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IMPROVE PRIMARY CARE ADVANCED PRACTICE NURSE'S KNOWLEDGE OF DEPRESSION BY EDUCATIONAL INTERVENTIONS AND TREATMENT RECOMMENDATIONS

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by

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ABSTRACT

Poor medication adherence is one of the significant barriers to treatment for depression, often due to fears about side effects and insufficient knowledge among nurses. Educating primary care advanced practice nurses can help to improve understanding about symptoms of depression and the treatment recommendations. Education can help engage the primary care advanced practice nurses to improve patient understanding and thereby support better adherence measured as improved refill rates and follow-up reports. The refill rates will show if the patients under the primary care advanced practice nurses 'care have been following the medications prescribed in the right frequency and dosage. The follow-ups will help to identify signs of poor medication adherence and promote interventions to improve adherence levels. Better adherence will indicate that the primary care advanced practice nurses can better understand and educate the patients on treatment and safety recommendations. The measures will be collected for 30 days after an educational intervention to the primary care advance practice nursing staff using 50 chart reports from nurses working with veterans diagnosed with depression and newly prescribed antidepressants. The results will indicate whether a better knowledge about depression and antidepressant recommendation can improve patient outcomes in medication adherence, lesser risks of relapse, and better satisfaction of patients.

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DEDICATION

God, I thank you for blessing me with the desire to strive for a higher level of excellence in the nursing profession. I want to dedicate this doctoral project to some important people in my life. I want to send my deepest gratitude to each of you to my family. I want to thank my husband (Ray) for always giving me support and encouraging me to keep going to reach my goal. To my children and grandchildren who continued to support and help me achieve my highest goal. To my mother (Dorothy L. Young), whose spirit encouraged and comforted me throughout this journey. I can reflect on one of her supporting statements, "Baby, I know you can do it." I want to thank my Grace and Mercy church family for all the prayers sent up for me. Finally, I would like to thank Dr. Nita Magee for being a helpful resource to ask questions and mentor me through this doctoral project. I am humbled and grateful for everyone who has played a part in helping me reach my goal. To everyone, thank you.

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LIST OF ABBREVIATIONS

CDC	Centers for Disease Control
CDW	Corporate Data Warehouse
DNP	Doctor of Nursing Practice
MPR	Medical Possession Rates
PTSD	Post-Traumatic Stress Disorder
SAIL	Strategic Analytics for Improvement and Learning Data
USM	The University of Southern Mississippi
VA	Veteran's Administration

CHAPTER I - INTRODUCTION

Studies have shown that personnel engaged in military services have higher risks of traumatic injuries and incidents that have long-term psychological and mental health effects. Exposure to traumatic injuries like traumatic brain injuries and concussions can often cause psychological health problems in later life. Traumatic injuries risk is highest for military personnel deployed in regions of conflict. According to Bravo et al. (2020), almost one out of four military service personnel risk being diagnosed with mental health problems in later life, especially for retired veterans. The mental health problems significantly affect their health, wellbeing, and quality of life. Traumatic brain injuries often lead to higher risks of post-traumatic brain injury, anxiety disorders, depression, and insomnia (Aronson et al., 2020). Mental health problems are also associated with higher health problems such as cardiovascular problems, hypertension, diabetes, obesity, and substance abuse disorders. Risks are extreme among veterans who have served in active combat or have suffered a traumatic brain injury or experienced the suffering of others while on duty. Health problems have contributed significantly to preventable hospitalizations, higher healthcare expenditures, and cost of care. As a result, the veteran population's risks of mental health problems are considered an essential concern for public health and welfare. According to Rabadi et al. (2021), one key barrier to effective treatment of mental health problems is poor adherence to the discontinuation of prescribed medications. Inadequate adherence leads to several adverse outcomes such as relapse of mental health symptoms, the need for more extended hospital stays, and healthcare costs.

Background

This section aims to explore the influence of patient education about the side effects of antidepressants and the importance of medication adherence. Patient education can also improve medication adherence and reduce the risks of relapse of mental health symptoms among veterans suffering from mental health problems. Medication non-adherence can often be exhibited in the form of a failure or an unwillingness to follow the prescribed medication dosage. As a result of the non-adherence, patients have the risk of deterioration or relapse of their mental health conditions (Yesavage et al., 2018). Antidepressants are prescribed to manage various mental health problems. Poor adherence to antidepressants can be due to patient-related or environment-related factors. Patient and environment-related factors can include fears of concerns about the medication side effects, addiction to the medication, insufficient level of trust in the medication to reduce the mental health symptoms, and a lack of education or understanding because of limited patient education is given by the healthcare providers. Furthermore, poor follow-up with the patient to check the level of medication adherence or changes in the symptoms experienced by the patients will affect the patient treatment outcomes (Taibanguay et al., 2019).

The Rationale of the DNP project

The discontinuation and poor adherence to medication prescriptions are due to several factors. Concerns about the side effects of the effectiveness of the medication are the most frequent causes expressed by mental health patients for not following the prescriptions, along with perceptions that the medications will adversely impact their quality of life. (Keeling et al., 2020). Hence, this study focuses on educating the primary

care advanced practice nurses on depression treatment and recommendations to improve patient outcomes regarding medication adherence.

Significance of the DNP project

According to veterans diagnosed with mental health problems, the risks of poor adherence to antidepressants are often prescribed to them, leading to missed dosages or overdosages. Mental health problems often lead to higher risks of relapse or remission of Major Depressive symptoms, PTSD, anxiety disorders, or depression among the veterans by almost 15%. Therefore, the necessity of educating primary care advanced practice nurses on the importance of medication adherence and addressing the internal and environmental factors that cause poor adherence and thereby giving them holistic knowledge about the various treatment options for depression (Yesavage et al., 2018).

Needs Assessment

Studies have shown that the most prevalent mental health problems faced by U.S. veterans include PTSD (9.3%), substance abuse disorder (8.3%), anxiety disorder (4%), and serious mental disorders (3.7%) (U.S. Department of Veterans Affairs [USDVA], n.d.). The financial impact is related to 1.2 billion USD, or almost 33% of the total national healthcare expenditure. Mental health problems among veterans are the cause of almost 1% of total morbidity nationally, causing the death of almost 557,000 veterans. Educating primary care advanced practice nurses on safety recommendation practices of antidepressants has been found to improve their knowledge about its side effects, adverse reactions, and dosage recommendations. Educated primary care advanced practice nurses help to support better patient education and understanding. Therefore, the understanding can improve adherence to medications for depression and prevent risks of relapse or

worsening of mental health problems among the patients (Bartone & Homish, 2020). According to Trivedi et al. (2020), most patients suffering from depression find it difficult to cope with their condition and adjust as participants in social settings. Depression can also be challenging for the families of the patient. When left unchecked, these problems can lead to social impairments, instability in jobs, violent behavior, marital challenges, substance abuse risks, and risks of suicide. A lack of trained health care providers or nurses and poor health-seeking behavior among these patients are critical barriers to the use of mental health services and treatments effectively (Bartone & Homish, 2020). Patient education helps to create a patient-centered care approach that ensures positive outcomes for the treatment. Educating patients can improve medication compliance and therefore improve the efficiency of healthcare delivery. Informed and educated patients show better ability to follow their medication requirements and have risks of complications (Conn & Ruppar, 2017).

Synthesis of Evidence

Prevalence of Mental Health Problems Among Veterans

Causes of Depression. The term *shell shock* was often used during World War I, which is PTSD, and indicated the psychological impact caused by the exposure of repeated blasts. This exposure leads to slow damage to the brain tissues leading to structural alterations in the brain and affecting cognitive processes. The DNP project research has found that repeated exposure to the blasts leads to the brain abnormally reacting to psychological stresses, thus further exaggerating mental health conditions (Audrain et al., 2018).

Veteran Challenges. In recent times young military personnel have been exposed to several combats and have experienced several casualties from suicide bombers and improvised explosive devices. Many of them have clinical challenges from extreme physical and mental injuries. After being discharged, they often face employment challenges as they lack essential employment skills because they enlisted into the military at a young age, immediately after high school and graduate level (Hester, 2017). Traumatic brain injury correlates with cognitive problems in the long term among almost 25% of veterans. Traumatic brain injury problems later manifest as dementia. Due to traumatic brain injury, there can be a 60% higher risk of dementia, and the odds ratio of developing dementia is associated with at least one moderate or severe damage. Veterans exposed to multiple traumatic brain injuries have twice the risk of dementia and cognitive impairment later in life. Conditions like Alzheimer's and Parkinson's diseases were also associated with exposure to traumatic brain injury (Dreer et al., 2018). Veterans have a higher risk of mental health problems than non-veterans of similar age groups. The veterans exposed to combat can experience adjustment difficulties in the long term, which increases the chances of mental health problems like post-traumatic stress disorder (PTSD). The veterans also have a higher risk of social isolation and depression, especially during their old age, due to their chronic health problems and difficulties in communication (Williamson et al., 2018).

Mental Health Access to Care. The long-term health problems such as mental health issues that veterans are at a higher risk of significantly increase healthcare costs and are considered the primary factor that drives the overall costs of war (DiNapoli et al., 2016). Estimates show that about 2.5 million U.S. military personnel have been deployed

for a total of 3.5 million times, with two-thirds of the personnel repeatedly deployed in conflict zones. The highest healthcare costs and war are significant stressors for the economy, indicating the importance of addressing long-term and mental health problems (Cho et al., 2016). Furthermore, the mental health problems among veterans are also an issue of growing social concern as it prevents the successful integration of war veterans in society and their employment opportunities (Campbell et al., 2018).

Improve Medication Adherence of Antidepressants by Increasing Education on Side Effects and Treatment Expectations

Define Depression. Depression is a pervasive mental health issue, and with the prevalence of mental health awareness today, people have become more open to seeking treatment. As research shows, approximately 300 million people worldwide live and battle with depression (Brown et al., 2019). Depression is noted to come in various forms depending on the demographic population affected.

Significance of Antidepressants. Antidepressants are highly recommended medications that target the brain by changing how certain chemicals in this section of the body interpret certain moods. However, antidepressants are to be administered in a particular manner to be effective. However, non-adherence to this recommendation has been reported among the population. The failure to follow antidepressant prescriptions results in a relapse in mood and decreased quality of life for the patient who can otherwise live a healthy life to possess optimum functionality.

Components and Measurement of Medication Adherence. Two important components of medication adherence are persistence and compliance. Poor adherence is due to inadequate patient education, ineffective prescriptions, poor follow-up, and poor

patient decisions. Measurement of medication adherence can be done based on the refill rates of medication, self-reported adherence levels, and incidents of complications due to poor adherence. Medication non-adherence create a barrier to the effective treatment of depression among the patients (Danan et al., 2020).

Non-Adherence to Antidepressants among Veterans

Reasons for Discontinuation. The most frequent reason for discontinuation of medication includes the perceived ineffectiveness of the medication or treatment, fear about side effects (like a problem with sexual activities, addiction, loss of personality). Because of these fears or misunderstandings, patients feel the urge to stop the medication dosage (Reddy et al., 2019).

Predicators to Non-Adherence/Compliance. Two key predictors of poor medication adherence include the background of the patient and the presence of comorbid conditions. Poor adherence reduces the potential for improvement in mental health conditions and reduced depressive symptoms (Gerlach et al., 2019). Additionally, comorbid conditions can increase the chances of side effects like dizziness or headaches, which reduces the motivation of the patients to refill their dosage on a timely basis (Kales et al., 2016).

Patient-specific factors that lead to poor adherence include misconception about the medication, forgetfulness for self-administering the medicines (Gerlach et al., 2019), negative attitudes or stigma about the medicine, insufficient knowledge about the effectiveness of the medication along with the presence of comorbid conditions (Kales et al., 2016). Medication-specific challenges that cause poor adherence are side effects of

medicines, adverse reactions with other medication, costs and duration of continued treatment, and the need for additional antidepressant doses (Nguyen, 2020).

Medication Adherence/Compliance. Based on a six-month study, Stewart and Basit (2019) found that less than 20% of the patients adhered to antidepressant medications, and 80% did not. Non-adherent patients have a higher risk of symptom relapse or recurrent that required emergency hospitalization and more extended hospital stay. Prolonged hospital stays increase the economic burden on national health care (National Institute of Mental Health [NIMH], 2018). According to Gaspar et al. (2019), the problem increases expenditure by 210 billion USD when the patients do not perceive any benefit from the medication or are concerned about the side effects like sexual dysfunction which causes poor adherence. Studies have shown that when multiple psychiatric health problems exist, a history of drug use, and lack of healthcare coverage, leads to high healthcare costs. Inadequate follow-up visits, lack of interest in treatment, and severity of depression are critical risk factors that lead to non-adherence and poor compliance (Keyloun et al., 2017).

Improve Depressive Symptoms. Some of the patient-related factors expressed by patients in distress from mental health disorders towards discontinuing medication included fear of addiction to the medication, concerns regarding the side effects, believing that the antidepressants are unlikely to improve their mental health problems. In addition, clinician-related factors such as poor follow-up and insufficient patient education were also associated with non-adherence. Therefore, better awareness about non-adherence to antidepressants and their side effects can help overcome these problems

by addressing the concerns of the patient and better monitoring through follow-up visits (Wittink & Oosterhaven, 2018).

Education of Health Care Practitioners to Educate Patients on the Side Effects of Antidepressants

Education to Health Care Providers. Almost 10% of medical schools provide education to patients regarding medication safety and adherence (World Health Organization [WHO], 2016). Studies have shown that education for nurses helps to ensure patient knowledge and thereby achieve better adherence to medication (Duek et al., 2021). Education for primary care advanced practice nurses about depression, its medications, their side effects, and safety recommendation practices helped improve patient understanding of antidepressants, their side effects and set correct expectations on their effectiveness. Better educated nurses also show more efficiency in follow-up assessment and assessing the refill sheets of the patients (Salas et al., 2020). Patients are often afraid of the side effects of antidepressant medications and the perception that they might not help their mental health problems (Lande, 2019). Therefore, it could be claimed that knowledge-based interventions for nurses that focused on the knowledge of antidepressants, refill rates, and follow-up can promote the improvement of depressive symptoms (Srimongkon et al., 2018).

Health Care Providers Educate Patients on the Side Effects of Antidepressants. The patient-provider relationship and involvement are considered as solid supportive factors for delivering patient education. Patient education improved self-efficacy and self-care behavior, while poor education leads to a continuation of poor lifestyle choices and half of the premature deaths. Health literacy can increase positive health behaviors.

Thus, it is essential to engage in patient education by leveraging provider-patient trust (Paterick et al., 2017). Improving patient knowledge about medication and safety increases adherence by up to 95%. Patient education improves health outcomes from medication-based treatment by informing them about its side effects and its safety practices by 71.4%. Recommending patients on safety, therefore, improves patient outcomes (Talbot, 2018). Nurses have the most frequent contact with their patients and play an essential role in patient education because of the trust patients have in nurses. Frequent contact and trust can significantly support the delivery of patient education, making it an essential part of therapeutic relations and patient-centered care. Building a positive rapport promotes not only better satisfaction of patients but also better adherence (Rice et al., 2018).

Improve Knowledge/Better Adherence. Educating and empowering patients is a key clinical consideration to support better health behavior of patients. Improved behavior of a patient requires delivering necessary knowledge and information to patients to help them make informed and better health decisions. Education creates positive relations with primary care advanced practice nurses, improves self-efficacy, and supports informed decision-making (Kennedy et al., 2017). Yeh et al. (2018) found that patient education was correlated with patient satisfaction ($r=0.677$) and with patient empowerment ($r=0.637$). The results show a positive correlation of patient education with satisfaction and empowerment.

Better knowledge about medication and safety recommendations for depression can help to provide sufficient knowledge and information to the patients (Maguire et al., 2017). When there is a higher level of understanding among primary care advanced

practice nurses, they can tailor the patient education according to their condition, health care needs, and existing knowledge. Education also helps in medical intervention, efficient follow-ups, and identification of poor adherence to medication (Paczkowska et al., 2021). Healthcare professionals who are well-educated in their field can provide holistic knowledge to the patients on adherence practices and medication side effects (Zaini et al., 2021).

PICOT for the Study

The PICOT question for this study is: For primary care advanced practice nurses, will educational interventions improve knowledge of depression and treatment recommendations compared to non-educational interventions to improve knowledge of depression and treatment recommendations within 30 days?

Specific Aims

There is a gap in the literature regarding studies done on educating primary care advanced practice nurses on treatment recommendations on the improvement of medication adherence and better treatment outcomes for patients. The evidence-based practice project focuses on enhancing knowledge among primary care advanced practice nurses to ensure better patient understanding and improve medication adherence. Better knowledge among nurses can help identify the various manifestations of mental health conditions and provide better recommendations on medication use, its side effects, and safety aspects.

The specific aims of the research include the following:

- Exploring the best approaches to improve adherence levels to antidepressants.

- Understanding how multi-disciplinary support can help veterans have positive outcomes to treatment.
- Identifying the importance of nurse education on patient outcomes.
- Understanding how nurse education can be improved for better treatment of patients.

Framework for the Study

The DNP project aims to ensure better patient outcomes by improving primary care advanced practice nurses' education and ensuring better ability to follow patient outcomes and recommend safety and dosage adherence. Improved adherence to treatment relates the doctoral project to the Meaningful Measures Framework (Winegar et al., 2018). The DNP project outcomes can be measured through medication refill rates and information from follow-up visits. The clinical outcomes can give feedback to the agency regarding medication adherence rates, signs of side effects, reduced risks of hospital readmissions, and length of stay (Schmidt et al., 2021).

Nursing Theory

For this DNP project, Kurt Lewin's *Change Theory Model* will be used as the theoretical framework to change nursing practice and incorporate educating patients in three stages: unfreezing, changing, and refreezing. The unfreezing stage involves examining existing practices and knowledge of the nurses about depression and treatment recommendations. In the changing state, education is provided to improve the knowledge, and in the frozen state, new guidelines are created to ensure the implementation of the knowledge into nursing practice.

DNP Essentials

DNP Essential I: Scientific Underpinnings for practice- The DNP project helped to understand the patterns of veterans' behavior in terms of their attitude and adherence to antidepressants and outlined the involvement of nurses in educating the patients about the side effects and the problems due to poor adherence.

DNP Essential III: Evidence-Based Practice- The DNP project helped identify new knowledge from the research outcomes to explore the research phenomena of poor adherence to antidepressants among veterans and how patient education can mitigate the problem and identify new approaches by which patients can be encouraged to adhere to antidepressant medications.

DNP Essential VI: Interprofessional Collaboration- An interprofessional collaboration between DNP nurses, health educators, and physicians can promote better education for the veterans about the side effects of antidepressants and the consequences for poor adherence and support informed decision making.

Study Outline and Summary

The DNP project will be divided into four chapters to provide a more structured approach for better understanding. Chapter I will introduce the research topic and outline the purpose of the investigation with the highlight the contextual framework, the background of the study, the needs assessment, synthesis of evidence, the key assumptions, the significance, and the study's rationale. Chapter II will outline the methodology that will provide intervention, the population, the outcomes, the data collection, data analysis, and the ethical considerations for the study. The increased knowledge will help the reader better understand the structure and methods used in this

research for transparency and assessment of the research validity. Chapter III will outline the results from the data collection and summarize the discussion, incorporating and analyzing the results to understand if the result has met the research objectives. The final Chapter IV will conclude the study with a thorough discussion of the results and findings and the accurate indication from the survey conducted. This section will also include the limitations and future implications for the study to increase its scope in nursing and nursing academics.

CHAPTER II - METHODOLOGY

An exploratory research method was used in this study to help to explore the various factors related to nursing education and ensure better patient outcomes in terms of treatment recommendations and patient safety. The principal investigator collected research information for 30 days after the completion of the online training program. The research data will help understand whether training the nurses about depression and treatment recommendations (for veterans) can improve patient outcomes in medication adherence knowledge and recommendations among patients diagnosed with depression. Significant factors, such as an adequate follow-up of treatment and evaluation of refill rates would be measured. However, confounding factors such as mental ability, reading level, and social determinants of health associated with adherence and refill rates were not measured in the project (Keeling et al., 2020). Pre-test and post-test measures on refill rates can help understand whether primary care advanced practice nurses' educational intervention has helped improve medication adherence among the patients.

Intervention(s)

The intervention program will involve training primary care advanced practice nurses on depression and treatment recommendations, including safety factors of antidepressants, the side effects, and adherence requirements. The training would also include the identification of signs of poor adherence during follow-ups. This education will improve a better understanding of the mental health condition and various recommendations the primary care advanced nurses can give to the patients to ensure correct expectations, adequate follow-up appointments, and informed decisions on better adherence. A PowerPoint presentation will be used as training material for the primary

care advanced practice nurses, including knowledge about depression, an antidepressant protocol booklet, and recommendations for treatment focusing on adherence, refill rates, side effects, and safety recommendation factors.

Recruitment and Consent

An email was sent informing about the online services and instructions and directions for a pre-test to all nursing professionals working in mental health and primary care outpatient clinics. The DNP project utilized Qualtrics, and results were reported in Excel. All participants remained anonymous and answered questions in the link. This method helps to reduce the potential COVID transmission via touch. All participants checked if pre-test or post-test and sent it back each time. The researcher sent out an email to all primary care advanced practice nurses working in the outpatient clinics. The email provided detailed knowledge about the project and the relevant date and time for the test. One week was given to the participants to respond to the email invitations to mention their interest in the training program before starting the survey pre-test. This researcher also sent a reminder email on the 6th day to remind the participants to respond to the invitation.

Pre-Test Result

After verifying the respondents' consent, a pre-test survey was conducted, followed by a PowerPoint presentation link to the respondents who completed the pre-test survey within a recruitment email. The PowerPoint presentation was conducted within one week of receiving the link. The online PowerPoint presentation was recorded and saved on the shared-point drive for review and available to ensure that the primary care advanced practice nursing staff can have adequate time to plan their review. The principal

investigator also emailed the participants who have agreed to participate in the training to explain the project and detailed instructions for participation. During the pre-test, an initial measurement will also be taken for the refill rates of patients under the nurses, which will be used as a baseline for the post-test measure.

Post-Test Result

A retrospective review of 50 charts will be done before the pre-test survey, and 50 charts will be reviewed 30 days after the educational intervention with the post-test survey, which would include MDD43/MDD47 metrics. The names of providers will be collected from the MDD43/MDD47 report to collect data on veterans diagnosed with depression and were newly prescribed antidepressants. The adherence rates to medications will be measured and compared with the pre-test baseline to identify any change or improvement in their adherence rate. As a member of the SAIL committee, the DNP project will be creating an evidence-based practice that focuses on improving the quality of care. Feedback from the participants would help understand how the education intervention can be further improved and whether they perceive the intervention to improve their knowledge and understanding of depression and treatment recommendations.

Outcomes

Compared to no intervention of educating primary care advanced practice nurses, the expected outcome of the intervention is that primary care advanced practice nurses working with patients diagnosed with depression will have better knowledge about depression and will be able to provide better recommendations to the patients in terms of medication adherence and side effects. This, therefore, will be exhibited through the

outcome of better patient health, improvement of depressive symptoms. The outcomes will be measured through the refill rates and follow-up frequency as well as reports.

Source of Evidence-Based Data

The Centers for Disease Control and Prevention (CDC) developed materials for education for health care providers.

- CINAHL Complete provides search options for evidence-based practice to identify research articles that support EBP.
- PubMed uses medical subject heading to identify a vocabulary for clinical queries used in evidence-based practice.
- UpToDate contains evidence-based information authored by physicians to help in clinical decisions within the care system's point.
- Cochrane Library contains a repository of high-quality, evidence-based data independently published containing significant clinical methods protocols, evaluation, trial, and assessment.
- TRIP Search Engine contains evidence-based guidelines and information from national and international sources.
- National Registry of Evidence-Based Programs and Practices contains strategies for interventions for mental health problems like depression.
- ClinicalTrials.gov contains a database of clinical studies in human participants.
- The U.S. Preventative Services Task Force has a non-federal expert panel in preventative care based on evidence-based medicine and comprises primary healthcare providers (Hatef et al., 2019).

Outcome Measurement/Measurement Tools

The various measurement tools that will use for this study are:

- A pre/post survey will help measure the outcomes in terms of adherence to prescribed medications and measure improvement after the intervention. The survey will review the data from VA Corporate Data Warehouse (CDW) and refill rates as a measurement on a scale of 3 (<25%, 25% to 50%, and >50%) (Moon et al., 2017).
- Refill rates: The principal investigator will check the rates at which the new antidepressant medication is picked up and refilled to analyze medication adherence. The adherence rates will be analyzed from the Veteran Affairs Strategic Analytics for Improvement and Learning (VA SAIL) Model. The MDD 43/MDD 47 data is based on pharmacy orders and CPT codes (Moon et al., 2018).

Population

For this DNP project, primary care advanced practice nurses working with veterans diagnosed with depression are the chosen population. These primary care advanced practice nurses provide follow-up care for the veterans diagnosed with depression and have recently been prescribed antidepressants.

Data Sources

Data will be collected from refill rates and patient follow-up reports. This data collected at pre/post survey will be used for comparison to identify any changes in the refill rates because of the intervention. Furthermore, the principal investigator will evaluate the Strategic Analytics for Improvement and Learning (VA SAIL) Model

metrics data to evaluate their medication adherence and the pick-up and refill rates for newly prescribed antidepressants. This data source is appropriate for the research because of nurses' direct interaction and trust developed with the patients and their ability to properly assess whether the veterans are adhering to newly prescribed antidepressants (Ventres et al., 2018).

Outcome Analysis and Measurement

The key outcome for the doctoral project that will help to understand the impact of the primary care advanced practice nursing education on patients (veterans) diagnosed with depression is medication refill rates and information from follow-up of patients (Azevedo et al., 2019). The medication refill rates will help understand whether the patients have been taking the correct medication dosages. An active and regular refill at the required frequency will indicate that patients follow the recommended dosage and frequency of medication. In contrast, infrequent or over refills will indicate poor adherence or over usage of the medication. Follow-up reports will help understand whether there have been any clinical improvements in patient outcomes in depressive symptoms, reduction in relapse, and the side effects experienced by patients (Spanakis et al., 2020). This outcome will be related to better ability among primary care advanced practice nurses to prove treatment recommendations and safety recommendations to patients to support better medication adherence. The outcomes of the study would be aligned with the focus of National Health Services towards patient-centric care. This association will be through better patient education supported through improved knowledge among the nurses about depression and its treatment and medication recommendations.

Data Collection

Approval from the Mental Health Outpatient Clinic was received in writing from the direct supervisor at the VA to implement this DNP project. The principal investigator received approval from the VA and the USM IRB for the DNP project Protocol number 21-260. Data was collected in two stages. The first stage of data collection, a pre-post survey, occurred before the intervention is used on the sample population and the second stage after the intervention is completed. The pre-post survey strategy collected data from the healthcare provider's ratings with veteran's assessments. The principal investigator will review data of adherence level to antidepressants through CDW (VA Corporate Data Warehouse) before the treatment and intervention are implemented. The data is readily available being a part of the model of the VA SAIL metrics system used by the VA. The data from MDD 43/MDD 47 is developed on pharmacy orders and their corresponding CPT codes (Moon et al., 2018). The initial stage of the collection will start with screening. Will review data available in the corporate warehouse, documented in the pre-post survey stage. The screening at the initial stage would allow us to understand the adherence to the prescribed medication before the prescribed intervention is implemented (Moon et al., 2018). After this, the principal investigator will give an education-based intervention to the health care providers and health care support staff. The collection of the results post-stage will follow the education. The objective is to assess whether there is any significant difference in their adherence and medication compliance levels. The healthcare staff educates their patients on the probable adverse reactions and side effects of antidepressant medications. This information is a part of the principal investigator's work as a committee member on the VA SAIL for MDD 43/ MDD 47 metric.

Data Analysis

This DNP project will use a mixed method of data analysis, incorporating both quantitative and qualitative analysis methods. The quantitative data will be analyzed by comparing the baseline data and the final data to see whether any change has occurred in veterans' adherence levels. The qualitative data will be analyzed based on the health care professional's response to the pre/post survey to understand their perception, opinions, and knowledge on side effects and adverse reactions of antidepressants. The final analysis will combine the comparative data from the quantitative study and the qualitative data's exploratory understanding (Almeida, 2018). The DNP project will consist of research for 30 days on 50 different charts to measure the outcome of the intervention on adherence to medication in terms of the refill rates and follow-up visits. As a member of the workgroup/committee relating to MDD 43/MDD 47, access to the data is already available to the principal investigator regardless of this DNP project. Data will be collected from the database, and no chart review or patient contact will occur. De-identification will occur through de-coding with four numbers and a letter assigned to each veteran and staff member. The evaluation and education for the staff are strictly based on clinical practice guidelines. The pre/post evaluation of the education to staff will hopefully improve patient care.

Ethics

Currently, the only expectation regarding the publication of data is through The University of Southern Mississippi's digital repository, *Aquila*, which is a requirement of the Nurse Practitioner program and the USM Graduate School. Consequently, there is no intention to publish the research findings outside the university's digital repository

(www.aquila.usm.edu). The VA and IRB guidelines will be followed to guide the publication. Participation in this DNP project will have no financial requirements and no incentives provided.

Project Timeline

Chapters I and II were submitted in the month of July 2021 to the committee members and chairperson—the DNP project's principal investigator communicated with the primary care advanced practice nurse manager of outpatient centers about the proposed intervention program. The investigator sent an email to the supervisor working in mental March 2021, the investigator of the project attended a meeting with the committee members and chairperson regarding the proposed research. By the month of October 2021, the investigator of the project finished the PowerPoint and thereby proposed the research project. In the month of November 2021, relevant paperwork was sent by the project investigator to the USM and IRB. Formal approval to start with the research project was received in the month of November 2021 (IRB Protocol # 21-260). The Evidence-Based Clinical project of online training for primary care advanced practice nurses began in the month of December 2021and was completed in the month of January 2022, in the next year. The survey results were collected by the investigator of the project in the month of January 2022 followed by the analysis of the data by the investigator.

Summary

The DNP project summary will be based on the pre-test and post-test measures and how they relate to better knowledge and understanding of the primary care advanced practice nurses through education-based intervention. Improvement in the post-test will

be considered positive results from better knowledge and inculcation of education of the nurses about depression, treatment recommendations, adherence to a better understanding of the safety and antidepressant recommendations, and the ability to identify inadequate intervention among patients. The training aims to improve the clinical outcomes for patients through better knowledge of the primary care advanced practice nurses that can improve their confidence and help educate patients on medication adherence. An antidepressant protocol booklet was created to compel all the antidepressant information in one place, and a fishbone diagram to list stakeholders and barriers relating to nonadherence to antidepressant medications. Poor adherence is one of the key barriers to patient outcomes in terms of the treatment of depression. Therefore, this DNP project that focuses on improving medication adherence through better knowledge of the primary care advanced practice nurses can help to reduce mental health complications for the patients. The refill rates and follow-up charts will measure the intervention outcomes to evaluate how better education among primary care advanced practice nurses improves the refill rates. The data will be shared with all relevant stakeholders, and policies on primary care advanced practice nurses' education will be created to ensure that optimal knowledge and understanding exists about depression and prepare the primary care advanced practice nurses to provide optimal recommendations to influence positive health behavior among patients. The knowledge and understanding will create holistic support for the patients and improve the experience and satisfaction while developing better trust between advanced practice primary care nurses and patients.

CHAPTER III – RESULTS

This chapter analyses the results after the implementation of the intervention. The variables from Qualtrics were analyzed using the IBM Statistical Package for Social sciences (SPSS). 50 advanced practice nurses took part in the study, and 50 charts were analyzed before and after the intervention. The information analyzed from the charts includes medical possession rates (MPR) of antidepressants. Demographic information collected from the participants includes gender, age, nursing education, and marital status. The Qualtrics contained questions regarding the effect of the educational intervention on the management of depression patients. Frequencies and means were used to analyze demographic characteristics, while chi-square and t-tests were used to compare the change in refill rates as shown by changes in MPR before and after the intervention.

Results, Details of the Process, Measures, and Outcomes

The primary outcome was a change in refill rates and follow-up frequency among patients whose charts had been reviewed. The principal investigator reviewed the medication possession rates (MPR) for the 30 days and compared the baseline data after the education intervention. The baseline data was the information collected from the 50 charts and pre-test survey before the implementation of the intervention. The post-test survey data was the information after the 30 days under review and after implementing the education intervention. The principal investigator also assessed the advanced practice nurse's perception of the knowledge and confidence level improvement on antidepressants after the intervention.

Steps and Details

A pretest survey was carried out from the fifty charts selected. Informed consent was included in Qualtrics in the pre/post-test survey and obtained from the prospective participants that completed the survey. The principal investigator then presented a PowerPoint presentation with the education information to the advanced practice nurses in the monthly APRN Meeting. After the intervention, the advanced practice nurse's knowledge of antidepressants was assessed through a post-test survey sent through the Qualtrics application. The advanced practice nurses were to indicate if the education intervention improved their knowledge on antidepressants. The 50 charts were then reviewed 30 days after the intervention to determine the refill rates and follow-up visits from veterans as an indicator that the education intervention led to better treatment recommendations.

Context

The intervention included an education program that educated advanced practice nurses on depression and treatment recommendations. The education program included information on safely prescribing antidepressants, adherence requirements, side effects, identification of signs of poor adherence during follow-ups. An antidepressant protocol booklet that contains instructions on how to prescribe an antidepressant was created to use as an educational resource tool.

Results

The participants' mean age was 36 (SD, 20.4). Listed below in the table are specific demographic information The demographic information of interest is illustrated in Table 1 below.

Table 1

Demographic Information

Variables	n (%)
Gender	
Male	10 (20)
Female	40 (80)
Race	
White	18 (36)
African American	24 (48)
Other races	8 (16)
Marital Status	
Not Married	30 (60)
Married	20 (40)
Nursing education Level	
MSN	26 (52)
DNP	24 (48)

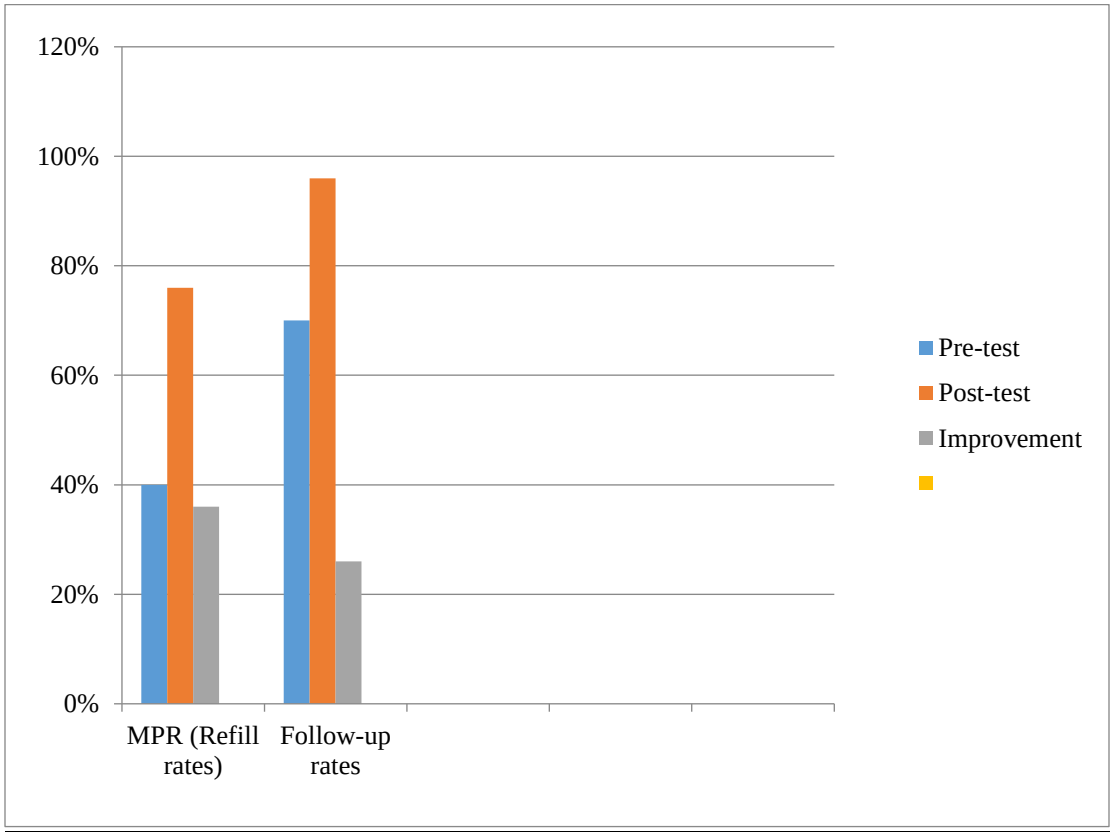
Refill Rates

From the 50 charts reviewed, only 20 (40%) had an MPR of more than 80%. After the intervention and after the 30 days review, 38 charts (76%) indicated an MPR of more than 80%, a 36% improvement. The improvement was a significant change in the MPR ($p=0.001$), indicating an increase in the refill rates. From the baseline data, only 35

charts (70%) indicated a history of the follow-up visit. After the intervention, 48 charts (96%) revealed a follow-up visit indicating a 26% improvement. Therefore, a significant change in the follow-up visit after the intervention (p=0.001). The information is illustrated in the graph below (Table 2).

Table 2

Follow-Up Rates



Knowledge Improvement

From the Qualtrics results, all the advanced practice nurses indicated that the education intervention was beneficial in their treatment recommendations. The educational resources were helpful in explaining antidepressants to the veterans. All the

advanced practice nurses also indicated that they would recommend the education program to be incorporated into the hospital continuing education program.

Observed Association

Therefore, a significant relationship between knowledge and confidence level improvement and the educational intervention ($p=0.001$). There was also a meaningful relationship between the MPR and follow-up visits. The educational intervention also yielded improvement ($p \leq 0.05$).

Unintended Consequences

The DNP project produced desired results. Therefore, a significant change in the refill rates and follow-up visit frequency, and the perception of knowledge and confidence level on antidepressants among the advanced practice nurses improved. The DNP project revealed no significant unintended consequences.

Details of Missing Data

Participants' personal and sensitive information was coded to maintain anonymity. All the other relevant information was collected and analyzed. Therefore, this DNP project produced no missing data.

Summary

In conclusion, there was an improvement in the refill rates as measured by the MPR before and after the intervention. The DNP project revealed a significant change in the follow-up visit frequency, and the advanced practice nurses' perception of the knowledge and confidence level on antidepressants.. The advanced practice nurses agreed anonymously that the education intervention was beneficial in boosting their knowledge and confidence level on antidepressants.

CHAPTER IV – DISCUSSION

Introduction

This chapter is an analysis of the results obtained from the project. The pre-test survey results will be compared with the post-test survey results. The key findings will be discussed, and interpretations made. The strengths and relevance of the project will also be discussed in relation to the outcomes and other projects' findings. Finally, the principal investigator will make recommendations and discuss a sustainability plan.

Key Findings, Relevance, and Strengths

After implementing the intervention, the post-test survey results indicated an improvement in refill rates. The follow-up visit frequency also improved significantly, and the advanced practice nurses' knowledge and confidence level perception on antidepressants improved. The strength of this study is that the results obtained are reliable since the tools were pretested before actual implementation.

Interpretation

After implementing the intervention, the post-test survey results indicated an improvement in refill rates, as shown by the improvement in MPR. The follow-up visit frequency also improved significantly, and the knowledge and confidence level perception on antidepressants improved. Improved knowledge and confidence level in prescribing antidepressants means that advanced practice nurses are better prepared to provide treatment recommendations such as advancing patient education on medication adherence and side effects. The improved knowledge also improves the advanced practice nurses' confidence while working with depression patients, thereby providing better treatment services (Gerogianni et al., 2019). The improved knowledge of managing

depression is evidenced by the improved refill rates and follow-up visit frequency after the intervention.

Patient education is a critical component in depression management. Through patient education, patients understand the benefits and risks of antidepressants adherence. The patients also understand how to check for medication side effects and when to seek medical attention (Yeh et al., 2018). A patient also has the right to understand the rationale behind the choice of antidepressants and the expected side effects and outcomes. A patient who is well informed feels involved in the treatment plan, which enhances the collaboration between the patient and the advanced practice provider (Lynggaard et al., 2017). Patients who are also well-informed embrace self-care management as they understand their role in managing their condition. The patient's involvement through patient education enhances compliance to medication and follow-up visits. Patient education also enhances the patient's decision-making by allowing the patient to make informed decisions regarding treatment and compliance to medication and follow-up (Lynggaard et al., 2017). Generally, it is the responsibility of advanced practice nurses to advance patient education, and therefore a continuous education of patient recommendations is necessary to improve the knowledge in depression management.

Limitations

Although this DNP project had significant strengths which led to the attainment of the proposed objectives, it was not without limitations. One of the limitations is that the baseline information was gathered from charts already reported and analyzed. Therefore, if there were any misinformation from the charts, they were translated to the analysis of

the project. Another limitation is the limited period of 30 days that the principal investigator utilized to observe the outcome of the intervention. Behavior change is a dynamic process and may take a relatively long period to show significant results (Vogel et al., 2017). Therefore, the limited project time frame is also another limitation.

Conclusions

Therefore, the education intervention enhanced confidence and improved knowledge levels in depression management, which translated to improved patient management and, consequently, improved patient outcomes. After implementing the intervention, the post-test survey results indicated an improvement in refill rates, as shown by the improvement in MPR. The follow-up visit frequency also improved significantly, and the advanced practice nurse's knowledge and confidence level perception on antidepressants improved.

The Usefulness of the Work

The positive clinical outcomes after implementing the education intervention indicate that educating primary care advanced practice nurses on antidepressants is critical in improving patient outcomes. Therefore, an education program on antidepressants contributed to the improvement of advanced practice nurses' knowledge on depression management and consequently resulted in improved medication adherence and follow-up visit frequency. Therefore, the DNP project significantly contributed to improving the quality of life of depression patients by enhancing the knowledge and confidence levels of primary care advanced practice nurses prescribing antidepressants.

Sustainability

From the positive outcomes after implementing the education intervention, recommendations are made that all the advanced practice nurses working with depression patients are educated on antidepressants. Other healthcare providers who manage depression patients should also go through educational intervention to improve their knowledge on antidepressants. Therefore, the learning materials are sent to the hospital's continuing education program offices for integrating into the facility's education program.

Suggested Next Steps

Hospitals, therefore, should recommend continuous education for their advanced practice nurses on prescribing antidepressants. An education program on depression management should be included in the continuous education program. The hospitals can also institute a policy where advanced practice nurses dealing with depression patients and prescribing antidepressants will have an opportunity to go through.

Project Summary

In conclusion, the results indicate that improved knowledge on depression management translates to better medication adherence, improved follow-up frequency, and improved patient satisfaction. Therefore, the education intervention contributed to the improvement of advanced primary care nurses' knowledge on depression management and consequently the improvement of patient outcomes. Therefore, knowledge-based interventions for depression management among primary care advanced practice nurses improve patient outcomes through better medication adherence, increased follow-up frequency, and decrease relapses. Therefore, the education intervention helped improve the advanced primary care nurses' knowledge of depression management.

APPENDIX A – IRB Approval Letters

Office *of* Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

118 COLLEGE DRIVE #5116 • HATTIESBURG, MS | 601.266.6756 | WWW.USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident submission on InfoEd IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER:	21-260
PROJECT TITLE:	IMPROVE PRIMARY CARE ADVANCED PRACTICE NURSE'S KNOWLEDGE OF DEPRESSION BY EDUCATIONAL INTERVENTIONS AND TREATMENT RECOMMENDATIONS
SCHOOL/PROGRAM	Leadership & Advanced Nursing
RESEARCHERS:	PI: Dorothy Adams Investigators: Adams, Dorothy~Coleman, Carolyn~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Expedited Category
PERIOD OF APPROVAL:	09-Dec-2021 to 08-Dec-2022

Donald Sacco

Donald Sacco, Ph.D.
Institutional Review Board Chairperson")

Department of Veterans Affairs

Memorandum

Date: March 25, 2021

From: Reviewer, Institutional Review Board (IRB)

Subj: Will educating nurse practitioners and registered nurses working in mental health and primary care outpatient clinics to educate veterans diagnosed with depression about side effects and adverse reactions to newly prescribed antidepressants as compared to not providing education improve adherence/medication compliance in three months?

To: Dorothy Adams, Principal Investigator

Thank you for submitting your protocol for IRB review. After review and discussion with you and the IRB chair it has been determined that this is not research.

VHA handbook 1200.05(2) defines research as a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

This project does not meet the definition of human subjects research according to the Revised Common Rule. It is determined that activities designed and implemented for internal VA purposes, or not designed to produce information that expands the knowledge base of a scientific discipline, are not considered to be research.

If you would like additional information, please contact Merchell Pittman, Administrative Officer, at extention 5-1041.

Sincererly,

3/25/2021

X Mary Jane Burton

Marv Jane Burton

SiQned bv: Marv J. Burton 193894

Mary Jane Burton, M.D.

G. V. (SONNY) MONTGOMERY
DEPARTMENT OF VETERANS AFFAIRS
MEDICAL CENTER
1500 East Woodrow Wilson Drive
Jackson, MS 39216-5199

April 20, 2021

The University of Southern Mississippi
DNP Program

RE: Dorothy Adams, DNP Student

To whom it may concern,

I am Dr. Nita Magee, PhD, MHNP-BC, direct supervisor for Mrs. Dorothy Adams. I am also a member of the leadership team for the clinic involved in the project.

This letter is to confirm of our awareness of Mrs. Adams proposal for her DNP project. She is approved to complete in the Mental Health Outpatient Specialty Team.

If you need any additional information, please feel free to contact me at 601-362-4471 Ext 51793 or nita.magee@va.gov

Nita A. Magee 199749

Digitally signed by Nita A. Magee 199749
Date: 2021.04.20 13:06:51 -05'00'

APPENDIX B – Pre-Post Survey

1. I feel comfortable educating the veterans about potential side effects of antidepressants I prescribe.

   ☐ Extremely Comfortable

   ☐ Very Comfortable

   ☐ Slightly Comfortable

   ☐ Not at all Comfortable

   ☐ Other (please specify)

2. Do you think you have enough time to educate veterans about prescribed medication? (Yes/No)

3. I feel comfortable consulting colleagues/peers/pharmacy when I am uncertain of prescribing antidepressants.

   ☐ Extremely Comfortable

   ☐ Very Comfortable

   ☐ Slightly Comfortable

   ☐ Not at all Comfortable

   ☐ Other (please specify)

4. When do you offer discussion of side effects and adverse reactions?

    1. Initial visit
    2. First follow-up
    3. RN or LPN on PACT/BHIP team offer
    4. Allow pharmacy to discuss details
    5. Other (identify)_____

5. How often do you find your assigned veteran failing to adhere to prescription requirements?

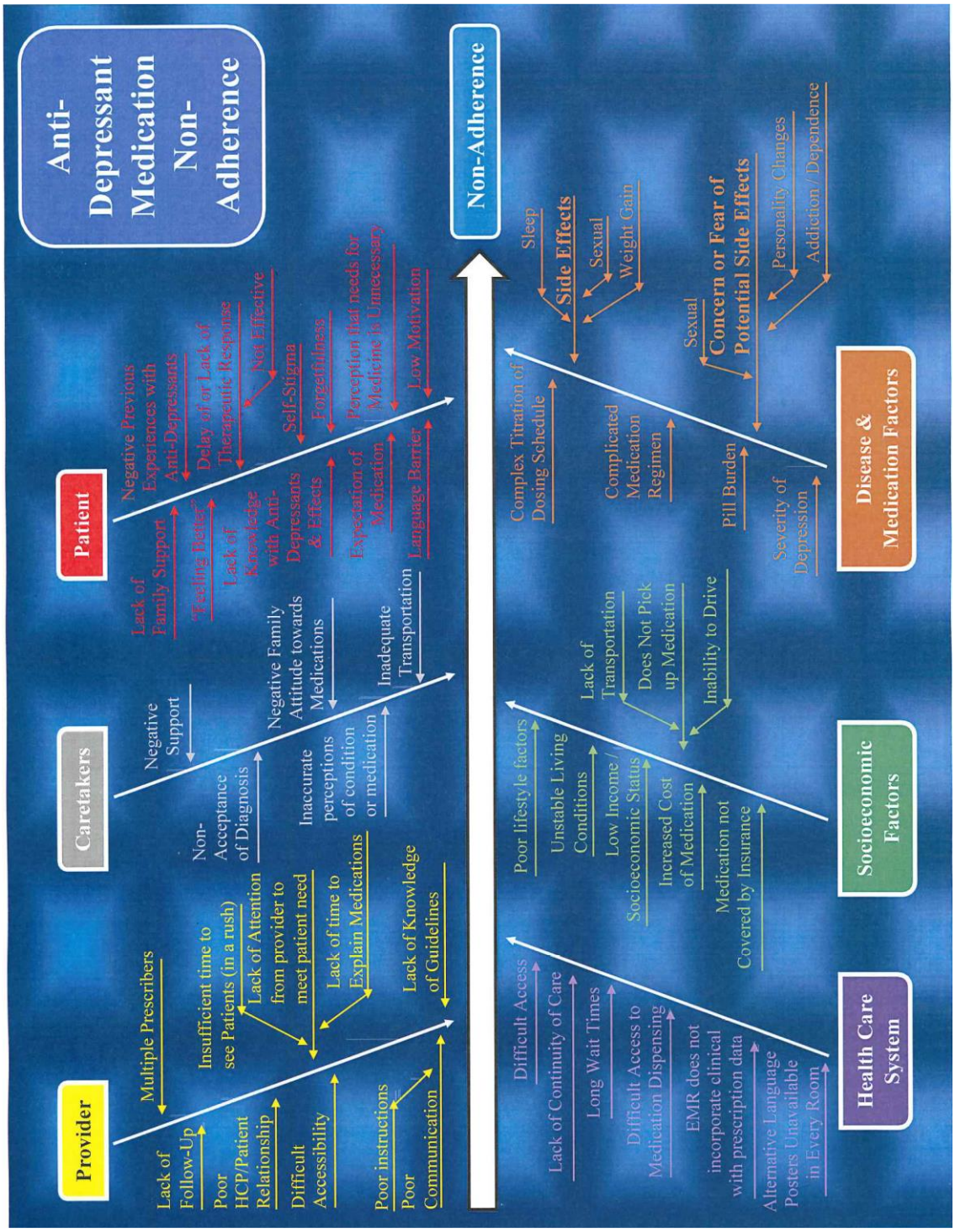
    Approximately < 25% of the adherence/compliance failure

    Approximately 25% to 50% adherence/compliance failure

    At least > than 50% adherence/compliance failure

6. Do you think physician-to-patient rapport improves adherence to antidepressants? (Yes/No)
7. Do you think a knowledge of medication safety for antidepressants helps to improve prescription adherence? (Yes/No)
8. Have you identified barriers you believe contribute to non-compliance/non-adherence? If yes, please identify.

APPENDIX C – Fishbone PIP



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