that 12 articles were most relevant to improving adherence to antipsychotics.

Review of Study Method

A review of the literature included a non-experimental study, a follow-up study, a systemic review of literature, a prospective study of adherence to antipsychotics, and a quasi-experimental study on improving adherence rates of antipsychotics. The study methods are relevant to this DNP project because they are reliable and valid and provide evidence to increase adherence, increasing patient safety and satisfaction.

Review Synthesis

A review of the current literature showed that implementing evidence-based practice guidelines can improve adherence rates to antipsychotic treatment in an outpatient mental health setting through provider and patient education and screenings for nonadherence to antipsychotic treatment. Screening patients for antipsychotic adherence has been shown to improve the antipsychotic adherence rate in patients experiencing psychotic symptoms. Through screening, patients self-report adherence regarding antipsychotic side effects, which include anxiety, increased salivation, and disturbed sleep patterns (Ghatwal et al., 2021). In a study by Abdullah-Koolmee et al. (2021) regarding nonadherence to antipsychotic treatment on rehospitalization in

patients with psychotic disorders, nonadherence to antipsychotics was observed during the initiation stage of antipsychotics, continual use of antipsychotics, and discontinuation of antipsychotics. The findings show that several factors are associated with nonadherence to antipsychotics. These include a lack of insight into the disease process, fear of antipsychotic side effects, medication ineffectiveness, and severity of disease symptoms (Abdullah-Koolmee et al., 2021). Retrospective follow-up on the study further concluded that the rate of rehospitalization and worsening of psychotic symptoms increases when the patient does not continue oral antipsychotic therapy after hospitalization, which indicates the importance of encouraging antipsychotic adherence (Abdullah-Koolmee et., 2021).

When patients adhere to antipsychotic treatment, quality of life and patient outcomes improve. Therefore, it is essential to encourage the patient to adhere to antipsychotic treatment. In an anonymous peer review about adherence to antipsychotic medication and quality of life in Latin-American patients diagnosed with Schizophrenia, results showed improved quality of life when patients adhere to antipsychotic treatment. Nonadherence to antipsychotic treatment in the study was associated with substance use, suicidal attempts, violence, and decompensation of patients with psychotic disorders (Caqueo-Urízar et al., 2020). Factors influencing nonadherence to antipsychotics were also identified, including the severity of the patient's symptoms, sociodemographic status, lack of insights about the disease process, and antipsychotic side effects.

Theme Development

The themes identified in the literature review include provider education, patient education, and screening tools for measuring antipsychotic medication adherence. Guidelines from the National Institute for Clinical Excellence (NICE) and American Psychiatric Association

(APA) emphasize the importance of treatment adherence and uninterrupted antipsychotic regimens to prevent symptoms and relapse (AMA, 2020). The APA (2020) released new guidelines for treating patients with Schizophrenia experiencing psychosis. The guidelines indicate the need to monitor the effectiveness of antipsychotics, side effects, the use of long-acting injectables for patients who preferred injections to oral medication, using clozapine for treatment-resistant psychotic symptoms, the use of cognitive behavioral therapy, psychoeducation about the psychotic disorder, and coordination of patient-centered care (APA, 2020).

Mental Healthcare Provider Education

Educating mental health providers about improving adherence to antipsychotic therapy is significant to treatment adherence. The APA defines education as obtaining knowledge, skills, or values (2020). A study conducted by Harmanci & Budak (2021) about the effect of psychoeducation in improving adherence to medication in schizophrenic patients concluded that medication adherence was improved, ultimately improving patient outcomes and symptoms. Therefore, if healthcare providers know how to improve adherence to antipsychotic therapy, patient adherence rate and symptom relief may improve, reducing healthcare costs and patient well-being.

Patient Education by Mental Healthcare Providers

Patient-centered care is essential to promote positive healthcare outcomes. Patient-centered care includes educating patients about medication adherence to improve healthcare outcomes. In a study by Ghatwal et al. (2021), 80 subjects were selected to measure adherence to antipsychotics. The study revealed that 40% of the selected patients experienced anxiety, 40% had disturbed sleep patterns, and 36% had decreased salivation, which influenced nonadherence

to antipsychotics. The study further concluded that the psychoeducation of the patients improved adherence to antipsychotics. Another study was conducted by Pozza et al. (2020) about improving adherence to antipsychotic treatment for bipolar disorders. The clinical trial revealed that patients with bipolar disorder adhere better to antipsychotic therapy when psychoeducation is introduced to patients' care. Educating patients about their disease process, barriers to adherence, and monitoring adherence influence patients' adherence to antipsychotic therapy.

Screening Tool for Measuring Antipsychotic Adherence

Adherence to medication is defined as the extent to which patients take prescription medication as prescribed by their healthcare provider (Nassar et al., 2022). Several factors influence patients' adherence to prescribed medication. Therefore, a healthcare provider needs to assess adherence to antipsychotics and reasons for nonadherence.

Several EBP tools have been designed to measure adherence and nonadherence to antipsychotics. The Glasgow Antipsychotic Side Effects Scale, Monitoring of Side Effects Scale, Medication Adherence Report Scale, and the Abnormal Involuntary Movement Scale are seen as valid and reliable tools.

For this QI project, the Medication Adherence Report Scale will be utilized, which consists of 10 'yes' and' no' questions designed to obtain patients' reports of nonadherence (Chan et al., 2020). In research conducted by Horne et al. in 2019 about the medication adherence rating scale: A measurement tool for eliciting patients' reports of nonadherence, the results show that the MARS is a good, reliable, and valid tool in the patient groups that the MARS was administered to.

Impact of the Problem of Nonadherence to Antipsychotics

Treatment with antipsychotics continues to be the gold standard for patients experiencing psychosis like Schizophrenia. Nonadherence to antipsychotic treatment has remained a challenge in the clinical setting, affecting patient symptom improvement, rehospitalization, and increased healthcare costs (Lieslehto et al., 2022). A peer-review study by Caqueo-Urizar et al. (2020) showed a relation between adherence to antipsychotic treatment and the quality of life in patients with Schizophrenia. Therefore, it is essential to encourage and educate patients on adherence to antipsychotic therapy, which can improve a patient's quality of life. As advocates and leaders in a healthcare organization, nurses provide patients with the necessary information to increase their treatment adherence.

Addressing the Problem with Current Evidence

According to Julia et al. (2020), nonadherence to antipsychotic treatment in patients diagnosed with Schizophrenia is directly related to a lack of insight into the disease process. The authors also identified factors that cause impaired insights in patients with psychosis: symptoms severity, substance use, attitudes toward medication, cognition, level of aggression, and depression. Per Tareke et al. 2018, the rate of nonadherence to the antipsychotic treatment of a patient diagnosed with Schizophrenia was associated with residing in the countryside, treatment length of antipsychotic therapy, substance use, polypharmacy, and treatment effectiveness. The absence of these factors hence improves adherence to antipsychotics. Patients comply more with treatment when fewer medications are used for symptom management (Tareke et al., 2018).

Nonadherence to antipsychotic treatment can also increase the incidence of patient rehospitalization, psychiatric decompensation, and economic and healthcare costs (Abdullah et al., 2021). Therefore, healthcare providers must be knowledgeable and well-educated on how to

decrease nonadherence to antipsychotic medication and improve adherence, thereby improving patients' quality of life and reducing healthcare costs and economic costs.

Quality Gap and Contextual Information

To bridge the quality gap at the project site, it is essential to assess for nonadherence to antipsychotics by asking patients about medication adherence and side effects, which often contribute to nonadherence. Educating mental health providers on assessing for nonadherence to antipsychotics in patients will provide answers to causes of nonadherence in an outpatient setting which will help reduce the nonadherence rate currently seen within the practice setting.

This QI project will be carried out at an outpatient mental health and behavioral-private practice in an urban area in Texas. The project site has 75% of the adult patient population on antipsychotic therapy, with 50% adhering to treatment. Therefore, there is a need to bridge the gap in quality by improving the adherence rate to antipsychotics at the project site.

Project Aims

This QI project aims to improve antipsychotic adherence using evidence-based guidelines when assessing nonadherence and side effects in patients prescribed antipsychotics by implementing a medication adherence assessment tool to guide nurses in identifying patients who will benefit from the adherence interventions. The Monitoring of the Side Effects Scale will also be administered to determine the cause of nonadherence in the patient, thereby addressing the medication side effects and promoting adherence to antipsychotics.

Project Objectives

In the timeframe of the DNP Quality Improvement Project, the DNP student will:

1. Develop and implement evidence-based guidelines outlining the process for providers when prescribing antipsychotics to encourage adherence.

2. Provide an education seminar for the multi-disciplinary team on the EBP guidelines, assessing adherence, and the cause of nonadherence.

3. Increase rates of (antipsychotic adherence in the adult population) by 5 % within a 4-week implementation frame.

4. Determine provider compliance with the use of the implemented toolkit.

Implementation Framework

The framework that will be used for this DNP QI project is the Plan-Do-Study-Act (PDSA) model (Appendix A). The PDSA model consists of four steps and is a commonly used tool in healthcare for quality improvement (Varkey et al., 2018). The process has four phases: plan, do, study, and act phase. The PDSA model provides a structure for iterative testing of changes to improve the system quality initiated by Walter Shewhart in the 1920s. (Katowa-Mukwato et al., 2020).

Overview of the PDSA mode

The PDSA model is an approach to continuous quality improvement that may be utilized for individual or organizational projects. The PDSA model is founded on the scientific method, which emphasizes the repeated generation and validation of hypotheses and ideas to acquire new information. The application of the PDSA framework is commonly used in a healthcare system to enhance quality improvement practices (Varkey et al., 2018). The PDSA framework is designed in four phases with problem-solving models for improving the various processes with the goal of quality improvement change within the healthcare system. The PDSA framework has a four-step cycle: Plan, Do, Study and Act. The PDSA framework for improvement applies to nursing as it can be utilized to improve the quality of health care service to improve patient outcomes. Each phase of the framework serves as a guide for quality improvement.

The application of the PDSA framework in the healthcare system is necessitated by the need for change in the healthcare system to improve the quality of healthcare outcomes. (Varkey et al, 2018). The PDSA paradigm promotes incremental change, testing with a "fail fast" mentality and open communication in both directions between the team and the many stakeholders. The PDSA model emphasizes rapid experimentation and immediate feedback; it benefits the healthcare industry. The PDSA model can be utilized to identify areas that need improvement rapidly and to establish a strategy for improving the quality, which usually occurs during the first phase of the cycle. The plan starts with predictions of identified outcomes, and tasks are assigned to who, what, when, and where the plan will be implemented (Varkey et al., 2018). The "do" phase is the plan implementation phase (Varkey et al., 2018). The "study" phase includes data collection and results analysis (Varkey et al., 2018). Furthermore, during the "active phase", the plan can be adopted, adapted, or abandoned based on the previous evaluation (Varkey et al., 2018).

Therefore, the PDSA is a product of remarkable improvements in healthcare and patient outcomes when all the elements of the PDSA framework are recorded (Varkey et al., 2018).

Application of the Model to Project

Plan

During the planning phase of the PDSA model, a change aimed at improvement should be identified (Katowa-Mukwato et al., 2020). The identified aim for improvement at the project site is to improve patient antipsychotic adherence rates. The project site adherence rate to antipsychotics has been reviewed, and an evidence-based toolkit consisting of educational material and one screening tools, the Medication Adherence Rating Scale (MARS), will be developed to be implemented and implemented by the Nurse practitioners (NPs) and Registered

Nurses (RNs) to assess for adherence to antipsychotics and monitor for side effects of antipsychotics. The evidence-based toolkit will include the use of MARS and MOSES.

Do

The do stage of the PDSA model is where the change is tested. During the doing phase of the project (Katowa-Mukwato et al., 2020). The RN will administer the MARS toolkit during a clinic visit or telephone follow-up call to determine adherence to antipsychotics and identify barriers to adherence to antipsychotics.

The DNP student will educate mental health providers on improving antipsychotic adherence in patients through the evidence-based toolkit, which includes patient education, the use of MARS. The mental health care providers include the RNs, and NPs, who will educate patients on the importance of adherence to antipsychotic therapy and will implement the toolkit.

Study

The study is the stage of the PDSA model where the success of the change is analyzed (Katowa-Mukwato et al., 2020). During this phase, the DNP student will evaluate the impact of using the MARS and providers' compliance with the toolkit, as evidenced by a 5% increased adherence rate.

Act

The active stage of the PDSA model establishes modifications to practice and determines the next step of another cycle (Katowa-Mukwato et al., 2020). During this phase, the project site will continue to implement the evidence-based toolkit and educate patients on the importance of antipsychotics if a 5% improvement rate is noted in antipsychotic adherence.

Population of Interest

The direct population of interest includes nursing staff, certified medication assistants and providers who will be educated about evidence-based guidelines to improve antipsychotic adherence in a patient-prescribed antipsychotic therapy. The nursing staff at the practice site includes one licensed Registered Nurse (RN), one Certified Medication Assistant, and one Psychiatric provider. The Psychiatric provider is an Advanced Practice Registered Nurse with board certification as a Psychiatric and Mental Health Nurse practitioner. The population that will be excluded from the project is the office manager who works as the front desk personnel /scheduler and a part-time relief-certified medication assistant. The indirect population of interest will be adults greater than 18 years of age receiving antipsychotic treatment at the project site.

Project Setting

The project site is in Katy, Texas. The site is a private practice specializing in offering mental health care to all age groups starting with children from age four years old, adolescents, and adults from age eighteen years and above. The project site offers psychiatric and mental health treatment to about ten to twelve patients daily, averaging two hundred patients in one month. All types of medical healthcare insurance are accepted at the project site, including Medicaid and Medicare.

The organizational structure includes the Psychiatric Nurse practitioner, who is the chief executive Officer (CEO) of the outpatient clinic, one RN who performs clinical nursing services such as lab draws, vital signs, AIMS assessment, medication monitoring follow-up and prescription refill, one CMA who assists in performing vital signs, EKG services and clinic related paperwork and one clinic manager who does the scheduling and billing of patients. The

CEO collaborates with a collaborating physician who is a Medical Director (MD) about the mental health services rendered to the patients at the project site.

Mental health care services are rendered virtually or in person at the project site. Services rendered at the project site include psychiatric evaluation, medication management, and patient education. A variety of psychiatric diagnoses are treated at the project site, which includes schizophrenia spectrum and other psychotic disorders, bipolar and related disorders, depressive disorder, anxiety disorder, insomnia, attention deficit hyperactive disorder, an obsessive-compulsive and related disorder, trauma and stress-related disorder and disruptive impulse control and conduct disorder. The project site uses the electronic health record called the Kareo electronic health record.

Stakeholders

The stakeholders involved with the DNP project include the practice's CEO who is also the nurse practitioner at the practice site, nursing staff, certified nursing assistants, and adult patients over 18 years. The nursing staff and the certified nursing staff will administer the evidence-based toolkit to measure adherence to antipsychotics and educate patients on the importance of adherence to antipsychotics. The nurse practitioner at the practice site will help coordinate and communicate with stakeholders.

The CEO of the project site approved the project and signed an affiliation agreement for the DNP student to approve using the practice site for the DNP project (Appendix B). The CEO will communicate information about the project to the other stakeholders including the NP collaborating physician about the planning and implementation phase. Information about the project will be provided via email or text to address stakeholders' concerns and questions.

The Nurse practitioner will educate the patient about antipsychotic adherence after the pre-MARS evaluation, and a post-MARS will be done to evaluate improvement in adherence to antipsychotics. The patient will be educated by the NP about the need for adherence to antipsychotics after pre-MARS assessment has been reviewed by the provider.

Interventions

The timeline for this QI project will be over four weeks. See Appendix C for project timeline.

The CEO will be notified about the project via email and the education session will be provided to all three providers (NP, RN, and CMA) within the project site.

An evidence-based guideline that outlines the process to follow when prescribing antipsychotics will be provided to the provider and how to assess for barriers that affect adherence to antipsychotic treatment. The educational session will be conducted with mental health providers at the project site to address educating patients on antipsychotic adherence and how to administer evidence-based tool kits to measure adherence to antipsychotic therapy. Approval was granted by the CEO of the practice site to conduct the quality improvement project and affirmed with an affiliation agreement (Appendix B). The project requirements and course syllabus were shared with the CEO. The CEO communicates project aims and objectives with the rest of the stakeholders at every stage of the implementation.

During the first week, the DNP student will be meeting with the project Mentor via Zoom before implementation at the project site and delivering a PowerPoint presentation on improving antipsychotic adherence. Education regarding the EBP toolkit and MARS screening tools with be shared with providers. The providers will then be prepared to utilize the screening tools with patients who are being prescribed antipsychotics. During the second week, weekly retrospective

chart reviews and implementation of evidence-based toolkits to measure adherence to antipsychotics will begin. Nursing staff and CMA will start administering MARS to selected patients and report the score to the NP who will then follow up by educating patients about adherence to antipsychotics. Meeting with the NP and other stakeholders about project updates, which include assessing adherence to antipsychotics, progress, and outcome of the implementation will be ongoing. During the third week, follow-up calls by nursing staff and CMA about Medication adherence to encourage patients to adhere to antipsychotic treatment will begin. During the fourth week, the DNP student will start data collection beginning with pre-MARS data, post-MARS data, and thirty chart reviews to measure the provider's compliance with the guidelines.

See Appendix C for Project Timeline

Planning Project Team

The project planning team include the NP at the project site, who will be using the antipsychotic guidelines and educating the patient about adherence to antipsychotics. Other members include the RN and the CMA administrating the MARS toolkit. The clinic manager will be assisting with the chart review and data collection.

Resources

The DNP student will develop and present a PowerPoint educational presentation to assess and evaluate antipsychotic adherence rate, factors contributing to nonadherence to antipsychotics and the importance of adherence to antipsychotics. The PowerPoint presentation will be held in the practicum site conference room. The psychiatric NP will be following the recommendation of the evidence-based toolkit in improving adherence to antipsychotics in patients. Data will be completed in an organized meeting with the health care provider. The

office manager will assist with data collection from the EHR to measure the provider's compliance with the evidence-based tool kit /protocol in improving adherence to antipsychotic treatment. During the educational session, the DNP student will provide attendees with light refreshments, a home-baked cookie, and a drink for less than ten dollars per head. The financial resource is from the support of the DNP student spouse.

Tools

The tools for this project will include an evidence-based toolkit to assess adherence to antipsychotics (MARS) (Appendix D), a practice protocol to ensure adherence (Appendix E), and an educational power point presentation (Appendix F).

MARS Toolkit

The MARS is an existing tool used to measure patient medication adherence. The MARS has been validated in several research works, one of such is the research work by Thompson et al. in 2020 about the reliability and validity of a new Medication Adherence Rating Scale (MARS) for psychoses; the MARS was an attested and accepted tool for evaluating adherence in patients with an internal consistency of 0.75 which was relatively high. The MARS also demonstrated internal reliability (Cronbach's α) which ranged from 0.67 to 0.89 (Chan et al, 2020). In another research on the reliability and validity of the Medication Adherence Rating Scale in a cohort of patients with schizophrenia from Nigeria, the MARS showed a reasonable test of intelligence of the features used in evaluating patients with schizophrenia (Owei et al., 2018). Copyright permission to use the MARS toolkit is requested from Dr. K Thompson and Elsevier. See Appendix G for the email request and Appendix H for copyright information.

Protocol

The protocol was developed based on the American Psychiatric Association (APA) Guidelines for treating Schizophrenia by the project lead in collaboration with the project mentor and the nurse practitioner at the practice site. The CEO of the project site reviewed the protocol, and the CEO has approved a summary of the protocol, which the NP will use as a reference guide to use with patients prescribed antipsychotics. The protocol includes evidence-based guidelines when prescribing antipsychotics, considerations when choosing an antipsychotic medication, assessing antipsychotic adherence barriers, education on the importance of antipsychotic adherence, how to implement strategies that reduce nonadherence, assessing for fear of side effects and educating patients, assessing antipsychotic treatment knowledge, and providing support through the implementation of nonadherence prevention strategies. The protocol will improve the provider's knowledge, thereby improving adherence in patients prescribed antipsychotics. The goal of the protocol is to determine if there is a significant change in adherence rates in patients on antipsychotics compared to pre-implementation.

Power-Point Presentation

A PowerPoint presentation will be used to educate the providers. The presentation will inform providers about antipsychotics, indications for antipsychotic use, initiation of antipsychotic guidelines, monitoring for adherence, importance of antipsychotic adherence, treatment guidelines and protocol essential for antipsychotic adherence, assessing for non-adherence to medication prior to starting antipsychotics and during treatment with antipsychotics.

See Appendix F for PowerPoint presentation.

Plan for Data Collection

Data will be collected to determine protocol compliance and increased antipsychotic adherence in patients. The first step will be collecting the pre-MARS before initiation of antipsychotic adherence protocol during the first week and post-MARS scores at four weeks follow-up after the initiation of antipsychotic adherence protocol to measure the increase in antipsychotic adherence in patients. The MARS score will be scanned into the patient's chart, making it easily accessible to review and compare pre and post MARS. The project lead will meet with the providers weekly to assess adherence to the protocol and provider answers if any arise.

Thirty charts will be reviewed for patients prescribed antipsychotics at week one and follow-up appointments at week 4. The chart review will measure the percentage of antipsychotic adherence in patients before and after the protocol implementation. Each chart will be assigned a random number from 001 to 030. A random chart review will also determine provider compliance with the use of the toolkit.

All data collected in this project will be stored in a locked filing cabinet at the practicum site, with the key to the filing cabinet in the custody of the site manager. All data will be recorded in an Excel spreadsheet protected with a password only accessible to the project lead. The data collected from the chart audits will also be stored in a password-protected Excel file. Chart numbers will be assigned from 001 to 030 to avoid direct identification.

Confidentiality will be protected as required by the practicum site policy and protocol for the patient's privacy. The project lead follows the informed consent procedure by respecting human autonomy, dignity, and privacy, as the subject population is vulnerable due to the disease process.

Ethics/Human Subjects Protection

The QI project is centered on implementing an antipsychotic adherence protocol for providers to promote antipsychotic adherence in patients on prescription antipsychotics. The QI project includes the mental health providers at the practicum site whose participation in the QI project is voluntary to increase their knowledge about antipsychotic adherence. The QI project excludes direct involvement of the patients who will benefit from the provider addressing barriers to taking antipsychotics, thereby increasing adherence.

To maintain compliance with Touro University of Nevada's policy, the Institutional Review Board (IRB) determination form was submitted for review. It was determined by the project team to be a quality improvement project. Since the project utilizes a QI design and does not involve direct patient care or human subjects, it was determined that it would not require IRB oversight. No financial compensation will be given to participants due to the quality improvement aim of the project. However, free lunch will be served during the educational session courtesy of the DNP student, and there are no risks to the participants. The CEO will communicate the educational training session to the mental health care providers attending the session by their organization email.

Plan for Analysis

Project data will be collected onto an Excel spreadsheet and analyzed using the IBM SPSS Software. A paired sample t-test will be used, assuming the differences between pairs are normally distributed, to compare the means of the pre – and post-MARS score and determine if statistically significant. A paired sample t-test can be used to measure the dependence of measurements between the two groups (Wadhwa & Marappa-Ganeshan,2023). The data collected will help determine if there is an increased rate of antipsychotic adherence in adults

within a 4-week implementation frame. A simple statistical analysis will be used to assess provider's compliance with evidence-based toolkit/protocol.

Data Collection and Analysis of Results

Data collection and analysis were completed to determine if there was an increase in rates of antipsychotic adherence in adult patients ages 18 to 50 years by 5 % within a 4-week implementation frame and to determine the provider's compliance with the implemented toolkit. The pre-and post-MARS assessment scores of patients who started on antipsychotic medications during the first week of project implementation and four weeks after were compared using SPSS data analysis software. The statistical assumption for this quality improvement project includes whether there is a statistically significant difference between pre-MARS and post-MARS scores with a *p*-value less than 0.05. A randomized chart review determined provider adherence rates.

Pre-MARS and Post-MARS assessment

The pre-MARS assessment was administered to new patients prescribed antipsychotic medication during the first week of project implementation, and the post-MARS assessment was on their follow-up visit in four weeks. During the pre-MARS assessment, thirty patients were randomly selected, two patients refused to complete the pre-MARS assessment, and the RN forgot to administer the pre-MARS assessment to 3 patients; a total of 25 pre-MARS assessments were completed for the 30 randomly selected patients, and all 30-patients completed post-MARS assessment.

Table 1

Pre -MARS Assessment

	Number of Patients	Percentage of Total Patients
Total completed Assessment	**25**	**83.3%**
Total Refused Assessment	**2**	**6.7%**
Total forgotten Assessment By RN	3	10%
Total Assessment Offered (Completed and offered)	27	90%
Total Patient Selected	30	**100 %**

Table 2

Post MARS Assessment

	Number of Patients	Percentage of Total Patients
Total completed Assessment	**30**	**100%**
Total Refused Assessment	**0**	**0 %**
Total forgotten Assessment By RN	**0**	0%
Total Assessment Offered (Completed and offered)	30	100 %
Total Patient Selected	30	**100 %**

A paired t-test (Appendix K) was conducted on 25 patients who completed both the pre-MARS and post MARS assessment to determine if there was an increase in the adherence rates of antipsychotics. Excluded from the pair-t-test are the five patient who did not get pre-MARS assessment completed. There was a statistically significant increase in the rate of adherence to antipsychotics from the pre-MARS scores (M =5.16 SD =2.58) to post-MARS score (M =2.56 SD =1.61), t (24) =5.46, p <0.001 (two-tailed). The mean decrease in MARS score was 2.60, with a 95% confidence interval ranging from 1.62 to 3.58. The eta squared statistics (0.55) indicate a large effect size. The lower the total score of the MARS, the better the medication adherence (Wei et al., 2021).

Chart Audit

The project lead conducted a chart audit to determine the provider's compliance with the antipsychotic protocol toolkit. To measure the provider's compliance with the antipsychotic protocol toolkit, the project lead audited 30 retrospective charts during the four weeks of project implementation using a simple statistical method to determine the percentage of provider's compliance with the antipsychotic adherence toolkit. Each chart was assigned a random number (001 -030). No patient identifiers were used to maintain patient confidentiality during this analysis. The chart audit (Appendix J) showed 83.3 % compliance with the antipsychotic adherence protocol toolkit at the project site, as shown in Appendix J.

Discussion and Interpretation of Results

The DNP QI project aimed to improve antipsychotic adherence in adult patients ages 18 to 50 years by implementing an antipsychotic adherence toolkit in an outpatient mental health and behavioral clinical setting. The project question sought to determine if implementing an

evidence-based guideline on antipsychotic adherence improves adherence rates in adult patients ages 18 to 50 years within a four-week implementation phase. The primary objective was to establish the efficacy of psychoeducation of patients on antipsychotic adherence in improving antipsychotic adherence in patients, showing a 5 % increase in antipsychotic adherence within a four-week implementation period.

The pre-MARS assessment audit of the 30 selected patients before psychoeducation about antipsychotic adherence indicated nonadherence to an antipsychotic with a mean score of 5.16, and the post-MARS assessment after psychoeducation about antipsychotic adherence had a mean score of 2.56, which indicated an increase in the rate of adherence. The lower the total score of a MARS assessment, the greater the medication adherence (Wei et al., 2021).

The internal reliability (Cronbach's α) of the MARS assessment has a value of 0.557, which is close to the internal reliability (Cronbach's α), which ranged from 0.67 to 0.89 as demonstrated by MARS in a study by Chan et al. in 2020 about The Medication Adherence Report Scale: A measurement tool for eliciting patients' reports of nonadherence. The MARS was also validated in the research study by Thompson et al. in 2020 about the reliability and validity of a new Medication Adherence Rating Scale (MARS) for psychoses; the MARS was an attested and accepted tool for evaluating adherence in patients with an internal consistency of 0.75 which was relatively high. The Cronbach's alpha was 0.557 for this QI project, further confirming the instruments' reliability.

Thirty retrospective charts were audited to assess the provider's compliance with the antipsychotic adherence protocol. The chart audit showed the provider completed the antipsychotic adherence toolkit for 25 patients, indicating the provider's compliance to

antipsychotic adherence protocol as 83.3%, which also influences the adherence rate to antipsychotics by patients.

The outcome of the project indicates that the use of an evidence-based antipsychotic adherence protocol increased patient adherence to antipsychotic treatment. This aligns with a study conducted by Harmanci and Budak (2021) about the effect of psychoeducation in improving adherence to medication in schizophrenic patients, which concluded that medication adherence was improved, ultimately improving patient outcomes and symptoms.

The CEO at the project site provided the project lead with the necessary resources to be successful during the project implementation, thereby limiting the financial expenses of the project lead and leading towards its success. Quality time was also spent at the project site by the project lead during the implementation period to provide answers to questions or concerns related to the project. The opportunity cost of this QI project was worth the tradeoff, which resulted in the project's success, though the implementation period was short.

The data analysis on MARS assessment is based on patient's self-report questionnaires of medication adherence. The use of the MARS assessment helped both patient and provider to ascertain some of the reasons for nonadherence to psychotropic medications such as medication side effects, medication adherence behavior, and attitude to taking psychotropic medication. The use of the MARS assessment was cost-effective and time-efficient,

The evidence-based protocol was adhered to by the provider and used for patients prescribed antipsychotics. Additional data collected showed an improvement in the rate of adherence to antipsychotics in an outpatient clinical setting after educating providers on the importance of adhering to and administering an EBP toolkit. Reducing the incidence of

nonadherence to antipsychotics is essential, and literature shows increased adherence to antipsychotic therapy when psychoeducation is introduced to patients' care.

In a systemic review and meta-analysis about interventions to improve medication adherence in patients with schizophrenia or bipolar disorders, eight of eleven educational interventions used in the study had a statistically significant improvement in adherence (Loots et al., 2021). In another systemic review of interventions to improve medication adherence in people with schizophrenia, the family schizophrenia psychoeducation program (FSPP) was developed as an intervention to improve treatment adherence (Cahaya et al., 2022). The FSPP program significantly improved patient adherence to treatment (Cahaya et al., 2022). In a controlled trial on measuring the effectiveness of psychoeducation on adherence, depression, anxiety, and stress among patients with the diagnosis of schizophrenia by Alizioti & Lyrakos in 2019, participants in the study were randomly selected to either participate in the psychoeducation group or the control group; there was significant improvement in medication attitude in the psychoeducation group.

Overall, the project had a positive impact, showing increased rates of adherence to antipsychotics in the patients. Patients can communicate their adherence to antipsychotics effectively through the MARS assessment. The project site CEO commended the project lead on the positive impact of the antipsychotic adherence toolkit and plans to incorporate the tool into their clinical practice.

Limitations

Some limitations were encountered during this QI project. The first limitation was the limited number of participants at the project site for the QI project due to the private practice

setting of the project site. The project implementation was only for four weeks, with chart audits collected for four weeks after the educational training of the providers on the evidence-based toolkit. The project site had one licensed nurse practitioner whose chart was reviewed for compliance with the evidence-based toolkit, and the provider forgot to use the evidence-based toolkit for five patients due to patients not being on time for their appointments and limited time for the patient's follow-up appointment. To minimize and adjust to the limitations, the project lead communicated daily with RN staff via phone calls to make sure that the MARS assessment was completed on the 30 patients that had been selected, and if not completed the reason should be documented. The project site practice manager cooperated with the project lead and assisted the project lead during the data collection process.

Conclusion

The prevalence of nonadherence to antipsychotics is a common problem in clinical settings with patients prescribed antipsychotics. Nonadherence to antipsychotics is a significant challenge in the effective management of symptoms in patients on prescription antipsychotics. This quality improvement project was developed to improve antipsychotic adherence by educating providers about antipsychotic adherence and implementing an evidence-based guideline and toolkit to increase patients' adherence to antipsychotic treatment in an outpatient mental health and behavioral setting. The objectives for the QI project were met as project results showed an increase in the rate of adherence to antipsychotics with a mean score of 2.56 for post-MARS assessment as compared to the mean score of 5.16 for pre-MARS assessment. The lower the total score of a MARS assessment, the greater the medication adherence (Wei et al., 2021). The provider's compliance with the evidence-based toolkit was 83.3%. The results of this QI project help to show a possible relationship between the psychoeducation of patients about

antipsychotic adherence to patient's adherence to antipsychotics. Educating providers on antipsychotic adherence helped in enhancing favorable outcomes for the patients.

The CEO of the project site approved the antipsychotic adherence protocol as a healthcare model for the project site and will continue to implement the MARS assessment and protocol for all patients prescribed antipsychotics. To ensure project sustainability, the clinic will also provide in-service training to newly hired providers regarding the protocol. This will help maintain consistency in the approach and ensure that all healthcare professionals are equipped with the necessary knowledge to deliver quality care.

This QI project demonstrates that using an evidence-based practice protocol and toolkit can improve the rate of adherence to antipsychotics in an outpatient clinical setting. Addressing non-adherence to antipsychotics is essential in improving a patient’s quality of life and symptoms.

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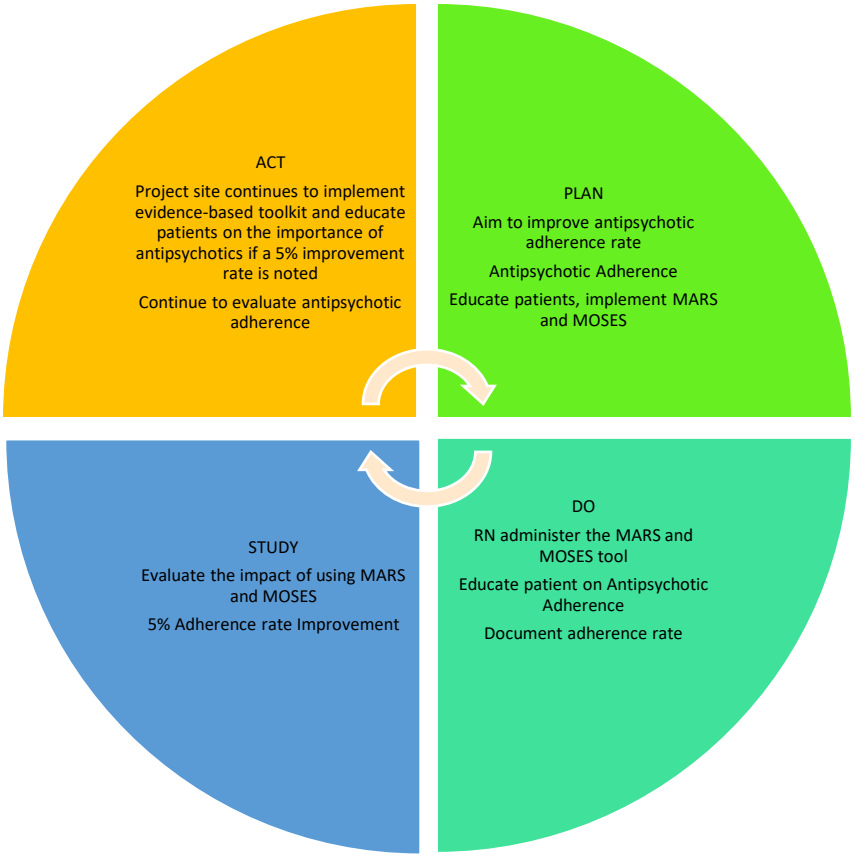
Appendices

A	Theoretical Framework: PDSA cycle model
B	Project Site Affiliation Agreement
C	Project Timeline
D	Medication Adherence report scale
E	Antipsychotic Adherence Protocol
F	PowerPoint Presentation
G	MARS Toolkit Permission Document
H	MARS Copyright Information
I	Pre-Post MARS Assessment
J	Chart Audit
K	Paired-t-test

Appendix A

PDSA CYLE



APPENDIX B

AFFILIATION AGREEMENT

Affiliation Agreement Statement:

Touro University Nevada does not require affiliation agreements for DNP Practicum Experiences. However, the project/practicum site may require an affiliation agreement with Touro. Please delegate this form to an appropriate project/practice site representative for completion.
Please fill in the blanks below and check the appropriate box:

The TUN DNP student: Adebisi Okieimen is authorized to complete practicum hours at the above listed project site.

MO An affiliation agreement is required for completion of this practicum experience.

MO An affiliation agreement is not required for completion of this practicum experience.

*If an affiliation agreement is required, please insert the name and contact information of the person who will coordinate the agreement:

Name of representative: Mercy Osaghae

Contact information and preferred contact method: alphahealth@gmail.com

Authorized Project Site Representative Signature: ______________________

Student Signature: ______________________

Appendix C

PROJECT TIME

Project Timeline	
Plan out the activities you will be performing each week during the implementation phase of Project III. Clearly delineate the time needed to carry out interventions, collect data, and evaluate the project. Set concrete dates for all implementation activities (e.g., trainings/education, interventions, data collection and analysis) and include them in the appropriate weeks below. **Dates for implementation are posted in the Project II course announcements. Week 1 should correlate with the first week of DNP Project III, unless permission is granted to implement early.**	
Week 1 (Dates) November 1 to 7 ,2023	• Meeting with project Mentor via Zoom before Implementation at the Project site and delivering of power point presentation on how to improve antipsychotic adherence. • Nursing Staff and CMA start administering MARS to selected patients and report score to the Nurse practitioner to follow up by educating patient about adherence to antipsychotic. Pre MARS score recording • Collection of Pre implementation of MARS assessment for 30 new patients started on antipsychotic therapy with 4 weeks follow up evaluation schedule.
Week 2 (Dates) November 8 to 14, 2023	• Nursing Staff and CMA continues administering MARS to selected patients and report score to the Nurse practitioner to follow up by educating patient about adherence to antipsychotic. Pre MARS score recording • Project lead assess ongoing needs of the population of interest at the project site and provide answers to the providers administering the MARS.
Week 3 November 15 to 21, 2023 (Dates)	• Follow up calls by Nursing staff and CMA about medication adherence. • Project lead **f**ollow up with Nursing staff and CMA about medication adherence rating scale administration. • Project lead transfer knowledge learned from human rights and protections in research ethics in the implementation, data collection, and analysis phases of the DNP project.
Week 4 (Dates) November 22 to 28, 2023	• Data collection for Pre Mars administration and Chart Review to measure provider compliance. • Data was stored while maintaining confidentiality, and analysis of data. • project lead collaborated with PM via zoom to discuss project results. Specifically, analyze and evaluate the data. Define the project results and how it relates to the project topic.

Appendix D

MEDICATION ADHERENCE REPORT SCALE (MARS)

	Question	Answer
1	Do you ever forget to take your medication? ?	Yes/No
2	Are you careless at times about taking your medication?	Yes/No
3	When you feel better, do you sometimes stop taking your medication?	Yes/No
4	Sometimes if you feel worse when you take the medication, do you stop taking it?	Yes/No
5	I take my medication only when I am sick	Yes/No
6	It is unnatural for my mind and body to be controlled by medication	Yes/No
7	My thoughts are clearer on medication	Yes/No
8	By staying on medication, I can prevent getting sick.	Yes/No
9	I feel weird, like a ‘zombie’ on medication	Yes/No
10	Medication makes me feel tired and sluggish	Yes/No

Appendix E

Protocol

SUMMARY OF AMERICAN PSYCHIATRIC ASSOCIATION GUIDELINES FOR ANTIPSYCHOTIC TREATMENT

EVIDENCE BASED PROTOCOL FOR PRESCRIBING ANTIPSYCHOTIC

When prescribing Antipsychotics:

- Choice of an antipsychotic agent should occur in discussion with the patient about likely benefits and possible side effects of medication options.

When choosing an antipsychotic medication, consider:

- Patient preferences
- Past responses to treatment (including symptom response and tolerability)
- Medication's typical side effect profile
- Presence of physical health conditions that may be affected by medication side effects.
- Other medication related factors such as available formulations, potential for drug-drug interactions, receptor binding profiles, and pharmacokinetic considerations.
- Birth control options for women with childbearing potential and at risk for pregnancy if pregnancy is not desired.
- Collaborate with patient's obstetrician-gynecologist or other obstetric practitioner if pregnant.
- Collaborate with patient's infant's pediatrician for women who are breastfeeding.
- Involve patient in the decision for treatment of antipsychotic side effects.
- Trial of Clozapine for treatment resistant psychosis
- Pre MARS assessment before initiating antipsychotics and Post MARS assessment after initiation of antipsychotics.

ANTIPSYCHOTIC ADHERENCE PROTOCOL

- Assess antipsychotic adherence barriers.
- Education on importance of antipsychotic adherence
- Implement strategies that reduces nonadherence.
- Assess for fear of side effects and educate.
- Assess antipsychotic treatment knowledge.
- Support the implementation of nonadherence prevention strategies.

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Appendix F

POWERPOINT PRESENTATION

Lesson Objectives

Upon completion of this course, you will be able to :

- Discuss about antipsychotic treatment for patients with mental disorder , classification of antipsychotic and indication for use
- Implement evidence-based guidelines for providers prescribing antipsychotic to enhance adherence.
- Use evidence-based practice to plan care for patients on antipsychotics.
- Improve knowledge on early intervention rates for patients at risk for nonadherence to antipsychotic.
- Show a 5% increase in antipsychotic adherence within four weeks of implementation

Introduction

- Antipsychotics are psychoactive medications that are used for the treatment of varieties of mental health disorders
- Antipsychotics are first line of treatment for patients experiencing psychosis, but recent evidence reveals effectiveness of antipsychotics in treating other mental health disorders
- The rate of non-adherence to antipsychotics is high among patients with psychiatric disorders. Existing data indicate that 30 to 40 % of patients with the first episode of psychosis become non-adherent to medication within six months of treatment, leading to a higher rate of relapse, hospitalization, and increased healthcare costs .
- Improving adherence to Antipsychotic have been identified to be important in improving patients' quality of life

Classes of Antipsychotics

FIRST GENERATION OR TYPICAL ANTIPSYCHOTICS

SECOND GENERATION OR ATYPICAL ANTIPSYCHOTICS

First Generation Antipsychotics

First-generation antipsychotics: Also Known as Typical Antipsychotics

dopamine receptor antagonists (DRA)

Trifluoperazine
Perphenazine
Prochlorperazine

Acetophenazine
Triflupromazine
Mesoridazine

Haloperidol
Thiothixene
Chlorprothixene

Loxapine
Molindone
Pimozide

Second Generation Antipsychotics

Second-generation antipsychotics : Also known as Atypical Antipsychotics

Serotonin Dopamine Antagonist

Risperidone
Olanzapine
Quetiapine

Ziprasidone
Aripiprazole
Paliperidone

Asenapine,
Lurasidone.
Iloperidone

Cariprazine
Brexpiprazole,
Clozapine.

Indications

- Schizophrenia
- Schizoaffective disorders
- Acute Mania
- Major Depressive Disorder with Psychotic features
- Delusional Disorder
- Severe Agitation
- Tourette Disorder
- Childhood Schizophrenia
- Borderline Personality Disorder
- Dementia

Indications continued

- Delirium
- Substance-induced psychotic disorder
- Huntington disease
- Parkinson disease
- Lesch-Nyhan syndrome
- pervasive developmental disorder
- Bipolar disorder

INITIATION

- Choice of an antipsychotic agent will typically occur in discussion with the patient about likely benefits and possible side effects of medication options.
- When choosing an antipsychotic medication, consider:
- Patient preferences
- Past responses to treatment (including symptom response and tolerability)
- Medication's typical side effect profile
- Presence of physical health conditions that may be affected by medication side effects
- Other medication related factors such as available formulations, potential for
- drug-drug interactions, receptor binding profiles, and pharmacokinetic
- Considerations.

Antipsychotic Adherence

Adherence to Antipsychotic have been identified to be important in improving patients' quality of life (Caqueo-Urízar et al., 2020).

Assessing for antipsychotic adherence is crucial to treatment to reduce relapse and decompensation of symptoms

Nonadherence to Antipsychotics

- Nonadherence to antipsychotic treatment has remained a challenge in the clinical setting, affecting patient symptom improvement, rehospitalization, and increased healthcare costs (Lieslehto et al., 2022).
- Nonadherence to antipsychotic treatment can increase the incidence of patient rehospitalization, psychiatric decompensation, and economic and healthcare costs (Abdullah et al., 2021).

Risk factors for Non-Adherence

- Poor Insight
- Negative Attitude
- Substance abuse
- Previous Non-adherence
- Duration of illness
- Poor therapeutic alliance /Lack of social support
- Cost of Medication
- Medication side effects
- Stigmatization
- Co-morbidity

Impact of Antipsychotic nonadherence

Exacerbation of illness	Reduce treatment effectiveness	Re-hospitalization	Poor quality of life
Relapse of symptoms	Increased comorbid medical conditions	Wastage of health care resources	Increased suicide rate

Patient Education on Adherence

Focus on Diagnosis, symptoms, medication, relapse , medication skills and medication adherence

One-one with provider

Give room for Q & A from patient

Enhance patient's knowledge about medication and illness

Adherence Protocol Summary

- Assess antipsychotic adherence barriers.
- Education on importance of antipsychotic adherence
- Implement strategies that reduces nonadherence.
- Assess for fear of side effects and educate.
- Assess antipsychotic treatment knowledge.
- Support the implementation of nonadherence prevention strategies.

Medication Adherence Rating Scale

- MEDICATIONADHERENCE REPORT SCALE (MARS)

	Question	Answer
1	Do you ever forget to take your medication?	Yes/No
2	Are you careless at times about taking your medication?	Yes/No
3	When you feel better, do you sometimes stop taking your medication?	Yes/No
4	Sometimes if you feel worse when you take the medication, do you stop taking it?	Yes/No
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7	My thoughts are clearer on medication	Yes/No
8	By staying on medication, I can prevent getting sick.	Yes/No
9	I feel weird, like a 'zombie' on medication	Yes/No
10	Medication makes me feel tired and sluggish	Yes/No

Question & Answer

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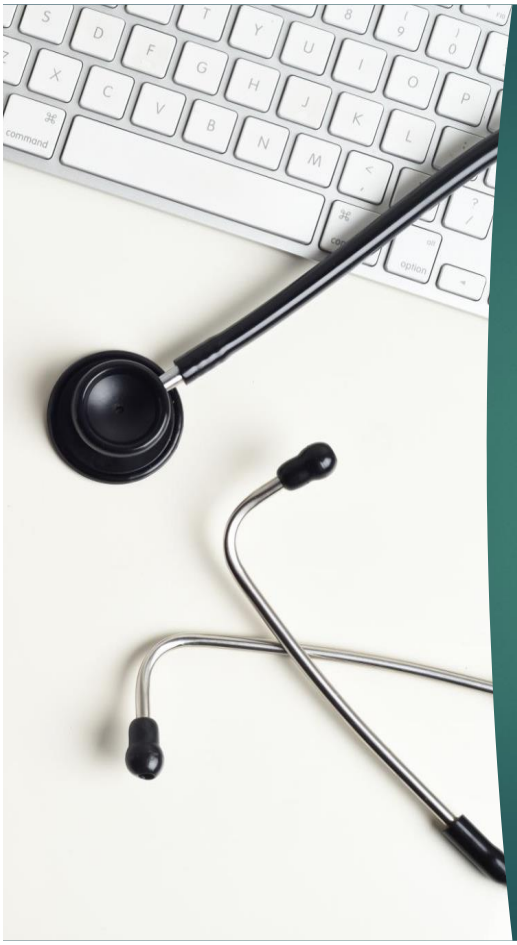

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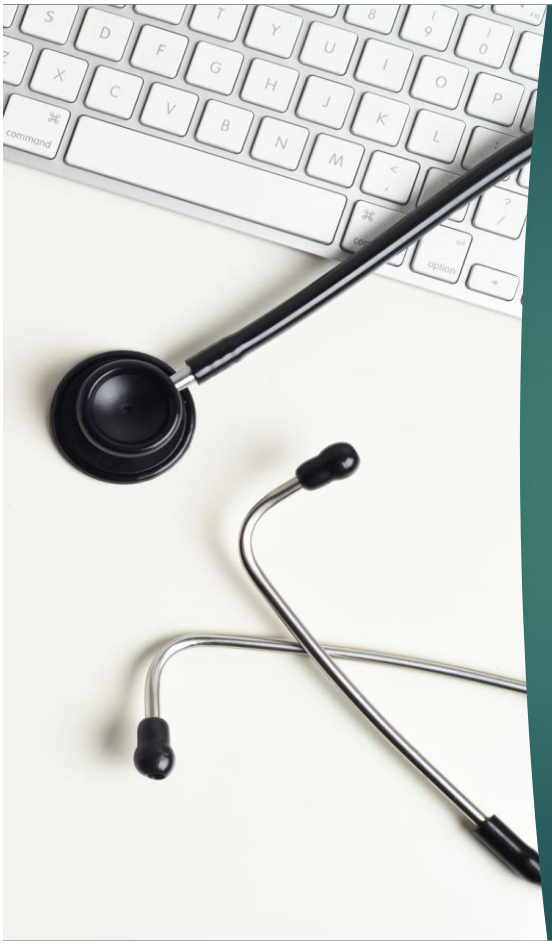

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APPENDIX G

REQUEST FOR PERMISSION

Permission to use Toolkit.

Adebisi Okieimen <aokieime@student.touro.edu>

Sat, Aug 26, 6:45 AM
(10 days ago)

to dr. Katherine

Good evening, Dr Thompson,
My name is Adebisi Okieimen. I am a Doctoral student at Touro University Nevada in the United States of America.
I would like to request permission to use the Medication Adherence rating scale that was developed by you for my quality improvement project on antipsychotic adherence.
I have reviewed the MARS, and it does fit perfectly into my Doctoral project.
Thank you in advance of your anticipated response.

Respectfully,
Adebisi Okieimen

APPENDIX H

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APPENDIX I

PRE-POST MARS ASSESSMENT

PATIENT ID	PRE MARS	POST MARS	
2001	5	3	
2002	8	2	
2003	6	1	
2004		2	
2005	4	5	
2006	2	2	
2007	7	1	
2008	6	2	
2009	8	1	
2010	5	3	
2011	10	8	
2012	7	4	
2013	4	1	
2014	2	2	
2016		5	
2015		3	
2017	6	2	
2018	8	4	
2019	7	4	
2020	6	3	
2021	3	2	
2022	2	2	
2023	6	1	
2024	4	1	
2025		6	
2026	1	2	
2027	9	4	
2028	2	2	
2029		4	
2030	1	2	

APPENDIX J

Chart Audit Tool

Antipsychotic Adherence Data			
Provider ID	Provider Adherence to Protocol Yes/No (Y/N)	Patient ID	Patient Adherence to Antipsychotic Yes/No(Y/N)
2004001	Y	001	N
2004001	Y	002	Y
2004001	Y	003	Y
2004001	Y	004	Y
2004001	Y	005	N
2004001	Y	006	Y
2004001	Y	007	Y
2004001	Y	008	Y
2004001	N	009	Y
2004001	Y	010	N
2004001	Y	011	N
2004001	Y	012	N
2004001	Y	013	Y
2004001	N	014	Y
2004001	N	015	N
2004001	Y	016	N
2004001	Y	017	Y
2004001	N	018	N
2004001	Y	019	N
2004001	Y	020	N
2004001	Y	021	Y
2004001	Y	022	Y
2004001	Y	023	Y
2004001	Y	024	Y
2004001	Y	024	Y
2004001	N	025	N
2004001	N	026	Y
2004001	Y	027	N
2004001	N	028	Y
2004001	Y	029	N
2004001	Y	030	Y

APPENDIX K

PAIRED -t- TEST STATISTICS

Pre and Post Pre-Post MARS assessment paired sample statistics.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRE MARS	5.16	25	2.577	.515
	POST MARS	2.56	25	1.609	.322

Pre and post Pre-Post MARS assessment paired sample correlations.

Paired Samples Correlations

				Significance	
		N	Correlation	One-Sided p	Two-Sided p
Pair 1	PRE MARS & POST MARS	25	.430	.016	.032

Pre and Post Pre-Post MARS assessment Paired Sample Test and paired Differences.

Paired Samples Test

		Paired Differences					t	df	Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			One-Sided p	Two-Sided p
Pair 1	PRE MARS - POST MARS	2.600	2.380	.476	1.617	3.583	5.461	24	<.001	<.001

Table 7.

Pre and Post Pre-Post MARS assessment paired Sample Effect sizes.

Paired Samples Effect Sizes

			Standardizer[a]	Point Estimate	95% Confidence Interval Lower	Upper
Pair 1	PRE MARS - POST MARS	Cohen's d	2.380	1.092	.587	1.583
		Hedges' correction	2.458	1.058	.568	1.533

a. The denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation of the mean difference.

Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

Case Processing Summary

		N	%
Cases	Valid	25	83.3
	Excluded[a]	5	16.7

Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.557	.601	2