Implementation of Abnormal Involuntary Movement Scale (AIMS) Protocol for Early Detection of Tardive Dyskinesia in Outpatient Psychiatric Clinic

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Abstract

The problem under investigation: Implementing Abnormal Involuntary Movement Scale (AIMS) Protocol for Early Detection of Tardive Dyskinesia in Outpatient Psychiatric Clinic.

Background: Tardive Dyskinesia is associated with the potential irreversible adverse side effect of antipsychotic medications, manifested as abnormal involuntary movement of the body seen in areas of the mouth, face, trunk, and extremities. Literature reports that five years after introducing first-generation antipsychotic (FGA) drugs, such as haloperidol, fluphenazine, chlorpromazine, and Thorazine, in 1952, there were concerns regarding the medication side effects in patients using these drugs. Second-generation antipsychotics (SGAs) were developed to reduce the impact of TD on patients; however, the problem of TD persists. TD is the drug-induced side effect of FGAs and SGAs used in treating schizophrenia and bipolar and, in some cases, used as an adjunct treatment for major depression and OCD. TD is relatively common but underrecognized.

Methods: An educational presentation was designed as a quality improvement project to guide the methodology of this DNP project. The quality improvement project was held in an outpatient psychiatric medical group between June 6 to July 9, 2022. The participants included providers (n=12) and non-providers (n=4) from different satellite offices of the medical group. Modalities consisted of in-office and online versions. The delivery modalities were chosen due to the Covid-19 global pandemic to provide opportunities for the HCPs to participate. Pre and post-test scores were administered before and after the educational intervention via the PowerPoint presentation to compare the rate of understanding of the material presented. Retrospective data were collected before and after the implementation for analysis.

Intervention: Includes an educational PowerPoint presentation to the HCPs on the following: TD and AIMS tool; tardive dyskinesia overview; signs and symptoms of TD; how to recognize TD in a patient taking antipsychotic medications; the purpose of using AIMS tool; and videos demonstrating proper procedures of conducting TD assessments using AIMS tool.

Results: After implementation, the results were analyzed and compared to the three project objectives. There was a statistically significant improvement in knowledge, as evidenced by the p-value of <0.05. The mean test score jumped from 93% to 98%. The AIMS documentation in patients' electronic medical records improved from 14% (n= 51) to 85% (n=309). The Chi-square test for goodness of fit for the TD diagnosed post-educational intervention compared to the nationwide study, which states that at least 20% of patients treated with antipsychotic medications will develop TD in their lifetime, indicates considerable statistical significance with p <.001, supporting the nationwide study.

Conclusions: Providing education to the HCPs on the TD overview and developing AIMS protocol increased knowledge, improved utilization of the AIMS tool, and documentation of the tool in the patient's Electronic Medical Records (EMRs).

Keywords: Abnormal Involuntary Body Movement, atypical and typical antipsychotics, dopamine receptor-blocking agent, and screening tool.

Implementation of Abnormal Involuntary Movement Scale (AIMS) Protocol

For Early Detection of Tardive Dyskinesia in Outpatient Psychiatric Clinic

The advent of antipsychotic drugs in 1952 introduced drug-induced movement disorders (Ricciardi et al., 2019). Drug-induced movement disorders remain a significant concern in treating mental illness with antipsychotic drugs (Kumsa et al., 2020). Patients with mental conditions such as schizophrenia and bipolar disorder benefit from antipsychotic medication treatment; however, they are more prone to developing abnormal movement side effects in the long run.

Antipsychotic-induced movement disorders represent a significant and troublesome complication in psychiatric management (Desai et al., 2018). Antipsychotic medications are dopamine antagonists that bind to dopamine-2 (D2) receptors, blocking the dopamine-receptor binding capability (Stahl, 2013). They affect four dopaminergic pathways in the brain: mesolimbic, mesocortical, nigrostriatal, and tuberoinfundibular; However, overactivation of the mesolimbic dopamine pathway is correlated with psychotic features like hallucinations; and receptor-blocking agents along that pathway reduce positive symptoms such as hallucination, delusional thoughts, paranoia as seen in Psychotic patients (Stahl, 2013). In contrast, the nigrostriatal dopamine pathway is correlated with movement production; thus, blockage in this pathway leads to motor side effects known as extrapyramidal symptoms (EPS), including drug-induced Parkinsonism akathisia dystonia and muscle rigidity (Stahl, 2013). However, chronic blockade of D2 receptors may cause receptor hypersensitivity or upregulate the number of receptors on the postsynaptic cell, thereby causing hyperkinetic movement disorders such as tardive dyskinesia (TD) (Stahl, 2013).

First-general antipsychotics (FGA) and Second-generation antipsychotics (SGA) are the

two medication classifications that cause TD after chronic utilization, which may produce negative self-esteem in the patients affected (Loughlin et al., 2019). The most used FGAs and SGAs are seen in (Appendix A). TD condition is a repetitive, involuntary movement that affects the face, tongue, lip, neck, and lower and upper extremities of the body; eight seven percent of TD cases are irreversible, despite discontinuation of the causative medication (Loughlin et al., 2019). TD symptoms can be socially embarrassing, stigmatizing, and associated with poor quality of life (Loughlin et al., 2019; Desai et al., 2018).

TD may be unfamiliar to patients and challenging for clinicians to identify due to the masking of symptoms by other medications' side effects, conditions, and lack of TD awareness (Jain & Correll, 2018; Citrome & Saklad, 2020). Additionally, patients may be at risk for TD due to the multiple uses of FGAs and SGAs to treat other psychiatric conditions, including obsessive-compulsive disorder, eating disorders, and post-traumatic stress disorder (Loughlin et al., 2019; Ricciardi et al., 2019; Kremens, 2019). Therefore, early identification of the symptoms necessitates better patient outcomes.

American Psychiatric Association [APA], 2020 and the American Association of Neurology [AAN], 2013 have recommended various modalities for TD treatment, including reduction, discontinuation of the medication, and use of evidence-based screening tools such as the Abnormal Involuntary Movement Scale (AIMS) (Kane et al., 2018). The AIMS is a screening tool published by the Psychopharmacology Research Branch of the National Institute of Mental Health in 1976 to help clinicians detect TD in patients taking antipsychotic medications. Another device, such as the extrapyramidal rating scale (ESRS), is utilized to assess clinical manifestations of movement disorder due to side effects of FGAs and SGAs (Kane et al., 2018); however, AIMS is the most notable and has been determined to be valid and reliable

(Kane et al., 2018). AIMS tool assesses dyskinesia severity in 12 items which comprise five categories: facial and oral movements, extremity movement, trunk movement, global movement, and dental status. When utilizing the tool, clinicians must have solid observational skills (Appendix B).

Background

TD is a condition with the potential for irreversible abnormal involuntary movements associated with dopamine receptor-blocking agents (DRBAs) due to the chronic use of antipsychotic medications (Kane et al., 2018). TD produces significant impairment of functioning and poor quality of life for patients (Kremens, 2019). Literature reports that five years after introducing FGAs drugs such as haloperidol, fluphenazine, chlorpromazine, and Thorazine, in 1964, there were concerns regarding the medication side effects in psychiatric patients (Kane et al., 2018). SGAs were developed to reduce the drug-induced TD, but TD continues to be a problem even after developing this new class of antipsychotics (Kane et al., 2018).

The word "tardive" refers to the delayed onset of motor disturbance following treatment with psychotic drugs, manifesting as chewing, tongue protrusions, and choreoathetosis movements of the extremities (Kane et al., 2018). The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition [DSM-5] (2013) defines tardive dyskinesia as a drug-induced movement disorder that persists despite discontinuation or change of drugs. DSM-5 stipulates that TD symptoms must persist for at least one month after discontinuation of the causative drug to make the diagnosis (Vasan & Padhy, 2021).

According to Ricciardi et al. (2019), a meta-analysis of 41 studies highlighted TD prevalence during treatment with FGAs and SGA. These studies observed a lower mean TD

prevalence rate of 21% in SGA patients versus 30% in FGA medications, indicating that SGA could be a better choice than FGA. Furthermore, movement disorder has been documented in patients using antiemetic drugs for gastrointestinal disorders (i.e., metoclopramide). Such movements need thorough differentiation from TD associated with antipsychotic medications (Citrome & Saklad, 2020; Kane et al., 2018).

The animal study using antidotes such as anticholinergic to treat movement disorder prompted the incorrect use of this medication in treating TD in practice settings (Vasan & Padhy, 2021; Bergman & Soares-Weiser, 2018). Utilizing Cogentin (Benztropine) is appropriate in treating the acute drug-induced movement disorder called extrapyramidal side effect (EPS). EPS symptoms are less severe and easily reversible than TD. The US Food and Drug Administration (FDA) approved two vesicular monoamine transporter two inhibitors (VMAT-2) for the treatment of TD (Kane et al., 2018; APA, 2020, AAN, 2013).

The key to treating the TD is early identification of the abnormal involuntary movement with the proper utilization of the AIMS tool (Citrome & Saklad, 2020; APA, 2020; Kane et al., 2018; AAN, 2013). The APA and AAN recommend using the AIMS tool regularly with those patients on antipsychotics (baseline, 3-12 months), depending on the risk factors (Kane et al., 2018). However, a more conventional approach advocates briefly examining abnormal movement during every routine office visit (Kane et al., 2018). Besides, screening more often leads to early identification of TD, and treatment with the VMAT-2 inhibitor that is FDA-approved will reduce cost and improve the quality of life (Citrome & Saklad, 2020; Kane et al., 2018).

Healthcare cost is a concern; evidence demonstrates that patients with TD utilize healthcare resources more than those without, and their quality of life is poor if not treated

(Caroll & Irwin, 2019). Caroll & Irwin, (2019) shows increase in cost due to health care utilization after diagnosis of TD than for those without TD during the post-TD-diagnosis time-inpatient admissions (55.5% vs. 26.1%; $P < 0.001$) and emergency room visits (61.5% vs. 50.6%; $P < 0.001$). Total healthcare costs were significantly greater for patients with TD than for those without TD ($54,656 vs. $28,777; $P < 0.001$). However, using AIMS alone is not diagnostic; Healthcare Providers (HCPs) need a thorough history of treatment with DRBAs and systematic assessment (Kane et al., 2018). This DNP scholarly quality improvement (QI) project will educate the HCPs on using AIMS tools to identify TD early for treatment initiation to improve patients' quality of life.

Problem Identification

TD is a concern due to the prevalence rate among the patients treated with antipsychotic drugs, including FGAs and SGAs. Vasan & Padhy, 2012, highlighted that at least 20% of all patients treated with antipsychotic drugs have TD. Furthermore, a study conducted by Desai et al., 2017 on Indian patients demonstrated a high incidence of TD in patients treated with antipsychotics for disorders such as schizophrenia, bipolar, and patients of epilepsy with psychosis, demonstrating that the effect of the D2 blocking agent side effect is a global incident and needs attention.

In the study on the cost-effectiveness of patients diagnosed with TD vs. non-TD patients, Carroll & Irwin, 2019 highlighted that those diagnosed with TD 12 months before non-TD patients utilized more healthcare resources ($54,656 vs. & $28,777; P<0.001). Moreover, the rate of healthcare utilization and cost were remarkably high. Hospitalization time in post TD-diagnoses vs. non-TD were (55.5% vs. 26.1%; P>0.001) and emergency department visits (61.05% vs.50.6%; P, 0.001). The burden of TD cannot be underestimated. TDs seen in

chronically ill patients such as schizophrenia demonstrate high utilization of health care resources. The increased resource utilization by chronically mentally ill patients is estimated to be 26% of total healthcare costs (Carroll & Irwin, 2019).

Furthermore, the almost irreversibility of the disorder makes it a concern to healthcare providers and patients. TD is associated with personal suffering, poor medication compliance, and poor quality of life with increased medical morbidity and mortality (Kumsa et al., 2020; Carroll & Irwin, 2019). Annually, adults receiving FGAs and SGAs keep rising, and the elderly are more susceptible to TD than younger patients (Carroll & Irwin, 2019). The debilitating side effects of TD are alarming and of great concern to the patient, family members, and healthcare providers. Because TD is not fully recognized or somewhat overlooked in clinical settings, increasing awareness through healthcare provider-focused education on symptomologies of TD, utilization of evidence-based rating scales, and providing supportive care to the patient is essential.

Working in an Outpatient Psychiatric clinic has provided an opportunity to observe the lack of screening tools and documentation of tools in the patient electronic medical records (EMR). Outpatient Psychiatric clinic has been a psychiatric outpatient group for almost 25 years with many satellite offices and HCPs in Inland Empire, Southern California. Outpatient Psychiatric clinic services patients with various psychiatric problems aged 6 to 90+ years old. Antipsychotics are used frequently by providers to treat psychiatric disorders, including schizophrenia, bipolar, psychosis, major depressive disorder, and many others. Considering how often the providers utilize these classes of medications yet, not enough documentation is seen in the patients' EMRs taking these medications. As a student of Touro University undergoing a DNP program, the CEO/administrator of the Outpatient Psychiatric clinic was approached about

the observed lack of adequate AIMS tool utilization and documentation in the patient's EMRs. The negative consequences on the quality of life and the overall care outcome led to the consensus that education and AIMS protocol would be necessary for the medical group HCPs.

Purpose Statement

The use of DRBA in psychiatric patients has led to the development of TD in most patients and has resulted in poor quality of life for those impacted. We are educating the HCPs on using an evidence-based tool such as AIMS to assess the TD symptoms for early recognition and appropriate treatment with FDA-approved medications. This scholarly project aims to improve the HCPs' baseline knowledge in the early identification of TD in patients on antipsychotics and compliance with the new screening AIMS protocol with an increase in EMR AIMS documentation.

Project Question

In psychiatric HCPs caring for patients on FGAs and SGAs, would implementing an evidence-based AIMS-focused educational protocol, compared to current practice, increase the utilization of AIMS tools within five weeks?

Problem/Population/Patient: Healthcare providers (Nurse practitioners, Psychiatrist, Therapists, and Nursing staff) in the outpatient psychiatric setting

Intervention: Focused educational intervention and implementation of AIMS protocol

Comparison or issue of interest: current practice

Outcome: Improve knowledge, increase current practice in utilizing the AIMS tool for TD assessment and improve the documentation of AIMS assessment in patient's electronic medical record

Time: 5 weeks

Search Methods

A literature search was conducted using the following databases from Touro University Nevada (TUN) library: CINAHL, PubMed, and Cochrane systematic review; also, Google scholar was used outside of the TUN library. The keywords used were "Tardive dyskinesia," "movement disorder," "abnormal movement disorder," "antipsychotic medications," "screening tool," "AIMS tool," "Tardive Dyskinesias and schizophrenia," "first-generation antipsychotic and second-generation antipsychotics." The search yielded 15,100 articles and was narrowed down to 216 articles with the thorough application of the level of evidence and the importance to the clinical setting; out of these 216 articles, 50 were analyzed using the inclusive criteria for this DNP project. The *Inclusion criteria* include studies and reports in the English language within the last five years (2016 to 2021), full free-text articles, randomized controlled trials, and peer-reviewed journals. The *Exclusion criteria* were acute movement disorder, children with a movement disorder, seizures, non-antipsychotic-related medication-induced movement, essential tremors, and articles in a foreign language.

Additionally, studies were rated for methodological quality using the American Association of Critical-Care Nurses (AACN) Levels of Evidence (LOE) and Long & Donne's (2020) evidence-based medicine level of hierarchy. The investigator gave each article an arbitrary rating of A to M on fulfilling these criteria. The investigator narrowed the 50 articles down to 30 by critically appraising the clinical implications, level of evidence, and limitations (Appendix C).

Review of Literature

Upon reviewing the study methodologies, the study designs include four meta-analyses, three randomized controlled trials, ten qualitative studies, three systematic reviews, three retrospective, and other observational and interventional trials. These methodologies are relevant to the DNP

project because they produce best practices and reliable information to implement academic quality improvement. Furthermore, consideration was given to the critical appraisal of the research question, ethical ramifications, measurements, and instrumentation while analyzing the methodologies (Pinchbeck &Archer, 2020; Chism, 2019). The articles were clear and concise with the information discussed. The studies considered subject protection by obtaining permissions from the internal review board (IRB) where applicable and ensuring confidentiality (Moran et al., 2020). The statistical analysis of the studies discussed the descriptive and inferential statistical findings; the tables and figures were depicted in an organized, systematic manner, and the limitations were adequately explained in most cases (Creswell & Clark, 2017).

Review Synthesis

A common theme emerged in synthesizing the literature review with the DNP project question. The articles indicate a valid need for HCPs to improve recognition of TD through monitoring and consistent use of diagnostic criteria and rating scales such as AIMS to aid in the early detection of TD (Correll et al., 2019; Caroff et al., 2019). Correll et al., 2017 highlighted that the AIMS tool is a screening tool and not a diagnostic and should be used in conjunction with diagnostic criteria for making a probable TD diagnosis. They agree that early detection is essential for initiating treatment modalities, including using FDA-approved medications (VMAT-2) for treatment. Additionally, the evidence synthesis highlighted the limitations of using the AIMS tool despite its benefits in detecting TD (Correll et al., 2019; Caroff et al., 2019).

Furthermore, some of the articles acknowledged a lack of frequent utilization of the AIMS tool by HCPS, considering the regular prescription of DRBAs in in-patient and out-patient psychiatric settings in treating schizophrenia, bipolar disorder, and Major depressive disorder (Correll et al., 2019; Caroff et al., 2019). In a study of 7985 veterans receiving antipsychotics,

only 4706 (58.9%) had at least 1 AIMS examination; of these, 229 (4.9%) were diagnosed with possible TD (Caroff et al., 2019). Many articles have highlighted that TD is prevalent more in patients on FGAs (30.0%) than SGAs (20.7%) (Correll et al., 2017; Carbon, Hsieh, Kane, & Correll, 2017). Four studies conducted on 2088 patients between 2004 and 2008 among adult patients on FGAs and SGAs mean age 41.2years found that TD is low in patients on SGAs (2.7%) than FGAs (7.7%).

Project Rationale

Evidence Gaps and Controversies

The management of TD remains a challenge and problematic to HCPs, even with the discovery of the SGA after 1970. Most of the available data are over-five years old, and there are not enough measuring instruments to capture the symptoms for early management. According to the articles reviewed, the Simpson Dyskinesia Scale and the Extrapyramidal Symptom Rating Scale (ESRS) assess movement disorder but are not as reliable in detecting TD as AIMS. Furthermore, the utilization of the AIMS tool for evaluation and assessment, though considered the gold standard for TD measurement, has not adequately been studied and updated on its validity and reliability (Caroff et al., 2019). Studies support the need for HCPs to use the AIMS more in screening and diagnosing TD (Caroff et al., 2019; Correll et al., 2017) because of the easy accessibility and availability of the tool.

The gap in patients' understanding of their symptoms needs attention. The World Health Organization (WHO) recognizes the gap in services offered in mental health and calls for adequate provision of care to this cohort through an educational program for the providers to meet patients’ needs and provide necessary educational programs to fit patients' needs (WHO, n.d.). In 2008, WHO launched a Mental Health Gap Action Program (mhGAP). The program

uses evidence-based technical guidance, tools, and training packages to expand services for mental health patients.

While critically evaluating the literature shreds of evidence, some common themes emerged: education, knowledge, proper medication, and the correct rating tool. Providing education to HCPs and integrating the AIMS tools into patients' EMRs will increase the knowledge and skills of HCPs and facilitate quick AIMS assessments on patients on DRBAs (Correll, Kane, & Citrome, 2017). Additionally, the inconsistency among HCPs in using a measuring tool in the clinical setting to gather TD symptoms demonstrates a need for education and AIMS protocol development (Observation, n.d.). The latter proposal aligns with one of the WHO's objectives for mental health services (i.e., "educational program for HCPs") to meet the health needs of their patients.

Impact of the Problem

According to Healthy People 2030, half of all United States individuals will be diagnosed with mental health disorders at some point in their lifetime (CDC, 2018). Moreover, mental illness does not discriminate; it affects people of all ages, ethnicity, and gender. However, some groups are disproportionately affected due to genetic and socioeconomic status; and only half of the people diagnosed receive treatment (National Institutes of Mental Health, 2018). Those treated receive at least one antipsychotic drug, predisposing them to potential TD. TD concerns patients, families, and providers providing care to this cohort suffering from mental illness. These patients are exposed to long-term antipsychotic medications [Appendix A] (Patterson-Lomber et al., 2019). TD exacerbates social stigmatizations, low self-esteem, unemployment, behavioral problems, and medication noncompliance (Jain & Correll, 2018; Carbon et al., 2018).

Addressing the Problem with Current Evidence

Forty percent of patients on antipsychotic drugs exhibit abnormal motor side effects (Patterson-Lomber et al., 2019). The risk factors are associated with old age, long-term exposure to antipsychotics, female gender, comorbidities such as diabetes, high dosages of the medications, and higher incidence seen in the use of FGA than in SGA (Patterson-Lomber et al., 2019; D'Abreu, Akbar, & Friedman, 2018). Articles have shown TD prevalence of about 30.0% on FGAs versus 20.7% in patients on SGAs (Carbon et al., 2017; Patterson-Lomber et al., 2019; Martino & Morgante, 2017), demonstrating that TD is a concern irrespective of the antipsychotic class.

Prevention, early recognition, and treatment by clinicians continue to be a challenge in the clinical setting; and are attributed to the following: delayed symptoms onset, masking of the symptoms by other drugs that cause TD, misclassification of the symptoms, and variability in the timeline (Martino & Morgante, 2017). Additionally, many articles highlight that even with a definite diagnosis of the TD, withdrawal of causative medication or dosage reduction exposes the patient to an additional risk of illness exacerbation (D'Abreu, Akbar, & Friedman, 2018).

Theme Development

Relevant Background

TD is a chronic disorder observed in one or more body areas. It consists of abnormal involuntary body movement seen in patients on dopamine receptor-blocking agents such as antipsychotic drugs used to treat schizophrenia, bipolar disorder, major depressive disorder, and other related disorders (Correll et al., 2018; Kane et al., 2018). TD was devised in 1964, and treatment attempts began in the early 1970s (Cloud et al., 2014). TD diagnoses are based on the DSM-5 criteria in the clinical setting, including patients' clinical presentation, evaluation to rule out other conditions, and medication history of antipsychotic drugs. While the DSM-5 criteria

are the standard, Schooler and Kane have criteria for TD diagnosis requiring a patient's history of DRBA and persistent abnormal movements after discontinuing the antipsychotic drug (Kane et al., 2018).

The National Institute of Mental Health initially developed AIMS for research purposes with 12 items and later modified it to 14 (Kane et al., 2018). The tool is considered one of the standard tools used in measuring TD in research and clinical settings. Kane et al., 2018 highlighted some of the other items' challenges in generalizing the tool. One of these challenges is that the items are subjective data, making quantification challenging (Kane et al., 2018). AIMS is considered a screening tool more than a diagnostic tool and requires additional clinical assessment for conclusive TD diagnosis in a patient (Kane et al., 2018).

The articles established that AIMS is easy to administer and readily available in the clinical setting; however, the lack of linearity in the total score creates interrater variability concerns for HCPs. Kane et al., 2018 recommended that institutions or practices develop protocols for screening, diagnosing, and monitoring TD with AIMS to ensure the scale’s reliability.

What is Currently Understood

The long-term use of antipsychotic drugs causes TD, which severely debilitates patients (Kumsa et al., 2020; Desai et al., 2018; Kane et al., 2018; Carroll & Irwin, 2019; Stahl, 2013). The effect of TD adds to the social isolation, stigmatization, and negative impact on daily functioning or quality of life for those affected (Loughlin et al., 2019; Desai et al., 2018; Kane et al., 20118). Many authors have highlighted the lack of adequate knowledge among the HCPs (Jain & Correll, 2018; Citrome & Saklad, 2020); Kane et al., 2018 and Meyer, 2018 report that

new interest in TD amongst the HCPs will encourage and potentially transform individuals affected by TD.

FDA approved two drugs for the treatment of TD. Besides drug treatment, monitoring and recognizing TD are critical for HCPs prescribing DRBAs (Kane et al., 2018). Furthermore, using the AIMS tool in the early assessment of TD is essential (Kane et al., 2018).

The literature suggested using AIMS at the early stages of TD assessment; however, the lack of utilization, interpretation, and documentation of AIMS in an outpatient setting by HCPs is a concern. Moreover, it is understood that AIMS is challenging for experienced raters due to a lack of detailed instruction and descriptors, which have prompted the development of newer versions of the tool with detailed instructions for examination (Kane et al., 2018). Any HCP can administer the AIMS with proper training at baseline intervals, 3-12 months, depending on the risk factors (APA, 2020; AAN, 2013; Kane et al. 2018). Additionally, Healthcare cost is higher amongst TD patients than those without (Caroll & Irwin, 2019)

Discussion of National Guidelines

The American Psychiatric Association (APA) guidelines for treating schizophrenia support using a measuring tool (such as AIMS) and drugs in the clinical setting to manage the side effect of patients on DRBAs (2020). The APA agrees that early identification of patients affected by TD will improve patient outcomes regarding medication compliance and functional capability, increase the quality of life and provide better cost containment in general (APA, 1979). The APA TD Task Force in 1992 recommended discontinuation of the antipsychotic and dose reduction as a logical treatment plan for managing TD; however, dosage reduction is appropriate where discontinuation would exacerbate the patient illness (Kane et al., 2018). The APA guideline for treating patients with schizophrenia recommends switching to SGAs over

FGAs due to their low risk of TD (Ricciardi et al., 2019; Kane et al., 22018; AHRQ, 2014); and using the AIMS as a tool to facilitate TD identification in a clinical setting for uniformity and standardization of data metrics among the HCPs. The AIMS tool takes approximately 10 minutes to administer by a trained HCP. AIMS form is accessible via several applications, i.e., mobile devices, electronic health records, and phones. AIMS is a 5-point scale that scores facial and oral movement, extremity movements, trunk movements, global judgments, and dental status. The AIMS is also valuable for monitoring treatment effects over time and adjusting medications. According to APA, the AIMS should be administered at baseline, three months, six months, and12 months. However, for older adults, it should be every visit.

Contextual Information

The Agency for Healthcare Research and Quality (AHRQ) supports the need to choose SGAs over FGAs in one of their systematic review surveillance programs due to the decreased adverse side effects associated with SGAs in adults with bipolar disorders and schizophrenia disorders treated with antipsychotic drugs. (AHRQ, 2014). In the clinical setting, after interviewing some of the HCPs, it was deduced that there is a need for more studies on TDs and the use of the AIMS tool or other standardized tools to help measure TD in the early stage. Few mentioned time constraints and patient cooperation during the AIMS administration (Personal communication, 1/17/2022). The following are the common themes shared by the articles reviewed:

Lack of knowledge. There is a consensus on the lack of knowledge amongst many HCPS as demonstrated by inconsistent utilization of measurement-based care (MBC), which includes using the AIMS tool in screening for TD in out-patient settings (King, Beehler, Funderburk et al., 2018; Loughlin et al., 2018). Through their descriptive qualitative

observational studies of the Veteran cohort, the study collected data from 28,376 patients, primarily male (89.8%), in an out-patient setting using data recorded on screening and measurement tools in patients' EMR from 2014 to 2015 (period of one-year data collection). The study result was consistent with the other literature findings, such as documentation inconsistency, providers' time and resource limitations, lack of knowledge on how to use the measurement tool in clinical decision-making, undervaluation of the benefits of MBC, and lack of specific guidelines to use standard measures (King et al., 2018).

The article highlighted the numerous benefits of MBC, such as higher-quality care, facilitation of communication amongst HCPs, and early diagnosis (King et al., 2018). Adequate education would increase the knowledge base and provide skills for practical assessment of TD symptoms to promote health-related quality of life (HRQOL) for those with TD (McEvoy et al., 2019; Correll et al., 2017; King et al., 2018). Regarding the providers' time limitation, Johnson, 2017, reports that administering AIMS tools during patient encounters by an HCP takes less than 10 minutes.

Romeu et al., 2021 conducted a single-site audit of in-patient Units at Becklin Center between November 2020 and January 2021 on patients taking antipsychotics and found that out of 33 patients that were on antipsychotics for over three months, only 3 (9.1%) received an AIMs assessment, which they attributed to "lack of awareness of the relevant guidance." The literature suggested best practice for this lack of knowledge is to educate and provide evidence-based guidelines or protocols for the clinical site to adopt (Ricciardi et al., 2019)

Early detection of TD. Early detection is the key to treating TD, especially in adult patients. Jeste et al., 1999 conducted a descriptive qualitative study of 307 psychiatric out-patients and examined the cumulative incidence of tardive dyskinesia at intervals of 1, 3, 6,9, and

12 months; they found that the cumulative incidence of TD was 3.4% and 5.9% at 1 and 3 months respectively; after 3months is 5.9%. And no significant difference in the other 12 months' cumulative incidence. They concluded that a substantial proportion of patients develop TD early during antipsychotic treatment. They recommend using the AIMS tool to detect and initiate optimal therapy (APA, 2013; AAN, 2020). Blumbergert et al., 2013 conducted a study on the benefit of using the AIMS tool for measuring 259 patients. The result showed a significant detection of TD in some of the patients taking antipsychotics, which led to the development of treatment protocol in that facility.

SGAs over FGAs. SGA is a popular drug class due to its novel binding profiles (Xu & Zhuang, 2019; AHRQ, 2014). Among the many studies conducted, the meta-analyses by Carbon et al., 2017 compared SGAs vs. FGAs on the prevalence of TD shows a correlation with SGAs with fewer TDs. The study duration ranges from 2000 to 2015 data collection on patients treated with antipsychotic drugs. Out of 203 articles analyzed, 41 studies were selected and analyzed by two independent TD moderators. The result across the 41 studies depicted a global TD prevalence mean of 25.3%: however, a lower TD rate in SGA treatment (20.7%) vs. FGA treatment (30.0%) was observed with the help of the AIMS scores.

Another study was done by Hazari et al., 2013, and they reviewed 2 RCTs of 32 patients with schizophrenia by comparing clozapine and haloperidol on their effects on TD. The first RCT found a significant difference in TD severity in the group treated with haloperidol over a period and a decrease in AIMS score in the clozapine group after 4months of treatment. In the second study, 423 in-patients with refractory schizophrenia were randomized to haloperidol +benztropine or clozapine plus placebo for one year. After one year, the baseline AIMS score was compared with scores over time, and discovered a marked decrease in the clozapine vs.

haloperidol group. The studies show that the use of SGAs over FGAs reduces the debilitating symptoms of TD (Patterson-Lomba et al., 2019).

Reliability and Validity of the AIMS. Literature highlights the importance of using MBC to systematically collect data to inform clinical decision-making and monitor treatment outcomes (King et al., 2018). The literature supports the AIMS tool as a great measuring tool. However, the "true" reliability and validity have not been established due to the different interpretations seen in the clinical practice; more information, such as the history of antipsychotic assessment, clinical evaluation of symptoms, and discontinuation history of antipsychotic medications are required in conjunction with AIMS tool for TD diagnosis (Kane et al., 2018; Correll et al., 2017).

Nevertheless, the tool has shown some effectiveness in TD diagnosis. A systematic study was conducted by Smith et al., 1979 on 293 in-patients diagnosed with primary and secondary schizophrenia. The AIMS was used to evaluate TD; 30% TD prevalence was found using a criterion rating of 3 or more on the AIMS. They found that females had a higher prevalence and concluded that the AIMS is reliable for evaluating TD. Furthermore, in comparing the AIMS and Extrapyramidal Side Effect Rating Scale (ESRS), AIMS was found more superior in detecting TD than ESRS (Gharabawi et al., 2005; Kane et al., 2018).

Conclusion with Resolution

The literature found that TD is a problem that requires attention. They also expressed a lack of adequate studies on instruments to properly assess and evaluate TD at an early stage of antipsychotic treatment. According to Carbon et al., 2018, most studies on TD and AIMS are shorter than 3months which in most cases is the minimum duration required to diagnose TD; more time should be allowed during studies of TD to capture whole incidents of TD.

Moreover, most of the tools developed are not universally accepted due to different interpretations (Smith et al., 1979). However, the AIMS tool, so far, is available in clinical practice sites but lacks frequent HCPs' utility. Literature suggests that education, guidelines, or protocol development will mitigate this issue (McEvoy et al., 2019; Correll et al., 2017; King et al., 2018; Ricciardi et al., 2019) goal of this scholarly DNP capstone project.

Project Aim

This DNP project aims to increase the knowledge of the HCPs in using the AIMS tool protocol in screening for TD in patients taking antipsychotic medications for early detection to reduce or prevent adverse side effects. The American Psychiatric Association guideline for treating schizophrenia recommends TD screening at baseline, three months, six months, and 12 months. We expect the APA recommendations to be achieved with adequate knowledge and skill background in utilizing AIMS protocol in clinical practice. Additionally, incorporating the screening tool into the EMR system would provide easy access for all HCPs and eliminate delays in screening. AIMS screening during practice encounters takes less than10 minutes to administer (Johnson, 2017).

Project Objectives

In the 5-week timeframe of this Scholarly DNP project, the host site will:

1. Administer an education seminar for the multi-disciplinary team to improve knowledge and skills in identifying TD using the AIMS protocol, with a goal of the post-educational in-service pass rate of 80% on the post-test
2. Implement an evidence-based AIMS protocol to identify TD early in patients in the outpatient clinic. The outcome will be measured by 80% of new TD diagnoses post-implementation

3. Improve compliance by providers with documentation of TD screening using the AIMS tool in patients' EMRs by 90%

Theoretical and Conceptual Framework

Considering this DNP project's theoretical and conceptual framework, the Donabedian framework implementation science was chosen because of its utility in quality improvement (QI) projects (Appendix D). Additionally, the Donabedian framework has contributed to QI science safety based on evidence-based practice and research within healthcare environments.

Historical Development of the Theory

Donabedian conceptual framework was chosen as an implementation science framework to guide this DNP project during implementation because of its foundational and theoretical underpinnings for quality improvement (Hall & Roussel, 2017). The original framework was developed in 1966 by a physician and health services researcher at the University of Michigan named Avedis Donabedian. This framework continues to be the leading theory for assessing the quality of health care (Donabedian, 1966). Healthcare quality has become the prime focus of the U.S. healthcare industry since the industry has become more patient-centric and less physician-directed (Donabedian, 1966). Donabedian defines quality through his "seven pillars of quality," which is documented in his paper entitled "Evaluating the Quality of Medical Care" (Donabedian, 1966). He not only offers a means for assessing healthcare services but also provides a conceptual framework for evaluating healthcare quality (Donabedian, 1966). His model serves as a reference guide for those who wish to embark on safe, timely, effective, efficient, equitable, and patient-centered healthcare as recommended by the Institute of Medicine (IOM) (Ayanian &Markel, 2016; IOM Committee on Quality of Health Care in America, 2001).

Major Tenets of the Theory

Donabedian framework has three central tenets: structure, process, and outcomes. The *structure* consists of the environment in which the health care services are provided, such as human resources, material resources, and organizational characteristics. Understanding the structure component, potential constraints, and opportunities in a system provides a comprehensive picture of the quality of care available to patients. The *process* integrates the healthcare activities performed by HCPs: diagnosis, treatment, prevention, rehabilitation, and patient education. The process itself is not quality; however, quality is seen in evidence-based care practices that produce desirable outcomes (Hall & Roussel, 2017; Donabedian, 1966). *Outcomes* are changes in patients' knowledge, behavior, and health status because of the care provided by HCPs. Outcomes serve as a quality measure because they reflect the care provided to the patient and the quality of care rendered (Hall & Roussel, 2017; Donabedian, 1966).

Application to the DNP Project

Change is inevitable and essential to progress. For change to be implemented in an organization or system, mindset changes and training must occur. Utilizing the Donabedian framework as the implementation guide facilitates a smooth approach by considering the three central tenets and how they fit into this DNP Project.

Structure

The Donabedian framework was used to evaluate the quality of care at Outpatient Psychiatric Clinic regarding psychiatric patients on anti-psychotropic medications. Specifically, the framework was applied to assess the appropriate use of the AIMS tool to identify TD early and diagnose patients. When evaluating the *structure* at Outpatient Psychiatric Clinic, it was

determined that HCPs might have insufficient knowledge concerning TD and early identification. Some HCPs in practice do not have substantial experience with patients exhibiting TD symptoms; therefore, their ability to recognize or initiate screening via the AIMS tool is not intuitive, and patients do not receive their diagnosis (King et al., 2018; Loughlin et al., 2018). The clinic is regarded as a teaching facility as they welcome inexperienced HCPs; however, the administration may not offer adequate time for HCPs to acclimate to the organization's culture and expectations, impacting the quality of care. With the onboarding of new HCPs, their inexperience creates opportunities for further education.

The DNP project aims to modify this aspect of the *structure* by providing time for HCP training that seeks to increase awareness and improve knowledge in this area. Furthermore, AIMS screening is HCP-initiated instead of system-initiated, thus relying solely on human capacity. This structure aspect may be enhanced by implementing a systematic AIMS protocol that prompts HCPs to conduct screening in every appropriate encounter per APA guidelines (APA, 2020). The DNP project addresses this by instituting a systematic protocol that will encourage HCPs to screen when appropriate to promote accurate and early TD identification, diagnosis, and EMR documentation.

Upon interview, HCPs vocalized time constraints related to heavy workload assignments. Some ascribe their inability to conduct regular TD screening to their busy work schedule (Dr. J & NP M, personal communication, February 11, 2022) [see Appendix E]. This concern provides an opportunity for the administration to reduce the HCP workload or train axillary staff to conduct screening and notify the HCP of the results. Although the DNP project does not directly address this structure aspect, it acknowledges its impact on care through the Donabedian framework.

Process

The inconsistent use of the AIMS tool amongst HCPs provides an avenue for quality improvement. As described in the Donabedian framework, the *process* encompasses the services provided to patients by HCPS (Donabedian, 1966; Hall and Roussel. 2017), in this case, TD screening. Some HCPs do not screen as recommended by the APA guidelines due to insufficient knowledge and time constraints (AAN 2013; APA, 2020; Kane et al., 2018; Dr. J & NP M, personal communication, February 11, 2022); some of the HCPs screens, however, lack the EMR documentation to support their actions (DNP student, personal observation, April 26, 2020). Irregular TD screening is also accompanied by insufficient AIMS documentation in the EMR (DNP student, personal observation, April 26, 2020; Dr. J, personal communication, February 11, 2022). Consequently, some patients experiencing TD go undiagnosed and untreated due to a lack of screening (DNP student, personal observation, April 26, 2020).

The DNP project identifies this as an area for improvement and aims to address the problem by providing evidence-based education to HCPs. The education will highlight the significance of utilizing the AIMS tool per APA guidelines and introduce the AIMS protocol designed for this project (AIMS 2021; APA, 2020). Through such modifications brought about by the project, the expectation is to observe increased TD screening and EMR documentation. Improvements in HCP practice will likely manifest in better outcomes.

Outcomes

The quality of care rendered to patients is vital to patient outcomes (Donabedian, 1966, 2003). Patients experiencing TD are often identified through screening, leading to timely diagnosis and treatment (King et al., 2018). Therefore, HCPs' ability to conduct regular screening impacts patients' access to care. The DNP project aims to increase HCPs' knowledge of TD,

increase AIMS tool utilization and documentation, and improve TD diagnoses. The Donabedian framework, as uniquely applied to clinics, identifies suboptimal outcomes associated with missed opportunities for education, screening, and treatment (Myszewski & Sinha, 2019; Sharew, Mullu, Abebe, & Mehare, 2020). The clinic HCPs and literature concurred that the Donabedian framework is an excellent guide to assessing the quality of care to improve outcomes (Myszewski & Sinha 2019; Sharew, Mullu, Abebe, & Mehare, 2020; Dr. J & NP M, personal communication, February 11, 2022). Meeting these outcomes will likely improve patient self-esteem as it prompts treatment of symptoms characterized by abnormal, involuntary body movement (Dr. J & NP M. personal communication, February 11, 2022). Additionally, receiving an appropriate diagnosis for such an ambiguous condition may relieve patient and family anxiety (Dr. J & NP M. personal communication, February 11, 2022).

Setting

This scholarly DNP project site is a privately-owned outpatient psychiatric medical group in Southern California's Semi-Urban Area of the Inland Empire (IE). The medical group has multiple satellite clinics of the same patient population located in cities of IE. The host site is in the city of Rancho Cucamonga, with a population of 173,309 with a median age of 36.1. Of this, 49.29% are males, and 50.71% are females; race distribution ranges from White making 59.70%, Asian 12.99%, Black or African American 10%, and other races 9.88% (Rancho Cucamonga, CA Demographics 2022). The clinic has been over 25years and has over 50 providers consisting of psychiatrists, PMHNPs, clinical psychologists, medical assistants, and other auxiliary workers; each psychiatrist and PMHNP sees an estimate of 15-35 patients/day six days a week. The medical group is a profit-oriented infrastructure and uses an electronic medical record system known as KAREO for documentation and a telemedicine platform named DOXY; since

the inception of the Covid pandemic, telemedicine has triumphed over in-office visits.

The patient population ranges from six to 90 years old and above with episodic and chronic mental illness. Additionally, the patient population represents a diversified cultural and racial background. Most of the patients have Inland empire health plan (IEHP)-Medicare-Medicaid, commercial, private insurance, and some are out-of-pocket. The clinic sees scheduled appointments, same-day visits, and walk-in patients. Structurally, each office is built differently with provider rooms, therapy rooms, patient lobby, and front office. The billing and HR departments are housed in the headquarters of the CEO and Medical director.

Population of Interest

This project population of interest includes all the HCPs who work with the patients and prescribe medications to the patients. Presently, there are nine psychiatric mental health nurse practitioners, six psychiatrists, and one psychiatric mental health nurse practitioner student. Inclusion criteria require that HCPs with direct contact with the patients have prescriptive privileges, full-time/part-time status, and be board-certified; these include the PMHNP and the psychiatrists. Other HCPs without prescriptive rights include five clinical psychologists, three licensed social workers, ten medical assistants, and two Life Coach staff are inclusive due to their direct contact with the patients and their ability to observe and report findings to the PMHNPs and psychiatrists for a potential change of treatment plan. Exclusion criteria are the auxiliary staff- Information technology personnel, human resources personnel, managers, supervisors, and billing personnel. The goal is to recruit 30 participants. HCPs from other satellite clinics will be invited to participate. An email was sent to HCPs inviting them to participate in a quality improvement (QI) project. Invitation to participate was strictly voluntary, and no identifying information was disclosed.

This project indirectly impacts patients on antipsychotic medications with their families and caregivers because extensive use of the antipsychotic medicines has placed their loved ones at high risk for developing TD (Carroll & Irwin, 2019). Additionally, caregivers and family members are impacted by stigmatization associated with TD (Loughlin et al., 2019; Desai et al., 2018). Family members are less likely to bring their loved ones with TD to public places due to the shame associated with the manifestation of TD (Jain & Correll, 2018; Carbon et al., 2018). Inclusion criteria – any patients with a history of antipsychotics and those currently on FGA, SGA, or both. Caregivers: father, mother, uncle, and aunty or paid caretaker are included. The sole criteria are patients on antidepressants, mood stabilizers, anxiolytic medications, and families and caregivers.

This project will identify these patients' cohorts without using personnel identifiers to facilitate unbiased data collection for analysis for a good quality outcome. Early identification of this TD will promote early treatment, eliminate the embracing side effect, and reduce caregiver/ family burnout syndromes in caring for these chronically ill patients.

Stakeholders

The key stakeholders are the host site executive team which includes the chief executive officer (CEO), the medical director (MD), the office managers, and the chairman of the medical group. These are the decision-makers whose roles are essential to the well-being of the medical group. They uphold quality in high esteem and expect the highest quality for the patient. They are responsible for the logistics on that higher executive level which involves decision-making. Collaborating with them and the HCPs meets the criteria of the DNP essential VI: interpersonal collaboration for improving patient and population health outcomes (Chism, 2019; Hall & Roussel, 2016).

Other stakeholders include the *primary investigator (PI)*-a DNP student/educator who is the champion of this project. The PI is responsible for the management and integrity of the design, conduct, and reporting of the DNP QI project and for overseeing, monitoring, and confirming the integrity of all collaborative relationships. The PI sees the financial, personnel, compliance, and coordination with the school and administration of the host site and ensures that the project meets the IRB criteria.

The medical assistant is the PI's role in the project is to assist during the implementation stage in facilitating communication and collaboration of information amongst the HCPs via emailing, faxing, calling, and organizing agendas. The *psychiatrist, PMHNPs, therapist, and medical assistants*- All work for the welfare of the patients and have direct contact with patients. Their opinions matter, and they ar, also responsible for quality care. Providing adequate education will promote a just culture in care administration and acceptance of new changes in the policy and practice culture of the organization (Hall and Roussel, 2016).

The *life coach staff* are those staff that assists some of the patients, especially those chronically ill and disabled patients, under the "Brand-new-day program" (a unique program under the care of this host site) in meeting their activities of daily living. They are uniquely positioned to identify TD in patients and report to the direct contact providers for new treatment plan initiation or modification.

Permission to conduct project/Affiliation agreements formed.

Permission was obtained from the CEO to utilize the medical group as the host site for this scholarly DNP project (Appendix F). No affiliation agreement is required. Also, there has been open communication with the executive team since the inception of this project. The executive team acknowledges the need for HCPs to understand and conduct need assessments

using the AIMS tool to assess patients treated with antipsychotic medications. Furthermore, the executive team's involvement is essential in eliminating barriers and unforeseen hurdles that might impede the project's progression and facilitating a smooth transition into the project's implementation phase.

Interventions/timeline

The DNP project aims to raise the HCPs' knowledge in utilizing the AIMS protocol/tool for the early identification of patients on antipsychotic medications. The project aims to increase the AIMS tool protocol utilization and documentation in patients' EMRs by 90% and diagnose TD by 80% after the educational intervention.

The project implementation timeline commences from July 6 to August 9. The first week of July consists of 3-months retrospective pre-intervention data collection; meetings with the stakeholders to present the DNP project for preview; sending emails and flyers to remind the HCPs of the DNP project training presentation and meeting all the housekeeping logistics such as securing the conference room and equipment for the training.

The PowerPoint educational training will be presented at the beginning of the second week of July, commencing with a pre-test questionnaire to evaluate the participants' knowledge base before the PPT presentation. After completing the pre-test, the PPT will be presented by the DNP Student/PI and during which any questions and concerns about the presentation will be addressed accordingly. After the presentation, a post-test questionnaire is distributed for completion, which will be used later to compare and analyze the acquired and improved knowledge from the baseline. The contents of the PPT and pre/post tests have been reviewed and approved by the content expert and the project team. The educational intervention is provided over a one-week in-person and online allowing many HCPs to participate. Pre-and post-

intervention data collection is an ongoing process. There will be 3months of pre-intervention data collection and four weeks of post-intervention data collection.

The third week will continue with post-intervention data collection and the beginning of data analysis. The post-intervention data collection is finalized by the fourth week, with data analysis still ongoing and completed by the end of the fourth week. The final week, which is the fifth week, is for dissemination of the findings/outcome of the project to the stakeholders in the practice site. Additionally, results are presented to the DNP course instructor and academic mentor.

After the educational intervention, a retrospective data report is generated from the patient's EMR daily for four weeks. This identifies the number of times the AIMS protocol/tool has been utilized and documented in the patient's EMR and the number of TD diagnoses made. The SPSS software will analyze this data to compare the initial data collection before educational intervention to the prospective data collection for positive changes, such as increased screening using the AIMS protocol/tool, EMR AIMS tool documentation, and TD diagnosis.

Tools/instrumentations

Pre- and Post-test Questionnaires: The PI formulated the questionnaires and completed the content validity index (CVI) with the approval of the content expert and the project team. The group members rated and validated the questionnaires through a thorough and rigorous review, with mostly 4 (highly relevant) rating scores. The Item-level content validity index (I-CVI) was 1.0, and the scale-level content validity index, universal agreement (S-CVI/UA), was 1.0; these numbers meet the standard set by Lynn's 1986 criteria (I-CVI=1.00 with 3 to 5 experts and a minimum I-CVI of .78 for 6 to 10 experts) [Appendix G] These questionnaires analyze the baseline knowledge and knowledge after the educational intervention training. Both

questionnaires have the same content questions on TD identification and AIMS tool assessment and evaluation. The test is confidential and has no identifying information about the test taker. The PI conducts the training over one week to allow the HCPs the opportunity and time for participation. The test format is anonymous; however, PI assigned arbitrary numbers to the paper tests for prospective comparative and data analysis (Appendix H).

PowerPoint Presentation: The PI formulated the educational PowerPoint presentation with evidence-based information on TD and the AIMS tool for clinical use and application. Embedded in the PPT slides are a refresher course on TD and the AIMS tool with step-by-step information on assessing TD using the AIMS tool. Also included in the PPT presentation are the YouTube videos demonstrating the assessment of a patient in the absence of TD and a patient exhibiting TD symptoms. Both videos are less than three minutes long and depict the steps HCPs should take to arrive at a conclusive screening of TD when possible. Experts in the field put the videos together (Appendix I). The content of the PPT will be rated and validated by the content expert and the project team.

EMR Chart Audit Tool: The PI formulated the tool to capture the following information: Medication classification (FGA/SGA), AIMS completed, AIMS positive/negative, and TD documentation using ICD-code: G24.01. (Appendix J). The contents of the tool will be validated by the project team (course instructor and the academic mentor).

SPSS Software: The Statistical Package for Social Sciences (SPSS) version 28 is a tool from IBM used for statistical data analysis. The student version will be used to analyze the data, and in other to accomplish this, the PI will obtain a user account that allows the end-user access to the software and data analysis. Paired t-test is used to analyze the pre-and post-test score with inclusion criteria: specifying the average patient seen in a week by each provider includes at least

30 to prevent skewed numbers. Furthermore, the chi-square test measures the number of patients seen and the number of TD diagnoses before and after the educational intervention. Statistical significance is set at p</=.05.

The AIMS tool Policy and Protocol: Policy and Protocol were drafted to serve as a binding contract between the host site and the provider, demonstrating that evidence-based training was conducted, and HCPs agreed to administer the AIMS assessment as stipulated in the Policy. Additionally, the Policy consists of the following: the AIMS assessment frequency, purpose, scope, and responsibilities of the HCPs. The DNP student (PI) drafted the Policy and Protocol, which will be reviewed and validated by the project team and, after that, is submitted to the stakeholders of the host site for final approval (Appendix K).

Plan for Data Collection

Demographics

Demographic variables are essential in studies because they describe the sample and determine the population to generalize the findings (Burns & Grove, 2005). PI will collect demographic information to describe the participants and sample size better. Common ones used are age, gender, ethnicity, educational level, job classification, and length of time in the medical group. However, this project will utilize gender (GEN), participant age (AGE), type of provider (PVD), years of employment (EMP), employment status (EMS), and office location(LOC).

Pre/Post-educational Test Scores

The PI formulated the pre/post-intervention tests by applying the concept from “test item writing: 3Cs for successful tests” by Bristol and Brett (2015). According to Bristol and Brett, creating examination questions is both an art and a science and provides a consistent way to measure learning across individuals and the environment. The educational tests will be

administered before and after the in-service training and completed anonymously voluntarily in two formats. PI chose two designs to make the training available to providers who want to participate. In the *online format*, the participant takes the pre-test before viewing the PPT presentation via google forms; the post-educational test is taken at the end of the PPT presentation via google forms.

In contrast, the in-person format allows the before and after tests to be taken by paper and pencil. An 80% or more score on the post-educational test is the benchmark for significant knowledge improvement after in-service education. Both results of the tests are collected for data analysis. For the confidentiality of participants' information, arbitrary numbers will be assigned to the paper questionnaires for tracking purposes for pre-and post-data study.

EMR Chart Review

The PI developed an EMR Chart Audit Review form approved by the project team to collect data on the number of AIMS assessments done on patients taking antipsychotic medications and the number of ICD code G24.01 for TD documented in the EMR. A 3-months retrospective chart review and data collection will be conducted on each participating provider's caseload of patients before the in-service educational intervention. The PI hopes to review at least ten charts/day for 5days. The exact process will be applied to the daily post-educational in-service data until all the data are collected and statistically analyzed for four weeks. The objective of the data analysis is to determine if there is an improvement in AIMS documentation and diagnosis of TD in patients treated with FGA and SGA, as stated in the project objective.

Ethics/Human Subjects Protection

According to the Belmont report published in 1978, all research involving human subjects is guided by the basic ethical principles stipulated by the Commission for Protection of Human

Subjects of Biomedical and Behavioral Research (HHS, 2010). The quality improvement project is exempted from this because it does not involve human research. However, it will abide by the ethical standards described by the Commission in the standard of ethical principles in research.

Ethical principles in Research

Respect for the person encompasses two ethical convictions: treating participants as autonomous agents and protecting participants with diminished autonomy. All participants of this project will be accorded their due respect and privacy by maintaining strict confidentiality and HIPAA guidelines. No personal emails, phone numbers, or addresses will be utilized. *Beneficence* has two general rules: do no harm, maximize possible benefits, and minimize injuries. There might not be a direct benefit to the participants, but patients will indirectly benefit from the intervention. *Justice*: fair treatment and equitable recruitment of participants. Participation in the project and completion of the questionnaire is implied consent. Participation is voluntary, and participants' risk is minimal since what is asked of them is within their knowledge and scope of practice. Participants will not be offered any payment or incentive since this is within their job duties. Participants will be informed about the DNP project via their office emails inviting them to participate in the host site's educational training. The PI will conduct follow-up phone calls. The Project Assistant will post flyers in the breakrooms asking interested providers to call the PI or the project assistant to indicate interest in one of the delivery formats. PI intends to offer some snacks during the dissemination phase of the project during the staff meeting after the project implementation.

Data Management

Maintaining confidentiality is one of the utmost priorities for protecting the participants of this QI project; as such, arbitrary numbers will be assigned to the participants. All the project

records will be stored in a password-protected computer accessible only to the PI and the project assistant. Additionally, all the project records will be held for 5yrs securely; and destroyed afterward.

Institutional Review Board Process:

Touro University Nevada does not require IRB for quality improvement projects nor the DNP project Site. However, the PI still had to submit a document to the committee of faulty in TUN for IRB clearance/waiver to proceed with the process (Appendix O). Additionally, the PI completed the online Human Subject Research course (CITI) as mandated by the University.

Measures/Plan for Analysis

The Statistical Package for the Social Sciences (SPSS) sixth edition will be used to analyze descriptive data, including the demographic information collected and the post-knowledge of the HCPs about the information delivered during the training. These descriptive statistics include scores' mean, standard deviation range, skewness, and kurtosis.

The SPSS will run paired t-tests of parametric statistics to compare the pre-and post-test scores' knowledge improvement, assuming the data collected is normally distributed on the bell curve and homogenous. Otherwise, a Wilcoxon Signed Rank test of non-parametric statistics will be used to avoid assumption violation and incorrect conclusions (Pallant, 2016). The SPSS statistics will run the Chi-square to measure the TD diagnosis rate before and after the intervention.

The SPSS statistics will run the paired t-test to measure the rate or percentage of time the AIMS tool is used per provider in one month (i.e., July 6 to August 6, 2022) with the inclusion criteria that each provider sees at least 100 patients per month; to accomplish this test, one

categorical independent variable (time1/time2) and one continuous dependent variable (AIMS completed -yes, measured on two different occasions) are required.

A private statistician was not employed for this project; however, PI consulted with the project team and the TUN statistician Cheryl Vanier, Ph.D., Chief Research Officer, and Chairperson of the Touro University NV IRB on the proposed statistical tests; and Dr. Vanier provided robust feedback on the appropriate tests to run. Additionally, the PI utilized the SPSS Survival Manual and knowledge gained from the statistic class DNPV762 for this project section.

Analysis of Result

Two modalities were utilized in delivering this DNP quality improvement project to the participants- the online and in-person versions. However, the online version appeared more acceptable and accessible to most participants due to the convenient nature of the modality. Regardless of the chosen version, each participant was asked to select a three-digit number code for statistical analyses and for pairing the pre and post-test scores before engaging in the PPT.

Before participation, an invitation was sent out via intraoffice email, inviting staff from different satellite offices to participate. The email assured confidentiality and privacy to all who agreed to participate. The in-person training lasted for 1hr 10 minutes. The pretest and post-test were allotted 10 minutes each to complete, while the PPT presentation took 40 minutes. However, the online version time was variable because of the convenient nature of the modality. Participants were advised to complete the pretest survey before viewing the PPT presentation. Overall, the participation was encouraging; out of 30 anticipated participants, 16 finished the training online and in person. Demographic data and test scores were collected via google forms over five weeks.

Participant Demographic

Descriptive statistics were used to analyze the participants' demographic data. Table (1) depicts the participants' demographic: type of providers, years of employment, job experience, employment status, highest education, office location, and gender. Of the 16 participants, 62.5%(n=10) were providers, 18.8% (n=3) were administrators, 12.5% (n=2) medical assistants and 6.3%(n=1) therapist. Most participants came from the Rancho office (n=5), followed by Chino (n=4), and the rest from the other offices. Eighty-seven percent were female (n=14) with 12.5% male (n=2). Most participants' education fell between master's and doctorate degrees, with work experience in the range of 1-5yrs for most participants.

Pre/Post-intervention test scores Analysis

Table (2) illustrates the pre/post-test scores using descriptive statistics to clarify the difference in scores. Both tests are identical, consisting of 11 questions. These 11 questions are worth one point each. The scores for the pre-test ranged from 70% to 100%, with an average score of 93%. The post-tests ranged from 90% to 100%, with an average score of 98%.

The descriptive statistics analysis for both test scores showed that both were skewed to the right (Figure 1&2), making the bell curve a nonconforming curve and violating the assumption of normal distribution. Furthermore, a test of Normality was carried out to confirm this by looking at the Kolmogorov-Smirnov values of the pre-test score ($p=.001$) and post-test score ($p<.001$) (table 3); thus, making it difficult to run paired sample t-test. However, Pallant 2016 explained that "the difference between two scores obtained for each subject should be normally distributed with sample sizes of 30+; however, violation of this assumption is unlikely to cause a serious problem" (p. 250). Based on the latter statement, a paired sample t-test was run for the statistical significance of the scores (table 4), with a sample size of (n=16). The paired

sample t-test was conducted to evaluate the educational intervention's impact on participants' post-test scores. There was a statistically significant increase in knowledge as depicted in scores from pretest score (M = 93.19, SD = 8.635) to posttest score (M = 98.75, SD 8.635), t (15) = -2.524, p <.001 (two-tailed). The mean score increase was 5.562, with a 95% confidence interval ranging from .87 to 10.26. The eta squared statistic (.30) indicated a large effect size.

Documentation of AIMS Assessment in patient's electronic medical records

Table 5 depicts an excel spreadsheet of Pre/post-intervention data collection for documentation of AIMS assessment in the patient EMRs. The first 30 patients on antipsychotic medications were considered from May 6 to July 5 (pre-intervention) and July 6 to August 6 (post-intervention) for each participating provider. The data showed that 360 records were examined, and out of that, 14% (n=51) of the AIMS tool were documented pre-intervention, and 85% (n=309) documented post-intervention (fig 3); demonstrating a huge improvement. However, slightly under the goal set in the project objective of "90%". A paired -samples t-test was conducted to evaluate the impact of the educational intervention on the documentation of the AIMS tool in the patient EMR. There was a statistically significant increase in the number of AIMS tool documented in patient EMRs from pre-intervention (M= 4.64 SD= 8.82) to Post-intervention (M= 25.36, SD=6.39) t (6.92), df=10, P<.001 (two-tailed). The mean increase in the AIMS documentation was –20.72, with a 95%confidence interval ranging from -27 to -14.06. The eta squared statistic (.48) indicates a large effect size. Negative signs demonstrate skewness of the data indicating clustering of scores at the high end (right-handed side of the graph), which is appropriate for this data because of the expectation of the project goal (Pallant, 2016).

The number of TD-diagnosed pre- and post-educational interventions.

Table 6 shows an improvement in the number of TD diagnosed because of the educational intervention. It also indicates that the educational intervention positively impacted the providers' assessment skills. Out of the 360 charts reviewed, 6% (n=22) TD were documented in the pre-intervention, and 12% (n=45) were documented in post-intervention. The result depicts an increase in the number of TD diagnosed post the educational intervention, signifying an absolute difference of 9% in recognition of TD symptoms and making an astute diagnosis to treat the patients. A paired-sample t-test was conducted to evaluate the impact of the educational intervention on the providers on the number of TD diagnoses pre-intervention and post-intervention. There was a statistically significant increase in the number of TD diagnosed from pre-intervention (M= .58, SD= 2.02) to Post-intervention (M= 4.08, SD=3.80) t (-5.6), df=11, P<.001 (two-tailed). The mean increase in the TD diagnoses was -3.50, with a 95%confidence interval ranging from -4.86 to -2.13. The eta squared statistic (.48) indicates a large effect size.

Discussion of findings

This DNP quality improvement project goal was to educate health care providers with direct patient care in psychiatric outpatient clinics on the need to use the AIMS tool in screening all patients on antipsychotic medications as stipulated in the APA guidelines to eliminate or minimize the debilitating side effect of FGA and SGA. AIMS tool is the gold standard for TD screening and is recognized by the APA and other medical organizations.

After implementation, the three Project Objectives were analyzed and compared to the stated goals. There was a statistically significant improvement in knowledge as evidenced by the p-value of <0.05 with a 95% confidence interval that the result obtained during the analysis was not just merely by chance but was truly accurate. The AIMS documentation in the patient's

electronic medical records jumped from 14% (n= 51) to 86% (n=309) after the implementation phase. Though this jump did not correspond to the anticipated project objective goal of 90%, there was a true increase in EMR AIMS documentation that was not there before the implementation of the project. There were no missing data.

Furthermore, Chi-square was conducted to test the goodness of fit for the TD diagnosed post-educational intervention compared to the nationwide study, which states that at least 20% of patients treated with antipsychotic medications will develop TD throughout their lifetime. The Chi-square goodness of fit in the pre-intervention data indicates no significant difference in the proportion of TD diagnosed at 25%(4 out of 12) as compared with the value of at least 20% that was obtained in a previous nationwide study, x2(n=12, P=.25, df=1), however, in the post-intervention data, it indicates 91% (11out of 12) of the providers diagnosed TD after receiving TD education; showing a considerable statistically significance (n=12, P<.001, df=1).

Summary and interpretation of Results

The educational implementation has multiple strengths and potentials, as seen in the increase in knowledge of identifying TD symptoms and use of the AIMS tool from a mean score of 93% pre-test to 98% post-test; an increase in the number of TD diagnosed from 6% pre-intervention to 15% post-intervention; and finally, the AIMS documentation in patients' EMRs jumped from 14% to 85%. As Chism, 2016 has highlighted, every DNP-prepared nurse has the skills and ability to bring change in today's healthcare arena through the eight DNP essentials stipulated by the AACN, 2016. This project has afforded the site the tools to consistently administer AIMS assessments to patients on antipsychotic medications following the stipulations in the APA and AAN guidelines. Additionally, providers feel confident enough to use the tool, considering it is the gold standard for screening tardive dyskinesia. Thirty participants were

anticipated; however, 16 participated, which is admirable considering the significant impact of the ongoing covid-19 Pandemic and its deterrents.

The project met some setbacks, like the small sample size and the construction work going on the site, which affected some providers' participation because most providers were practicing remotely. However, the online version accommodated everyone who wanted to participate due to the availability of the information 24/7. Additionally, the magnitude of the data collection was overwhelming; the time allocation was insufficient for robust investigation, so the time allocated for the data collection was shortened to four weeks pre-intervention and four weeks post-intervention as opposed to the three months anticipated initially. This change in the timeline from the original plan provided reduced data collection; also made available enough data to work with in the allocated time frame for the project. Furthermore, because the providers' workload was over 100 patients/month, the PI made a conscious decision with the project team, content expert, and school statistician to consider the first 30 patients on antipsychotic medication for every participating provider instead of considering all the patients seen by each participating provider for the period. Three hundred and sixty patient charts were audited for AIMS documentation and TD diagnosis pre- and post-intervention for the 12 participating providers.

According to the studies, 20% of patients on antipsychotic medication will develop TD in their lifetime (Vasan & Padhy, 2021); however, this project result showed that 15% of the sample size was diagnosed with TD 4 weeks post-educational intervention. Though there was an increase in the number of TD diagnosed compared to pre-intervention, the percentage was less than the published data. This difference could be attributed to factors like small sample size, individual providers' screening style, time, Pandemic and telemedicine barriers, and many other

extraneous factors. This area requires further studies with a larger sample size that will make a difference.

This project did not only demonstrate improvement in early identification of TD and proper documentation in patient EMRS, but it also demonstrated a positive impact on the participants and the stakeholders. The overall impact on the system is seen as practical means of providing safe, quality, cost-effective, and patient-centered care. The stakeholders and the HCPs were enthusiastic about the project. They saw it as another opportunity to learn the AIMS tool; a refresher course to some, but to others, especially the auxiliary staff, a piece of new information worth knowing due to their patient interactions.

The educational intervention was robust and produced a good outcome, though it did not meet some of the goals anticipated in the objectives; for instance, there was a 98% increase in knowledge base versus the previous knowledge before the intervention, $p<0.05$, meaning that there is a statistical significance that the result was accurate and not by chance. It shows that the educational intervention increased their knowledge about TD and AIMS screening tools. Conversely, in the number of AIMS documented in EMRs, the project objective was not met even though there was substantial improvement post-intervention. Eighty-five percent was seen in documentation versus 90% anticipated by the project objective. Additionally, the number of TD diagnosed was below the previously published literature, which highlighted that 20% of patients on antipsychotic medication would be diagnosed with TD in their lifetime.

There was not much cost in conducting this quality improvement because the PI, the major Key player here, had to ask for a reduced workload and drew from her savings to supplement her work income throughout the implementation and analysis phases. The strategic trade-off is that the DNP project is the PI idea and is for her doctorate program, in which she will eventually

receive a degree. The whole equipment and refreshments offered during the in-person version of educational implementation were sponsored by the PI. The stakeholders knew that the medical assistant assisting the PI was conducting the assigned duties during her work hours. There was no opportunity cost in this situation because the whole project was a win-win quality improvement for the project site. The goal was to improve providers' knowledge, leading to the early identification of TD and diagnosis of more TDs than before. There was a significant improvement in the outcomes. However, in retrospect, the project objective goals were set high. The lesson learned was that the target project objectives were set very high.

Limitation

There was a temporary shutdown of the project site for repair due to flooding in the office building, which mandated staff to work remotely or from other satellite offices. The PI changed the delivery modality due to the impact of the Covid-19 pandemic. The number of patient chart audits was reduced due to time constraints. The school statistician and external statistician were consulted. There were some delays with external statistician responses, but they were resolved. Despite all the limitations encountered, the PI worked from another satellite office for the period while the repairs were in progress. Two delivery modalities were used to allow participation in the project, i.e., in-person and online versions. Online delivery favored most participants due to less human contact and the opportunity to participate at the convenience of their own time.

Conclusion

This DNP project aims to provide robust and evidence-based education to the HCPs on using the AIMS tool to identify TD at its earliest stage. TD is a potentially irreversible adverse side effect of FGA and SGA medications. TD can cause colossal discomfort, shame, isolation, and drug noncompliance, compromising patients’ outcomes. Social isolation and stigmatization

are often associated with TD manifestation. The DNP project addressed this issue and the usefulness of using the screening tool in early and ongoing encounters to identify and provide adequate treatment according to the APA guidelines.

Fortunately, using the AIMS tool for screening does not entail additional cost or staffing for the medical group; because screening is part of the provider's assessment skills used frequently to ensure quality and safe care for patients on antipsychotic medications. Cultivating the habit of screening patients on antipsychotic medication early demonstrates accountability and responsibility amongst providers in supporting safe and quality care in the healthcare arena. And consequently, fulfilling that conscience clinical decision-making in utilizing qualitative and quantitative evidence-based skills (Chism, 2019).

This DNP project contributed to the policy development of the AIMS protocol application in the medical group, in which the stakeholders expressed their satisfaction and seriously considered making it part of their policy for annual refresher training for providers and non-providers and as a training module for onboarding providers which will provide sustainability for the tool in the long run. This project will be presented in the quarterly meeting coming up in November for the host site. Additionally, this project can be replicated in any outpatient psychiatric setting. The project will be submitted to the doctoral project repository of the Doctor of Nursing Practice and one of the nursing journals to disseminate the findings in near future..

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APPENDIX A

First-Generation Antipsychotics (FGAs) and Second-Generation Antipsychotics (SGAs)

INTRODUCTION

FIRST GENERATION	SECOND GENERATION	
Chlorpromazine	Clozapine	Lurasidone
Thioridazine	Olanzapine	Aripiprazole
Perphenazine	Risperidone	Blonanserin
Trifluoperazine	Quetiapine	
Fluphenazine	Ziprasidone	
Pimozide	Amisulpride	
Haloperidol	Asenapine	
Droperidol	Iloperidone	
Flupenthixol	Paliperidone	
Zuclopenthixol	Zotepine	
Clopenthixol	Sertindole	

6

Source: ***https://www.bing.com/images***

APPENDIX B

ABNORMAL INVOLUNTARY MOVEMENT SCALE (AIMS)

Public Health Service
Alcohol, Drug Abuse, and Mental Health Administration
National Institute of Mental Health

NAME:_____
DATE: _____
Prescribing Practitioner: _____

CODE: 0 = None
1 = Minimal, may be extreme normal
2 = Mild
3 = Moderate
4 - Severe

INSTRUCTIONS:
Complete Examination Procedure (attachment d.) before making ratings

MOVEMENT RATINGS: Rate highest severity observed. Rate movements that occur upon activation one less than those observed spontaneously. Circle movement as well as code number that applies.		RATER Date	RATER Date	RATER Date	RATER Date
Facial and Oral Movements	**1. Muscles of Facial Expression** e.g. movements of forehead, eyebrows periorbital area, cheeks, including frowning blinking, smiling, grimacing	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
	2. Lips and Perioral Area e.g., puckering, pouting, smacking	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
	3. Jaw e.g. biting, clenching, chewing, mouth opening, lateral movement	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
	4. Tongue Rate only increases in movement both in and out of mouth. NOT inability to sustain movement. Darting in and out of mouth.	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	O 1 2 3 4
Extremity Movements	**5. Upper (arms, wrists,, hands, fingers)** Include choreic movements (i.e., rapid, objectively purposeless, irregular, spontaneous) athetoid movements (i.e., slow, irregular, complex, serpentine). DO NOT INCLUDE TREMOR (i.e., repetitive, regular, rhythmic)	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
	6. Lower (legs, knees, ankles, toes) e.g., lateral knee movement, foot tapping, heel dropping, foot squirming, inversion and eversion of foot.	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
Trunk Movements	**7. Neck, shoulders, hips** e.g., rocking, twisting, squirming, pelvic gyrations	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
Global Judgments	**8. Severity of abnormal movements overall**	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
	9. Incapacitation due to abnormal movements	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
	10. Patient's awareness of abnormal movements. Rate only patient's report No awareness 0 Aware, no distress 1 Aware, mild distress 2 Aware, moderate distress 3 Aware, severe distress 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
Dental Status	**11. Current problems with teeth and/or dentures**	No Yes	No Yes	No Yes	No Yes
	12. Are dentures usually worn?	No Yes	No Yes	No Yes	No Yes
	13. Edentia?	No Yes	No Yes	No Yes	No Yes
	14. Do movements disappear in sleep?	No Yes	No Yes	No Yes	No Yes

Final: 9/2000

Modified on: Tue, November 16, 2021, at 1:19 AM

Abnormal Involuntary Movement Scale (AIMS)

Definition

The Abnormal Involuntary Movement Scale (AIMS) is a rating scale that was designed in the 1970s to measure involuntary movements known as tardive dyskinesia (TD). TD is a disorder that sometimes develops as a side effect of long-term treatment with neuroleptic (antipsychotic) medications.

Purpose

Tardive dyskinesia is a syndrome characterized by abnormal involuntary movements of the patient's face, mouth, trunk, or limbs, which affects 20%–30% of patients who have been treated for months or years with neuroleptic medications. Patients who are older, are heavy smokers, or have diabetes mellitus are at higher risk of developing TD. The movements of the patient's limbs and trunk are sometimes called choreathetoid, which means a dance-like movement that repeats itself and has no rhythm. The AIMS test is used not only to detect tardive dyskinesia but also to follow the severity of a patient's TD over time. It is a valuable tool for clinicians who are monitoring the effects of long-term treatment with neuroleptic medications and also for researchers studying the effects of these drugs. The AIMS test is given every three to six months to monitor the patient for the development of TD. For most patients, TD develops three months after the initiation of neuroleptic therapy; in elderly patients, however, TD can develop after as little as one month.

Precautions

The AIMS test was originally developed for administration by trained clinicians. People who are not health care professionals, however, can also be taught to administer the test by completing a training seminar.

Description

The entire test can be completed in about 10 minutes. The AIMS test has a total of twelve items rating involuntary movements of various areas of the patient's body. These items are rated on a five-point scale of severity from 0–4. The scale is rated from 0 (none), 1 (minimal), 2 (mild), 3 (moderate), 4 (severe). Two of the 12 items refer to dental care. The patient must be calm and sitting in a firm chair that doesn't have arms, and the patient cannot have anything in his or her mouth. The clinician asks the patient about the condition of his or her teeth and dentures, or if he or she is having any pain or discomfort from dentures.

The remaining 10 items refer to body movements themselves. In this section of the test, the clinician or rater asks the patient about body movements. The rater also looks at the patient in order to note any unusual movements first-hand. The patient is asked if he or she has noticed any unusual movements of the mouth, face, hands or feet. If the patient says yes, the clinician then asks if the movements annoy the patient or interfere with daily activities. Next, the patient is observed for any movements while sitting in the chair with feet flat on the floor, knees separated slightly with the hands on the knees. The patient is asked to open his or her mouth and stick out the tongue twice while the rater watches. The patient is then asked to tap his or her thumb with each finger very rapidly for 10–15 seconds, the right hand first and then the left hand. Again the rater observes the patient's face and legs for any abnormal movements.

After the face and hands have been tested, the patient is then asked to flex (bend) and extend one arm at a time. The patient is then asked to stand up so that the rater can observe the entire body for movements. Next, the patient is asked to extend both arms in front of the body with the palms facing

downward. The trunk, legs and mouth are again observed for signs of TD. The patient then walks a few paces, while his or her gait and hands are observed by the rater twice.

Results

The total score on the AIMS test is not reported to the patient. A rating of 2 or higher on the AIMS scale, however, is evidence of tardive dyskinesia. If the patient has mild TD in two areas or moderate movements in one area, then he or she should be given a diagnosis of TD. The AIMS test is considered extremely reliable when it is given by experienced raters.

If the patient's score on the AIMS test suggests the diagnosis of TD, the clinician must consider whether the patient still needs to be on an antipsychotic medication. This question should be discussed with the patient and his or her family. If the patient requires ongoing treatment with antipsychotic drugs, the dose can often be lowered. A lower dosage should result in a lower level of TD symptoms. Another option is to place the patient on a trial dosage of Clozapine (Clozaril), a newer antipsychotic medication that has fewer side effects than the older neuroleptics.

Examination Procedure

Either before or after completing the examination procedure, observe the patient unobtrusively at rest (e.g., in the waiting room).

The chair to be used in this examination should be a hard, firm one without arms. Have the person remove their shoes and socks.

1. Ask the patient whether there is anything in his or her mouth (such as gum or candy) and, if so, to remove it.
2. Ask about the *current* condition of the patient's teeth. Ask if he or she wears dentures. Ask whether teeth or dentures bother the patient *now*.
3. Ask whether the patient notices any movements in his or her mouth, face, hands, or feet. If yes, ask the patient to describe them and to indicate to what extent they *currently* bother the patient or interfere with activities.
4. Have the patient sit in chair with hands on knees, legs slightly apart, and feet flat on floor. (Look at the entire body for movements while the patient is in this position.)
5. Ask the patient to sit with hands hanging unsupported -- if male, between his legs, if female and wearing a dress, hanging over her knees. (Observe hands and other body areas).
6. Ask the patient to open his or her mouth. (Observe the tongue at rest within the mouth.) Do this twice.
7. Ask the patient to protrude his or her tongue. (Observe abnormalities of tongue movement.) Do this twice.
8. Ask the patient to tap his or her thumb with each finger as rapidly as possible for 10 to 15 seconds, first with right hand, then with left hand. (Observe facial and leg movements.) [±activated]
9. Flex and extend the patient's left and right arms, one at a time.
10. Ask the patient to stand up. (Observe the patient in profile. Observe all body areas again, hips included.)
11. Ask the patient to extend both arms out in front, palms down. (Observe trunk, legs, and mouth.) [activated]
12. Have the patient walk a few paces, turn, and walk back to the chair. (Observe hands and gait.) Do this twice. [activated]

APPENDIX C

AACN Levels of Evidence and Hierarchy of Evidence Pyramid

AACN Levels of Evidence

Level A — Meta-analysis of quantitative

Level B — Well-designed, controlled studies

Level C — Qualitative studies, descriptive or correlational studies,

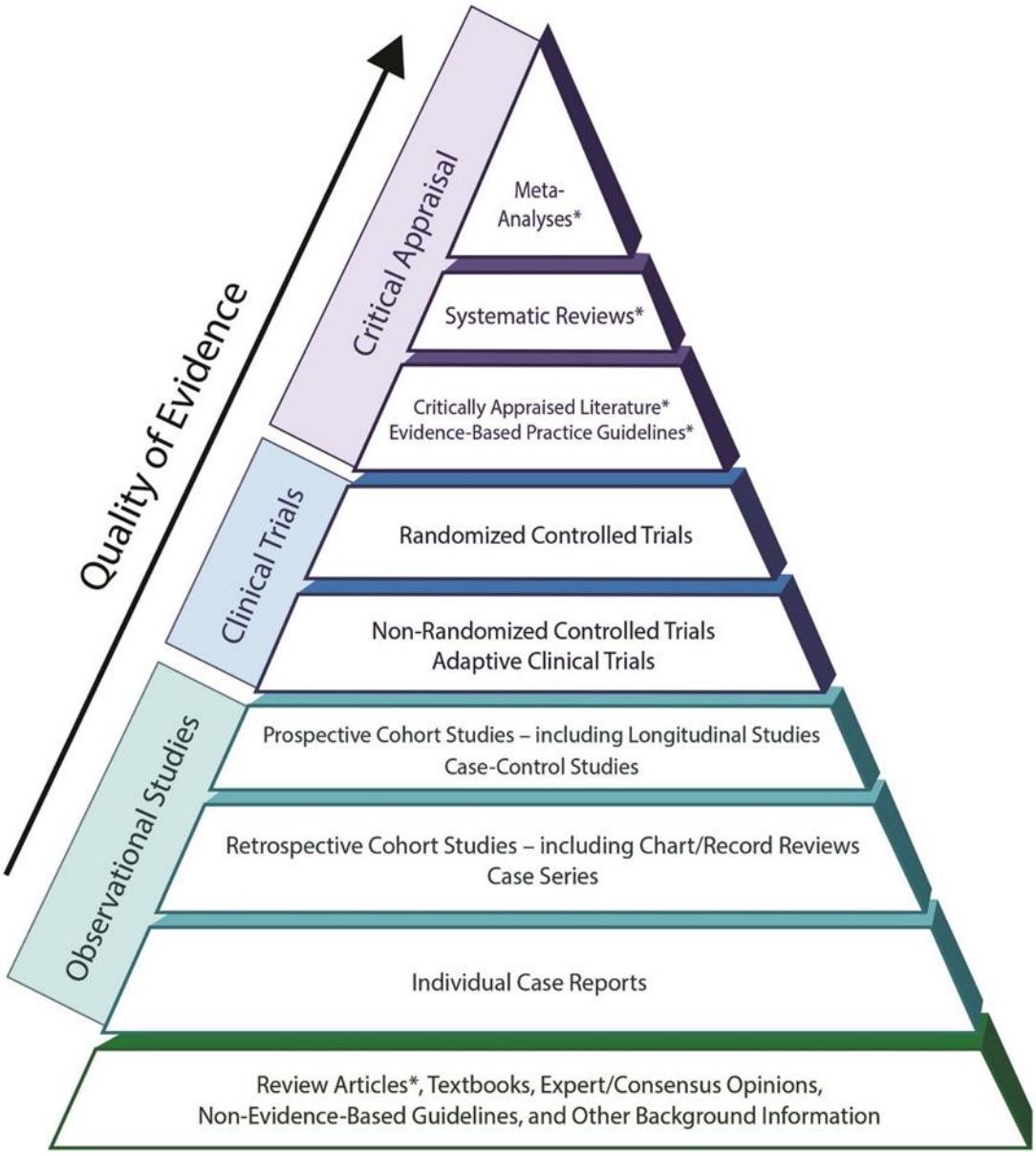
Level D — Peer-reviewed professional

Level E — Multiple case reports, theory-based evidence from expert opinions,

Level M — Manufacturer's recommendations only.

(Excerpts from Peterson et al. Choosing the Best Evidence to Guide Clinical Practice: Application of AACN Levels of Evidence. Critical Care Nurse. 2014;34[2]:58-68.)

Hierarchy of Evidence Pyramid



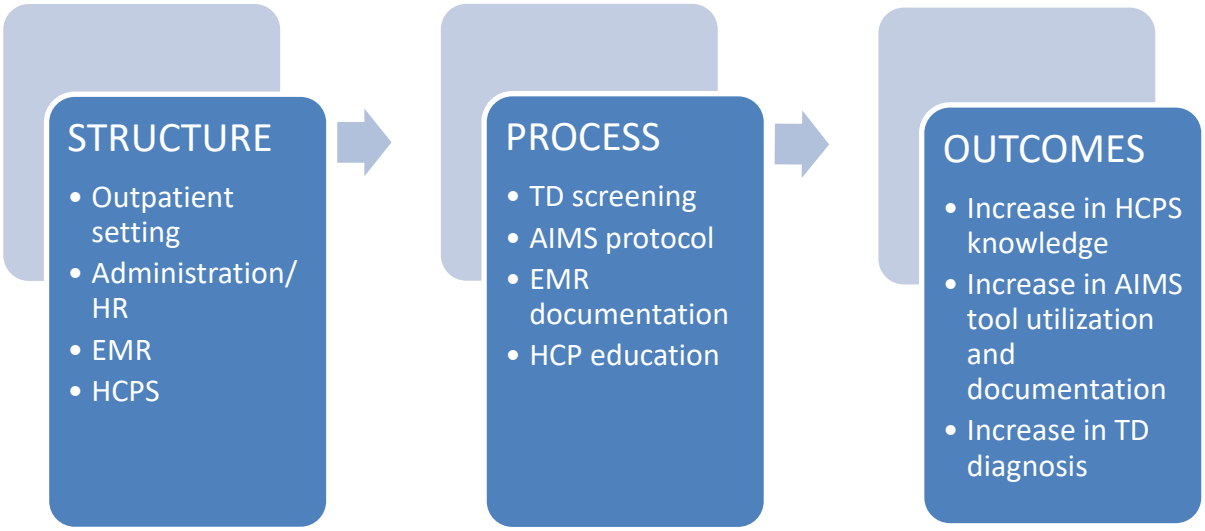
* Reviews of the published literature.

This is an updated edition of:
Bradley A. Long [author] and Audrey Rock [graphic designer]. Evidence-Based Medicine: Resources by Levels of Evidence. Central Michigan University Libraries (© 2016).

Both editions are based on (1) the "EBM Page Generator" from Dartmouth College and Yale University (© 2006) and (2) the Coursera MOOC "Understanding Clinical Research: Behind the Statistics" (© 2016).

APPENDIX D

DONABEDIAN FRAMEWORK



APPENDIX E

Interview transcript -Dr. J, FNP-BC, PMHNP-BC, DNP
Date 2/11/2022

DNP student: Hi, Dr. Jackson; thanks for the opportunity to be part of this interview process. How long have you worked as a Psychiatric nurse practitioner in this practice?

Dr. J: The pleasure is mine. I have been here for almost 6months, but I have been a family nurse practitioner for over 11 years. And new to mental health.

DNP student: I will dive into the interview. Well, what do you understand by a change in an organization?

Dr. J: Every organization needs change intermittently to maintain stability and sustainability. Change is difficult to some; however, it is indispensable. You can see that the world continues to evolve so are the organization and the people they serve. In healthcare, change is synonymous with the care they provide.

DNP student: Interesting. It sounds to me like you are a great proponent to change. How do you see yourself being part of the change I am proposing for this practice? I mean implementing an AIMS protocol for all the HCPs to use in every encounter with a patient on antipsychotic medication; to identify Tardive dyskinesia (TD) early to prevent the debilitating effect of this symptom in patients.

Dr. J: Well, that is not a bad idea. I have thought about that and have observed decreased use and documentation of AIMS in EMRs. Part of the issue is lack of time and overload of work. Perhaps a reduced workload will provide enough time for the assessment, and a refresher course on the AIMS tool will do the trick. Maybe, better patient outcomes will be seen after the training.

DNP student: you will be surprised that studies have shown that the AIMS assessment takes only 5-10minutes.

Dr. J: (she giggles) I don't know about that 5-10minutes because the workload is high, and most encounters are via telemedicine.

DNP student: Not to worry, the educational training will also demonstrate modify version, which can be done in less than one 1minute.

Dr. J: I'm all in. When is the training?

DNP student: Thanks to Dr. Jackson for this interview; I shall keep you posted with the training information.

Interview transcript -NP M, PNP, PMHNP-BC
Date 2/11/2022

DNP student: Hi Mary, thanks for being part of this interview process. How long have you worked as a Psychiatric nurse practitioner in this practice?

NP M: I think I have been working here for over three years, if I am not mistaken.

DNP student: I will dive into the interview. Well, what do you understand by a change in an organization? And what could constitute barriers to change?

NP M: Change in the organization could mean different things, but it depends on what needs to change. At first, change can be resisted because not many are acceptable to new things. Most people like the status quo. Anything disturbing their usual way of doing things causes anxiety and frustration. But I think change is innovative and should always be encouraged. Moreover, change is not cost-effective in the short term but can be recuperated in a long time.

DNP student: Interesting. It sounds to me like you have no problem with change. How do you see yourself being part of the change I am proposing for this practice? I mean implementing an AIMS protocol for all the HCPs to use in every encounter with a patient on antipsychotic medication; to identify Tardive dyskinesia (TD) early to prevent the debilitating effect of this symptom in patients. I am not waiting for the overt signs of this disorder.

NP M, great idea. We were taught AIMS in nursing school; however, I have not used it as much as I would love to. Part of it is time constraints; most patients in the outpatient clinic do not exhibit that overt symptom of TD, so they go unrecognized zed; need prompts and refresher courses. I think there will be better patient outcomes with the training.

DNP student: you will be surprised that studies have shown that the AIMS assessment takes only 5-10minutes.

NP M: I wish you could come up with a modified one that will take less than one minute to administer via telemedicine; that would be helpful.

DNP student: don't worry; the educational training will also demonstrate modify version, which can be done in less than one 1minute.

NP M: I'm in. Just send me an email about the training.

DNP student: Thanks Mary for your time. I shall shoot you an email about the training in due time.

APPENDIX F

Site Approval letter

INLAND PSYCHIATRIC MEDICAL GROUP, INC.

EXCELLENCE IN BEHAVIORAL HEALTH

1810 Monroe Ct, Rancho Cucamonga, CA 91730

SITE APPROVAL LETTER

Please note that Jennifer Onyekonwu-Mcgill, Doctor of Nursing Practice student at Touro University, Nevada, has permission from IPMG to conduct a Capstone Project on *Early Detection of Tardive Dyskinesia in Patients taking Antipsychotic Medications* at our facility located in Rancho Cucamonga, California.

Mrs. Jennifer Onyekonwu-Mcgill is hereby granted the privileges to contact the necessary providers and staff via flyer and email to facilitate her project. Mrs. Jennifer Onyekonwu-Mcgill is aware that identifiable information will not be collected during this project and participation by providers and staff is voluntary. The tentative date for project completion will be December 2022. The project includes the following: educational presentation, pre- and post-test, data collection, and data analysis. Mrs. Jennifer Onyekonwu-Mcgill has permission to access the electronic health record to assess data regarding the utilization of antipsychotic drugs in treatment and the number of AIMs documentation pre and post- intervention.

Mrs. Jennifer Onyekonwu-Mcgill has agreed to not disturb the flow of the clinic while conducting her DNP capstone project IPMG

Please feel free to contact to me if further information is needed.

Signed/Date,

x

Nandita Puchakayala M.D.

909/902-1082

npuchakayala@inlandpsych.com

INLAND PSYCHIATRIC MEDICAL GROUP
12555 CENTRAL AVE SUITE C
CHINO CA 91710
PH 909-902-1082 FX 909-628-3983

APPENDIX G

Expert Rating form

Rater #: Andrea Hill, DNP, APRN, FNP-BC_____1_____

Rating instructions: For each item, please indicate the following:

Please rate how relevant each item is to the overall construct of early identification of TD in patients on antipsychotic medications using the AIMS tool protocol by placing a number in the first box to the right of each item.

1=Not relevant at all

2=Slightly relevant

3=Moderately relevant

4=Highly relevant

Your honest feedback is appreciated and will be used to enhance the quality of this questionnaire

Item	Relevance Rating
1) What is the purpose of the AIMS tool? a. To assess for depression b. To diagnose TD c. To identify signs and symptoms of TD d. To treat autism	4
2) What does AIMS stand for? a. Abnormal involuntary Movement scale b. Abnormal Involuntary Movement Symptoms c. Active Involuntary Motor symptoms d. None of the above	4
3) What areas must you assess when using the AIMS tool? a. Facial and oral cavity b. Extremities c. Trunk d. All the above	4
4) What facial and oral movement must a provider look for when assessing for TD in a patient on antipsychotic medications? a. Puckering of lips b. Foot tapping c. Body rocking d. Lateral knee movements	4
5) What is included as part of the dental status assessment in the AIMS tool? a. Problems with teeth b. Loose dentures c. Edentia	4

d. All the above	
6) When should an AIMS assessment be performed on a patient? a. Whenever it is convenient b. When a patient tells you to do so c. When the patient is taking antipsychotic medications d. When patients are on antidepressants medication	4
7) A 65y/o male walked into your clinic with a history of haloperidol and Seroquel for many years however, he tells you that recently, he finds it difficult to move his tongue and that his tongue feels "large" in his mouth. Also, his wife tells him that his arm "jerks" sometimes. What intervention would be the most appropriate for him at this time? a. Discontinue all his medications due to his symptoms b. Reduce the dosage of the antipsychotic medication and reassess c. Increase the dosage of antipsychotic medications d. Do nothing and assure him that he will be fine	4
8) What neurotransmitter is notably involved in TD? a. Epinephrine b. GABA c. Serotonin d. Dopamine	4
9) AIMS tool is effective in identifying signs and symptoms of TD. a. True b. False	4
10) Patients with TD experience poor quality of life. a. True b. False	4

Adopted from Polit and Bec, 2006

Expert Rater #2: Dr. Daramola

Expert Rating form

Rater #:_____

Rating instructions: For each item, please indicate the following:

Please rate how relevant each item is to the overall construct of early identification of TD in patients on antipsychotic medications using the AIMS tool protocol by placing a number in the first box to the right of each item.

1=Not relevant at all

2=Slightly relevant

3=Moderately relevant

4=Highly relevant

Your honest feedback is appreciated and will be used to enhance the quality of this questionnaire

Item	Relevance Rating
1) What is the purpose of the AIMS tool? a. To assess for depression b. To diagnose TD c. To identify signs and symptoms of TD d. To treat autism	4
2) What does AIMS stand for? a. Abnormal involuntary Movement scale b. Abnormal Involuntary Movement Symptoms c. Active Involuntary Motor symptoms d. None of the above	4
3) What areas must you assess when using the AIMS tool? a. Facial and oral cavity b. Extremities c. Trunk d. All the above	4
4) What facial and oral movement must a provider look for when assessing for TD in a patient on antipsychotic medications? a. Puckering of lips b. Foot tapping c. Body rocking d. Lateral knee movements	4
5) What is included as part of the dental status assessment in the AIMS tool? a. Problems with teeth b. Loose dentures c. Edentia	4
d. All the above	
6) When should an AIMS assessment be performed on a patient? a. Whenever it is convenient b. When a patient tells you to do so c. When the patient is taking antipsychotic medications d. When patients are on antidepressants medication	4
7) A 65y/o male walked into your clinic with a history of haloperidol and Seroquel for many years however, he tells you that recently, he finds it difficult to move his tongue and that his tongue feels "large" in his mouth. Also, his wife tells him that his arm "jerks" sometimes. What intervention would be the most appropriate for him at this time? a. Discontinue all his medications due to his symptoms b. Reduce the dosage of the antipsychotic medication and reassess c. Increase the dosage of antipsychotic medications d. Do nothing and assure him that he will be fine	4
8) What neurotransmitter is notably involved in TD? a. Epinephrine b. GABA c. Serotonin d. Dopamine	4
9) AIMS tool is effective in identifying signs and symptoms of TD. a. True b. False	4
10) Patients with TD experience poor quality of life. a. True b. False	4

Adopted from Polit and Bec, 2006

Expert Rater #3: Dr. Peckham

Expert Rating form

Rater #:_____

Rating instructions: For each item, please indicate the following:

Please rate how relevant each item is to the overall construct of early identification of TD in patients on antipsychotic medications using the AIMS tool protocol by placing a number in the first box to the right of each item.

1=Not relevant at all

2=Slightly relevant

3=Moderately relevant

4=Highly relevant

Your honest feedback is appreciated and will be used to enhance the quality of this questionnaire

Item	Relevance Rating
1) What is the purpose of the AIMS tool? a. To assess for depression b. To diagnose TD c. To identify signs and symptoms of TD d. To treat autism	4
2) What does AIMS stand for? a. Abnormal involuntary Movement scale b. Abnormal Involuntary Movement Symptoms c. Active Involuntary Motor symptoms d. None of the above	4
3) What areas must you assess when using the AIMS tool? a. Facial and oral cavity b. Extremities c. Trunk d. All the above	4
4) What facial and oral movement must a provider look for when assessing for TD in a patient on antipsychotic medications? a. Puckering of lips b. Foot tapping c. Body rocking d. Lateral knee movements	4
5) What is included as part of the dental status assessment in the AIMS tool? a. Problems with teeth b. Loose dentures c. Edentia	4

d. All the above	
6) When should an AIMS assessment be performed on a patient? a. Whenever it is convenient b. When a patient tells you to do so c. When the patient is taking antipsychotic medications d. When patients are on antidepressants medication	4
7) A 65y/o male walked into your clinic with a history of haloperidol and Seroquel for many years however, he tells you that recently, he finds it difficult to move his tongue and that his tongue feels "large" in his mouth. Also, his wife tells him that his arm "jerks" sometimes. What intervention would be the most appropriate for him at this time? a. Discontinue all his medications due to his symptoms b. Reduce the dosage of the antipsychotic medication and reassess c. Increase the dosage of antipsychotic medications d. Do nothing and assure him that he will be fine	4
8) What neurotransmitter is notably involved in TD? a. Epinephrine b. GABA c. Serotonin d. Dopamine	4
9) AIMS tool is effective in identifying signs and symptoms of TD. a. True b. False	4
10) Patients with TD experience poor quality of life. a. True b. False	4

Adopted from Polit and Bec, 2006

CVI computation form

Expert rating on the Pre/Posttest questionnaires

Items	CI	CM	PM	Number in agreement	Item CVI
1	x	x	x	3	1.0
2	x	x	x	3	1.0
3	x	x	x	3	1.0
4	x	x	x	3	1.0
5	x	x	x	3	1.0
6	x	x	x	3	1.0
7	x	x	x	3	1.0
8	x	x	x	3	1.0
9	x	x	x	3	1.0
10	x	x	x	3	1.0
Proportion Relevant:	1.0	1.0	1.0		Mean I-CVI= 1.0 S-CVI/UA= 1.0 Mean expert proportion=1.0

Note:

According to Polit and Beck 2006, "…for a scale to be judged as having excellent content validity, it would be composed of items with I-CVIs that meet Lynn's (1986) criteria (I-CVI=1.00 with 3 to 5 experts and a minimum I-CVI of .78 for 6 to 10experts), and it would behave SCVI/UA of .90 or higher" (Pg. 496).

Keywords

I-CVI, item-level content validity index

S-CVI/UA, scale-level content validity index, universal agreement calculation method

References

Polit, D.F., & Beck, C.T (2006). The Content Validity Index: Are you sure you know what's being reported? Critique and recommendations. Wiley Periodicals, Inc. Doi: 10.1002/nur.20147

APPENDIX H

Pre/Post-Test

Pre-Test Questionnaire

Demographics

Participants Demographics: collected to provide a better understanding of participants.

Please select the answer that best describes you.

Department: Healthcare provider Therapist Administration Medical Assistant Others

What is your highest level of education: Associate Bachelor Masters Doctorate?

Years of employment in current position: 1-5 6-10 11-15 16-25 26+

Years of experience with behavioral health: 1-5 6-10 11-15 16-25 26+

Employment Status: Full-time Part-time

Current office location: Rancho Cucamonga Chino Claremont, Moreno Valley

Purpose: To assess the information you are familiar with or may know before the educational intervention.

Pre-test questionnaires

1) What is the purpose of the AIMS tool?
    a. To assess for depression
    b. To diagnose TD
    c. To identify signs and symptoms of TD
    d. To treat autism
2) What does AIMS stand for?
    a. Abnormal involuntary Movement scale
    b. Abnormal Involuntary Movement Symptoms
    c. Active Involuntary Motor symptoms
    d. None of the above
3) What areas must you assess when using the AIMS tool?
    a. Facial and oral cavity
    b. Extremities
    c. Trunk
    d. All the above
4) What facial and oral movement must a provider look for when assessing a patient on antipsychotic medications for TD?
    a. Puckering of lips
    b. foot tapping

c. Body rocking
d. Lateral knee movements

5) What is included as part of the dental status assessment in the AIMS tool?
   a. Problems with teeth
   b. Loose dentures
   c. Edentia
   d. All the above

6) When should an AIMS assessment be performed on a patient?
   a. Whenever it is convenient
   b. When a patient tells you to do so
   c. When the patient is taking antipsychotic medications
   d. When patients are on antidepressants medications

7) A 65 y/o male walked into your clinic with a history of Haloperidol and Seroquel for many years; however, he tells you that recently, he finds it difficult to move his tongue and that his tongue feels "large" in his mouth. Also, his wife tells him that his arm "jerks" sometimes. What intervention would be the most appropriate for him at this time?
   a. Discontinue all his medications due to his symptoms
   b. Reduce the dosage of the antipsychotic medication and reassess
   c. Increase the dosage of antipsychotic medications
   d. Do nothing and assure him that he will be fine

8) What neurotransmitter is notably involved in TD?
   a. Epinephrine
   b. GABA
   c. Serotonin
   d. Dopamine

9) AIMS tool is effective in identifying signs and symptoms of TD.
   a. True
   b. False

10) Patients with TD experience poor quality of life
   a. True
   b. False

Pre-test Survey

I feel confident using the AIMS tool (Please circle the applicable number)

Disagree 1 2 3 4 5 Agree

Post-Test Questionnaire

Purpose: To assess the information you are familiar with or may know after the educational intervention.

11) What is the purpose of the AIMS tool?
    a. To assess for depression
    b. To diagnose TD
    c. To identify signs and symptoms of TD
    d. To treat autism
12) What does AIMS stand for?

    e. Abnormal involuntary Movement scale
    f. Abnormal Involuntary Movement Symptoms
    g. Active Involuntary Motor symptoms
    h. None of the above
13) What areas must you assess when using the AIMS tool?

    e. Facial and oral cavity
    f. Extremities
    g. Trunk
    h. All the above

14) What facial and oral movement must a provider look for when assessing a patient on antipsychotic medications for TD?
    a. Puckering of lips
    b. foot tapping
    c. Body rocking
    d. Lateral knee movements

15) What is included as part of the dental status assessment in the AIMS tool?
    a. Problems with teeth
    b. Loose dentures
    c. Edentia
    d. All the above

16) When should an AIMS assessment be performed on a patient?
    a. Whenever it is convenient
    b. When a patient tells you to do so
    c. When the patient is taking antipsychotic medications
    d. When patients are on antidepressants medications

17) A 65 y/o male walked into your clinic with a history of Haloperidol and Seroquel for many years; however, he tells you that recently, he finds it difficult to move his tongue and that his tongue feels "large" in his mouth. Also, his wife tells him that his arm "jerks" sometimes. What intervention would be the most appropriate for him at this time?
    a. Discontinue all his medications due to his symptoms
    b. Reduce the dosage of the antipsychotic medication and reassess
    c. Increase the dosage of antipsychotic medications
    d. Do nothing and assure him that he will be fine

18) What neurotransmitter is notably involved in TD?
    a. Epinephrine
    b. GABA
    c. Serotonin
    d. Dopamine

19) AIMS tool is effective in identifying signs and symptoms of TD.
    a. True
    b. False

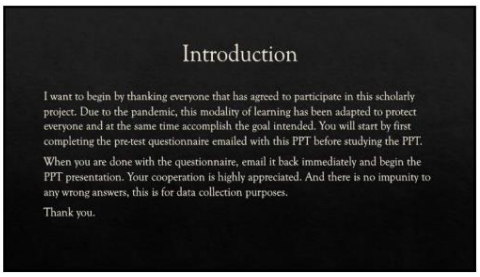
20) Patients with TD experience poor quality of life
    a. True
    b. False

Post-test Survey

	Question	Likely	Neutral	Not Likely
1	Did you find this educational presentation valuable?			
2	Did you feel it is essential to perform AIMS on patients on psychotropic medication?			
3	How comfortable are you with performing AIMS on your patients after the presentation			

APPENDIX I
PowerPoint Slides

1



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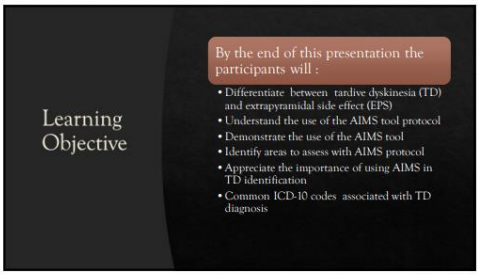

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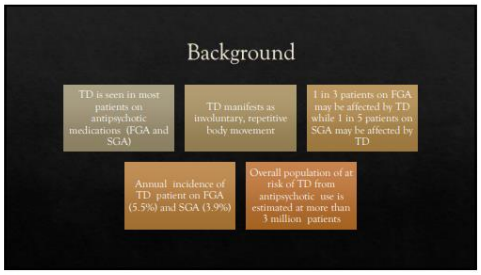

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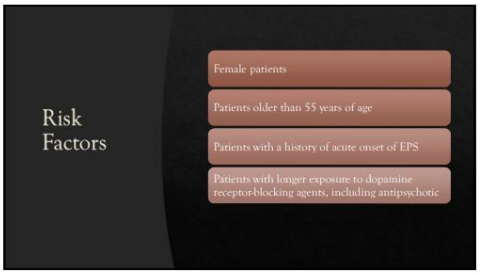

6

Difference between TD and EPS

TD

- Late onset
- Tongue protrusion
- Writhing of Tongue
- Lip smacking
- Chewing
- Blinking
- Facial grimacing
- Movements of neck, trunk, and pelvis
- Leg jiggling/jerky movements

EPS

- Acute onset
- Muscle rigidity
- Tremors
- Drooling
- Restlessness

7

TD management begins with identification

AIMS TOOL

8

Abnormal Involuntary Movement Scale (AIMS)

- Tool for assessing TD
- AIMS tool is not a diagnostic tool
- TD diagnoses requires thorough observation, current or history of antipsychotic medication and use of AIMS tool

9

Abnormal Involuntary Movement Scale (AIMS)

10

Abnormal Involuntary Movement Scale (AIMS)

11

Abnormal Involuntary Movement Scale (AIMS)

12

Normal AIMS Assessment

13

Tardive Dyskinesia

14

Areas of importance during AIMS assessment

Facial and oral cavity	Extremity	Trunk
• Facial muscles, lip and tongue movement	• Upper and lower extremity movement	• Neck, shoulder and hip movement

15

Antipsychotic medications

FIRST GENERATION ANTIPSYCHOTICS (FGA)	SECOND GENERATION ANTIPSYCHOTICS (SGA)
◆ Haloperidol	◆ clozapine
◆ Thioridazine	◆ Olanzapine
◆ Fluphenazine	◆ Quetiapine
◆ Droperidol	◆ Risperidone
◆ Chlorpromazine	◆ Aripiprazole
◆ Perphenazine	◆ Ziprasidone
◆ Trifluoperazine	◆ Paliperidone
◆ Pimozide	◆ Lurasidone
◆ others	◆ others

16

Common ICD-10 codes

Common disorders	TD
◆ Schizophrenia (F20.9)	◆ Tardive dyskinesia (G24.01)
◆ Schizoaffective (F25.9)	
◆ Bipolar disorder (F31.12)	
◆ Major depressive d/o with psychotic features (F33.2)	

17

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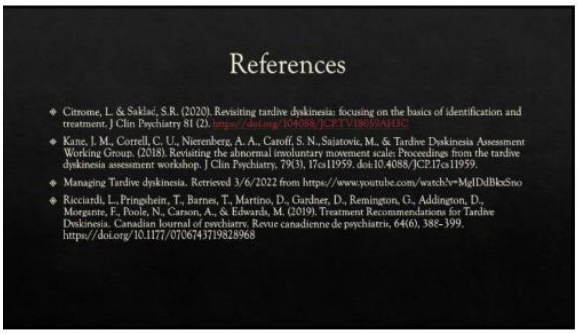
18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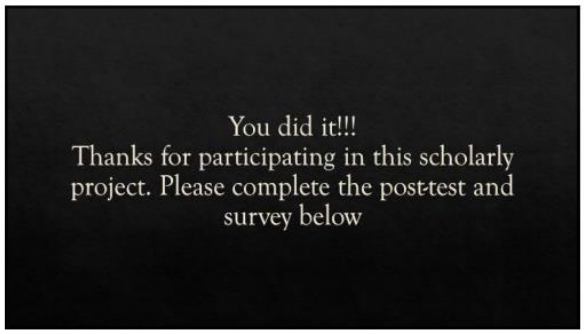
19


You did it!!!
Thanks for participating in this scholarly project. Please complete the post-test and survey below

20


Post-test survey

21

APPENDIX J

EMR Chart Audit Forms

Provider Initial: _____

DATA COLLECTION FORM

Pre-intervention

June 06, 2022- July 06, 2022

Date	Chart #	Diagnosis/ICD-Code	Antipsychotic medication name	Medication Classification FGA or SGA	AIMS completed Y/N	AIMS positive or negative	Tardive dyskinesia Documented (ICD-code: G24.01)

Total # of patients _____ Total # of AIMS completed _____ Total # of TD dx codes _____

Provider Initial: _____

DATA COLLECTION FORM

Post-intervention

July 06, 2022- August 06, 2022

Date	Chart #	Diagnosis/ICD-Code	Antipsychotic medication name	Medication Classification FGA or SGA	AIMS completed Y/N	AIMS positive or negative	Tardive dyskinesia Documented (ICD-code: G24.01)

Total # of patients _____ Total # of AIMS completed _____ Total # of TD dx codes _____

APPENDIX K

AIMS Tool Policy and Protocol

AIMS TOOL POLICY AND PROTOCOL

Outpatient Psychiatric Clinic

Document ID ATP0001-100	Title: AIMS TOOL Protocol	Print Date: 4/29/2022
Revision: 0.0	Prepared by: Jennifer Onyekonwu-McGill DNP Student	Date Prepared: 4/29//2022
Effective Date: TBA	Reviewed By: Daramola Oyemisie, DNP, FNP-BC, PMHNP-BC Dr. Hill, DNP, APRN, FNP-BC Dr. Peckham, DNP, APRN, AGACNP, FNP-BC, ENP-C	Date Reviewed: 00/00/2022
Standard: American Psychiatric Association, American Neurological Association Auditing:00/00/2023		
Policy:	The treating provider must assess tardive dyskinesia on all patients taking antipsychotic medications (first generation, second generation, or combination) **upon initial encounter and every three months.** **Exception:** elderly patients (65+ years) Every month or every encounter with the treating provider	
Purpose:	The APA and ANA recommend the AIMS assessment tool for early detection of TD in patients on chronic antipsychotic medications (more than three months or more than1 a month of use for elderly patients).	
Scope:	This policy remains valid and applicable until revised or new information from advising bodies (i.e., APA and ANA) recommend otherwise.	
Responsibilities:	*Prescriptive Providers* (Psychiatrists and Nurse Practitioners) are responsible for conducting AIMS assessments per policy and protocol. *Non-prescriptive Providers* (Therapists, Medical Assistants, and Life Coach staff) observe TD symptoms and report observations to the Prescriptive Providers for consideration.	
Word Key	American Psychiatric Association (APA), American Neurological Association (ANA), Abnormal Involuntary Movement Scale (AIMS). Tardive Dyskinesia (TD)	

References

Abnormal Involuntary Movement instructions (2021). Retrieved 12/13/2021 from, https://www.waombudsman.org/files/2013/09/AIMS-Test-Abnormal-Involuntary-Movement-Test.pdf

American Academy of Neurology (2013). Evidence-based guideline: treatment of tardive syndromes-report of the guideline development subcommittee of the American Academy of Neurology. Retrieve 12/06/021 from https://n.neurology.org/content/81/5/463

American Psychiatric Association, (2013). Diagnostic and statistical manual of mental disorder (5th ed.). Washington: Author.

American Psychiatric Association (2020). Practice Guideline for the Treatment of Patients with Schizophrenia. 3rd ed. American Psychiatric Association. Retrieved 12/01/2021 from https://pubmed.ncbi.nlm.nih.gov/32867516/

Dr. P CEO Date Dr. K President Date

APPENDIX L

Procedure for AIMS tool Implementation

Examination Procedure

During the initial encounter with the patient, the HCP will complete the following tasks:

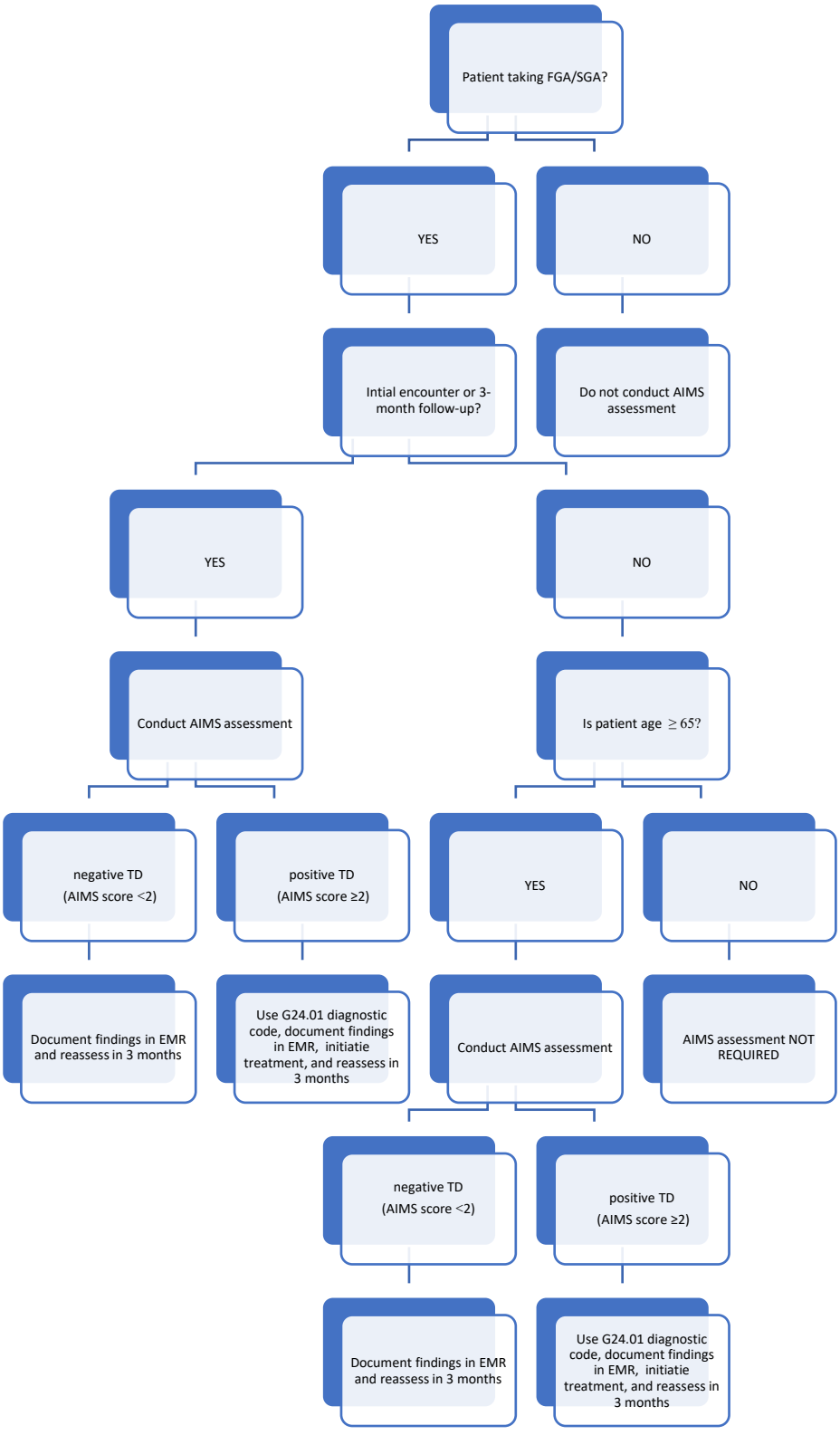
1. Conduct a complete examination procedure as indicated below:
    a) The chair used in this examination should be challenging and firm without arms. Have the patient remove shoes and socks.
    b) Ask about the current condition of the patient's teeth. Ask if they wear dentures. Ask whether teeth or dentures bother the patient now.
    c) Ask whether the patient notices movements in their mouth, face, hands, or feet. If yes, ask the patient to describe them and to indicate to what extent they currently bother the patient or interfere with activities.
    d) Have the patient sit in a chair with hands on knees, legs slightly apart, and feet flat on the floor. (Look at the entire body for movements while the patient is in this position).
    e) If the patient is male, ask the patient to sit with their hands hanging unsupported between their legs. If the patient is female and wearing a dress, ask the patient to sit with their hands hanging unsupported over their knees. Observe hands and other body areas.
    f) Ask the patient to open their mouth. Observe abnormalities of the mouth. Do this twice.
    g) Ask the patient to protrude their tongue. Observe abnormalities of tongue movement. Do this twice.
    h) Ask the patient to tap their thumb with each finger as rapidly as possible for 10-15 seconds, first with the right hand, then with the left hand. Observe facial and leg movements.
    i) Flex and extend the patient's left and right arms, one at a time.
    j) Ask the patient to stand up. Observe the patient in profile. Observe all body areas again, hips included.
    k) Ask the patient to extend both arms out in front, palms down. Observe trunk, legs, and mouth.
    l) Have the patient walk a few paces, turn, and return to their chair. Observe hands and gait.

2. Document the finding (positive TD/negative TD) in the patient EMR.
3. If the patient is determined to be positive for TD via the assessment tool, HCP should use the diagnostic code (G24.01)), document findings in the EMR, discuss treatment options with the patient, and continue to conduct recurring 3-month assessments if they are on antipsychotic medications.

4. If the patient is determined to be negative for TD via the assessment tool, HCP should document findings in the EMR and continue to conduct recurring 3-month assessments if they are on antipsychotic medications.

APPENDIX M

Workflow Breakdown for AIMS Assessment



APPENDIX N

Test Construction Activity

Jennifer Onyekonwu-McGill

Touro University

Test Construction

Purpose

This education aims to improve the HCPs' knowledge of early identification of TD in patients on antipsychotic medications such as FGA and SGA using the AIMS tool protocol. The educational intervention consists of a PowerPoint presentation on TD and AIMS tool protocol. Evaluation will determine if participants' knowledge led to changes in the practice behaviors at the end of the implementation by increasing AIMS tool utilization and documentation and increasing TD diagnoses.

Learning Objectives

At the end of this course, participants will be able to:

- Differentiate between tardive dyskinesia (TD) and extrapyramidal side effect (EPS)
- Understand the use of the AIMS tool protocol
- Identify areas to assess with the AIMS protocol
- Identify one Common ICD-10 code associated with TD diagnosis

Population

The population is general healthcare providers in outpatient psychiatric medical groups.

Length of the test

The optimum size of this test is ten questions

Difficulty and Discrimination Levels of Test Items

According to Oermann and Gaberson (2014), a criterion-referenced test is frequently utilized in clinical settings for measuring set standards rather than on the actual score itself. Since this test will measure the HCPs' knowledge pre-and post-intervention scores, low level to moderate difficulty questions are used.

Scoring Procedures to be Used

The test will be scored based on the number of questions answered correctly at two separate times and later develop a computer-generated item analysis report.

Item Format

The test is in a multiple-choice format.

Test blueprint

Content	Level of Cognitive Skill					
	K	C	AP	AN	Total	
TD and AIMS tool						
Signs and symptoms of TD	1	1				
Areas to assess with the AIMS tool.		1				
When to use the AIMS tool			1			
Intervention for positive TD			1	1		
Outpatient policy on the management of TD patient	1	1	1	1		
Total	2	3	3	2	10	

TD and AIMS Critical Thinking Questions

1)What is the purpose of the AIMS tool?

a. To assess for depression
b. To diagnose TD
c. To identify signs and symptoms of TD
d. To treat autism

Answer: C Comprehension

Rationale: AIMS tool does not measure depression. Instead, PHQ-9 and other similar tools do. AIMS tool is not a diagnostic tool but rather a screening tool for TD and should be used in conjunction with diagnostic criteria for making a probable TD diagnosis (Kane et al., 2018; Correll et al., 2017). AIMS tool has nothing to do with autism evaluation or screening.

2)What does AIMS stand for?

i. Abnormal involuntary Movement scale
j. Abnormal Involuntary Movement Symptoms
k. Active Involuntary Motor symptoms
l. None of the above

Answer: A Comprehension/Knowledge

Rationale: AIMS is an acronym for Abnormal Involuntary Movement Scale (Kane et al., 2018)

3)What areas must you assess when using the AIMS tool?

i. Facial and oral cavity
j. Extremities
k. Trunk
l. All the above

Answer: D Comprehension/knowledge

Rationale: According to Abnormal Involuntary Movement Instructions [AIMI], 2021, the following areas are affected by TD and need to be assessed during the patient encounter (facial and oral, extremities, trunk, dental and global judgments).

4)What facial and oral movement must a provider look for when assessing a patient on antipsychotic medications for TD?

a. Puckering of lips
b. foot-tapping
c. Body rocking
d. Lateral knee movements

Answer: A Application
Rationale: Puckering of lips is the right because it is located around the periorbital area of the face (AIMI, 2021). Foot tapping is situated on the lower extremity and does not answer the question asked.

5)What is included as part of the dental status assessment in the AIMS tool?

a. Problems with teeth
b. Loose dentures
c. Edentia
d. All the above

Answer: D Application
Rationale: All the options provided are inclusive in the areas for TD assessment to avoid misinterpretation of actions that might not be related to TD.

6)When should an AIMS assessment be performed on a patient?

a. Whenever it is convenient
b. When a patient tells you to do so
, c. When the patient is taking antipsychotic medications,
d. When patients are on antidepressants medications

Answer: C Comprehension/knowledge
Rationale: AIMS assessment is done on patients on antipsychotic medications such as first/second-generation antipsychotics. And needs to be done on the first encounter, at 3-months and 12-month intervals (AIMI, 2021; APA, 2013, AAN, 2020).

7)A 65 y/o male walked into your clinic with a history of Haloperidol and Seroquel for many years; however, he tells you that recently, he finds it difficult to move his tongue and that his tongue feels “large” in his mouth. Also, his wife tells him that his arm “jerks” sometimes. What intervention would be the most appropriate for him at this time?

a. Discontinue all his medications due to his symptoms
b. Reduce the dosage of the antipsychotic medication and reassess

c. Increase the dosage of antipsychotic medications
d. Do nothing and assure him that he will be fine

Answer: B Analysis

Rationale: Increasing or discounting the medications exposes the patient to further risk of illness exacerbation (D'Abreu, Akbar, & Friedman, 2018). Not doing anything constitutes negligence and lack of empathy.

8)What neurotransmitter is notably involved in TD?

a. Epinephrine
b. GABA
c. Serotonin
d. Dopamine

Answer: D Comprehension/knowledge

Rationale: Dopamine (D2) is the neurotransmitter involved in TD. However, chronic blockade of D2 receptors may cause receptor hypersensitivity or upregulate the number of receptors on the postsynaptic cell, thereby causing hyperkinetic movement disorders such as tardive dyskinesia (TD) (Stahl, 2013).

9)AIMS tool is effective in identifying signs and symptoms of TD.

a. True
b. False

Answer: A Comprehension/knowledge

Rationale: Research studies have demonstrated that the AIMS tool is frequently used to assess TD and has proven to be reliable in clinical and research settings

10)Patients with TD experience poor quality of life

a. True
b. False

Answer: A Comprehensive/knowledge

Rationale: According to studies, TD is associated with personal suffering, poor medication compliance, and poor quality of life with increased medical morbidity and mortality (Kumsa et al., 2020; Carroll & Irwin, 2019).

References

Abnormal Involuntary Movement instructions (2021). Retrieved 12/13/2021 from, https://www.waombudsman.org/files/2013/09/AIMS-Test-Abnormal-Involuntary-Movement-Test.pdf

American Academy of Neurology (2013). Evidence-based guideline: treatment of tardive syndromes-report of the guideline development subcommittee of the American Academy of Neurology. Retrieve 12/06/021 from https://n.neurology.org/content/81/5/463

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Kumsa, A., Girma, S., Alemu, B., & Agenagnew, L. (2020). Psychotropic Medications-Induced Tardive Dyskinesia and Associated Factors Among Patients with Mental Illness in Ethiopia. Clinical pharmacology: advances and applications, 12, 179–187. https://doi.org/10.2147/CPAA.S285585

Oermann, M.H., & Gaberson, K.B. (2014). *Evaluation and testing in nursing education* (4th ed.). New York: Springer. x

Stahl, S. M. (2013). *Stahl's essential psychopharmacology: Neuroscientific basis and practical applications* (4th ed.). Cambridge, NY: Cambridge University Press.

APPENDIX O

IRB Clearance/wavier

Touro University Nevada

DNP 763–Project II

DNP Project Team Determination: Quality Improvement Project or Research

This form is to be filled out by the student at the time the IRB application is filled out. All students will fill out the IRB application as this experience will provide insight into the IRB process. This decision form will then be used to guide the student and the project team as to whether the IRB application should be submitted to IRB. Although all IRB applications should be submitted to the course drop-box, IRB applications are only submitted to the IRB for review when they are determined to research (not quality improvement) and involve human subjects.

All DNP Projects regardless of methodology must uphold the highest standards of ethical practice including confidentiality and privacy as described in the ANA Code of Ethics. Accordingly, basic principles of ethics, confidentiality and privacy must be addressed and maintained in each phase of the DNP Project implementation. Methods for maintaining such should be described in full detail within the body of the DNP Project Paper.

If the determination is made that the DNP Project is a "Quality Improvement Project", then the project should be referred to as such in all future communications both in writing and verbally. "Quality Improvement Projects" should not be referred to as research or research projects. In addition, these projects are not subject to any form of IRB review. Additionally, the student should not make any claim in writing or verbally of IRB exemption status, acceptance, or review in such projects.

Section A should be completed and submitted by the student. Section B should be completed by the faculty.

SECTION A

Student Name: Jennifer Onyekonwu-McGill

DNP Project Title: Implementation of Abnormal Involuntary Movement Scale (AIMS) Protocol

For Early Detection of Tardive Dyskinesia in Outpatient Psychiatric Clinic

DNP Project Instructor: Dr. Andrea Hill

Academic Mentor: Dr. Samantha Peckham

Quality Improvement or Research Worksheet

Rachel Nosowsky, Esq.

ITEM	Issue and Guidance	Rating

10.14.2021

Touro University Nevada

DNP 763–Project II

1	Are participants randomized into different intervention groups in order to enhance confidence in differences that might be obscured by nonrandom selection? Randomization done to achieve equitable allocation of a scarce resource need not be considered and would not result in a "yes" here.	____ YES __X__ NO
2	Does the project seek to test issues that are beyond current science and experience, such as new treatments (i.e., is there much controversy about whether the intervention will be beneficial to actual patients – or is it designed simply to move existing evidence into practice?). If the project is performed to implement existing knowledge to improve care – rather than to develop new knowledge – answer "no".	____ YES __X__ NO
3	Are there any potential conflicts of interest (financial or otherwise) among any researchers involved in the project? If so, please attach a description of such in an attachment to this form.	____ YES __X__ NO
4	Is the protocol fixed with a fixed goal, methodology, population, and time period? If frequent adjustments are made in the intervention, the measurement, and even the goal over time as experience accumulates, the answer is more likely "no."	__X__ YES ____ NO
5	Will data collection occur in stages in an effort to remove potential bias? If so is there any potential for data skewing from this process?	__X__ YES ____ NO
6	Is the project funded by an outside organization with a commercial interest in the use of the results? If the answer to this question is "Yes" please also answer questions 6a and 6b. If the project is funded by third-party payors through clinical reimbursement incentives, or through internal clinical/operations funds vs. research funds, the answer to this question is more likely to be "no."	____ YES _X___ NO
6a	Is the sponsor a manufacturer with an interest in the outcome of the project relevant to its products?	____ YES ____ NO
6b	Is it a non-profit foundation that typically funds research, or internal research accounts?	____ YES ____ NO

Adapted from Hastings Center, "The Ethics of Using Quality Improvement Methods to Improve Health Care Quality and Safety" (June 2006) If the weight of the answers tends toward "yes" overall, the project should be considered "research" and approved by an IRB prior to implementation. If the weight of the answers tends toward "no," the project is not "research" and is not subject to IRB oversight unless local institutional policies differ. Answering "yes" to sequence #1 or #2 – even if all other answers are "no" – typically will result in a finding that the project constitutes research. It is important to consult with your local IRB if you are unsure how they would handle a particular case, as the analysis of the above issues cannot always be entirely objective and IRB policies and approaches vary significantly.

10.14.2021

Touro University Nevada

DNP 763–Project II

Obtained from: Quality Improvement or Research Worksheet

SECTION B

Project Classification Decision:

The project team consisting of a minimum of two faculty members will select one of the three classifications listed below.

__X___ This DNP Project is a quality improvement project. Do not submit to IRB for review.

_____ This DNP Project contains research methodology and an IRB application should be submitted to the TUN IRB committee for exemption determination and/or full IRB review.

_____ This DNP Project is not clearly delineated as quality improvement or research of discovery. Additional consultation will be obtained from the IRB committee by the project team. The advice of the IRB committee regarding the need for review will be noted in writing and the student will be informed of such (Please attach any pertinent documentation from IRB review as an Appendix to this document.)

By signing below, each member of the project team indicates that they agree with the above selection.

Printed Name of Project Team Member 1: ___Andrea Hill DNP, APRN, FNP-BC

Signature of Project Team Member 1: _____ Andrea Hill DNP, APRN, FNP-BC

Printed Name of Project Team Member 2: Samantha Peckham DNP, APRN

Signature of Project Team Member 2: Samantha Peckham DNP, APRN

APPENDIX P

Table 1

Frequencies

Statistics

		Type of Provider	Years of Employment	Years of Experience	Employment Status	Education	Office Location	Gender
N	Valid	16	16	16	16	16	16	16
	Missing	0	0	0	0	0	0	0
Minimum		1	1	1	1	1	1	1
Maximum		4	4	4	2	5	8	2

Frequency Table

Type of Provider

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 IPMG Provider	10	62.5	62.5	62.5
	2 Therapist	1	6.3	6.3	68.8
	3 Administrator	3	18.8	18.8	87.5
	4 Medical Assistant	2	12.5	12.5	100.0
	Total	16	100.0	100.0	

Years of Employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 1-5 years	11	68.8	68.8	68.8
	2 6-10 years	2	12.5	12.5	81.3
	4 16-25 years	3	18.8	18.8	100.0
	Total	16	100.0	100.0	

Years of Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 1-5years	8	50.0	50.0	50.0
	2 6-10years	3	18.8	18.8	68.8
	3 11-15years	2	12.5	12.5	81.3
	4 16-25years	3	18.8	18.8	100.0
	Total	16	100.0	100.0	

Employment Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Full time	12	75.0	75.0	75.0
	2 Part time	4	25.0	25.0	100.0
	Total	16	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Associate	2	12.5	12.5	12.5
	3 Masters	7	43.8	43.8	56.3
	4 Doctorate	4	25.0	25.0	81.3
	5 others	3	18.8	18.8	100.0
	Total	16	100.0	100.0	

Office Location

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Rancho Cucamonga	5	31.3	31.3	31.3
	2 Chino	4	25.0	25.0	56.3
	3 Claremont	2	12.5	12.5	68.8
	7 Redlands	2	12.5	12.5	81.3
	8 San Bernadino	3	18.8	18.8	100.0
	Total	16	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Female	14	87.5	87.5	87.5
	2 Male	2	12.5	12.5	100.0
	Total	16	100.0	100.0	

Paired Samples Test

Paired Differences							Significance	
			95% Confidence Interval of the Difference					
Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
-20.727	9.921	2.991	-27.392	-14.063	-6.929	10	<.001	<.001

APPENDIX Q

Pre and Post-tests educational scores

	Participant ID	Pre-test scores	Post-test scores
1	0	100	100
2	712	100	100
3	360	100	100
4	224	90	90
5	728	90	100
6	403	100	100
7	786	100	100
8	951	90	100
9	439	100	100
10	666	90	90
11	556	100	100
12	949	90	100
13	852	70	100
14	236	81	100
15	894	100	100
16	120	90	100
	Total	1491(93%)	1580 (98%)

Fig1

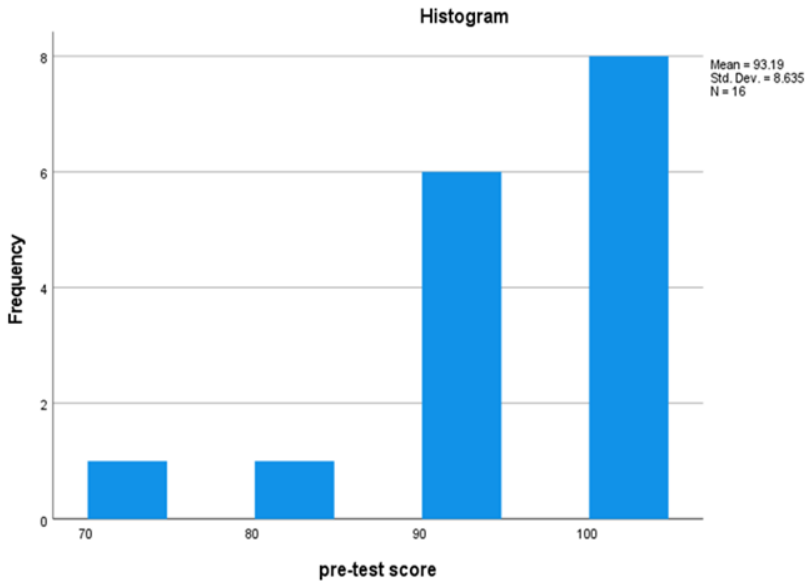
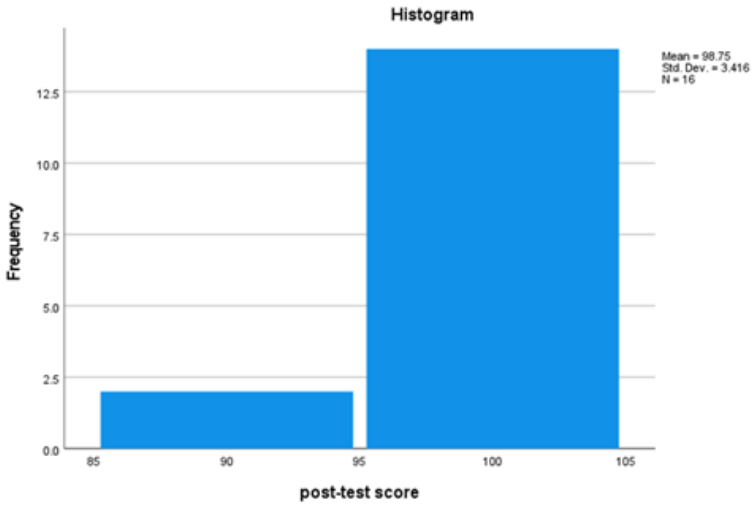

Histogram
Mean = 93.19
Std. Dev. = 8.635
N = 16
Frequency
0
2
4
6
8
70
80
90
100
pre-test score

Fig 2


Histogram
Mean = 98.75
Std. Dev. = 3.416
N = 16
Frequency
0.0
2.5
5.0
7.5
10.0
12.5
85
90
95
100
105
post-test score

APPENDIX R

Fig 3

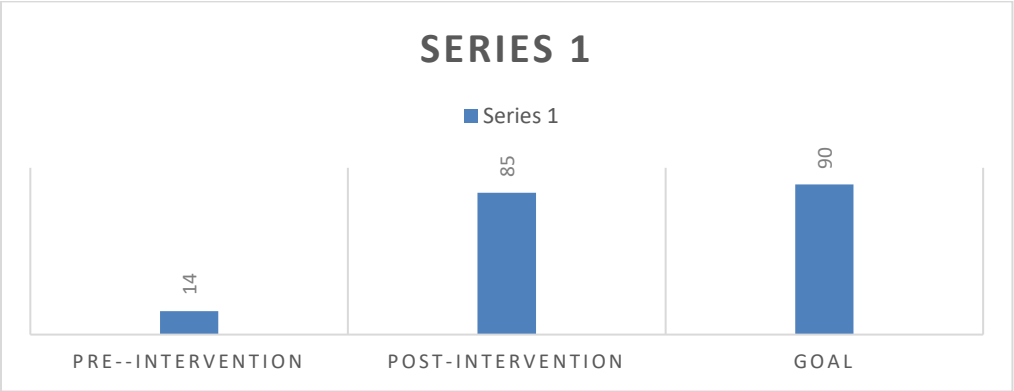


Fig 4

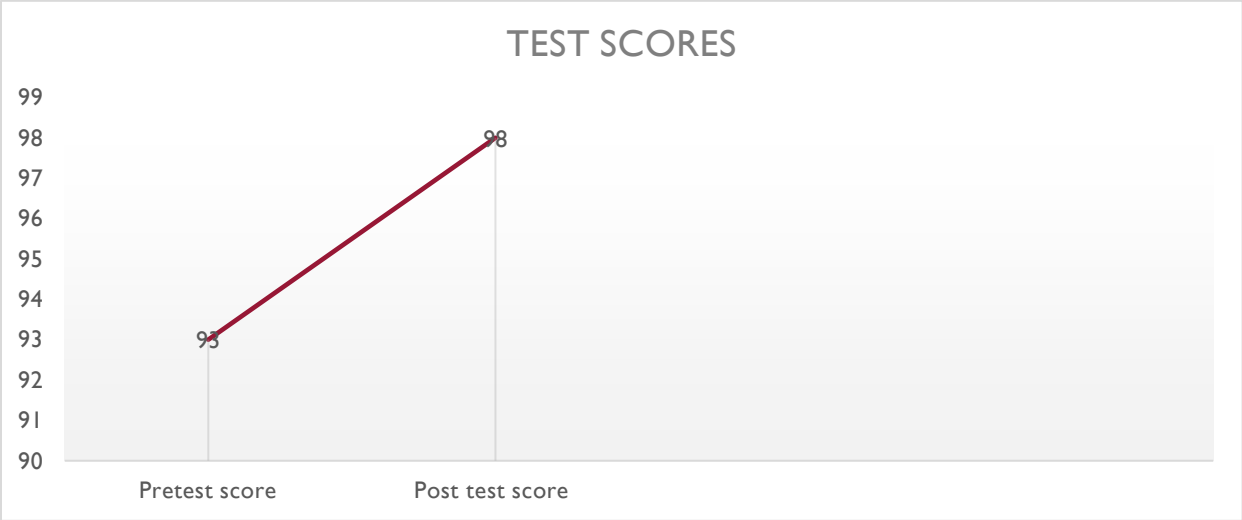


Table 2

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
pre-test score	16	30	70	100	93.19	8.635	-1.413	.564	2.187	1.091
post-test score	16	10	90	100	98.75	3.416	-2.509	.564	4.898	1.091
Valid N (listwise)	16									

Table 3

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pre-test score	.285	16	.001	.759	16	<.001
post-test score	.518	16	<.001	.398	16	<.001

a. Lilliefors Significance Correction

Table 4

Paired Samples Test

		Paired Differences					t	df	Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			One-Sided p	Two-Sided p
Pair 1	pre-test score - post-test score	-5.562	8.816	2.204	-10.260	-.865	-2.524	15	.012	.023

Table 5

Documentation of AIMS Assessment in Patients' EMRs

The project objective goal is 90% improvement post-intervention

Provider assigned identifiers	Number of patient records considered	Pre-intervention AIMS documentation	Post-intervention AIMS documentation	Comment
1	30	29	30	
2	30	0	30	
3	30	0	20	
4	30	0	26	
5	30	0	30	
6	30	0	28	
7	30	0	30	
8	30	0	30	
9	30	0	20	
10	30	5	10	
11	30	7	25	
12	30	10	30	
13	n/a	-	-	Non-provider
14	n/a	-	-	Non-provider
15	n/a	-	-	Non-provider
16	n/a	-	-	Non-provider
Total	360	51(14%)	309(86%)	

Table 6

The number of TD Diagnosed post-educational interventions compared with the documented study, which states that at least 20% of patients on antipsychotic medications will develop TD throughout their life (Vasan & Padhy, 2012)

Provider Assigned identifiers	# of chart reviewed per providers	# of TD codes (G24.01) Pre-intervention	# of TD codes (G24.01) Post-intervention	Comment
1	30	7	15	
2	30	0	3	
3	30	0	5	
4	30	0	3	
5	30	0	2	
6	30	0	2	
7	30	0	4	
8	30	0	2	
9	30	0	2	
10	30	5	3	
11	30	5	5	
12	30	5	10	
13	n/a	-	-	Non-provider
14	n/a	-	-	Non-provider
15	n/a	-	-	Non-provider
16	n/a	-	-	Non-provider
Total	360	22 (6%)	56(15%)	

APPENDIX S

Project Timeline

Project Status Report

Please complete the timeline below by the assigned due date. This assignment aims to determine a timeline of activities necessary to perform during the implementation phase. This schedule will keep you and your project team on track and assist in weekly communication. Please copy and paste some of the introductory information from your project proposal for consistency. You will utilize this timeline during the implementation of your project in DNP Project III. You may also use this form for providing updates during DNP Project III.

Introduction	
Project Site	Inland Psychiatric Medical Group (IPMG)
Project Mentor	Dr. Oluwayemisi Daramola
Project Purpose	The use of DRBA in psychiatric patients has led to the development of TD in most patients and has resulted in poor quality of life for those impacted. Educating the HCPs on the proper use of an evidence-based tool such as AIMS for quick assessment of the TD symptoms for early recognition of the symptoms and appropriate treatment with FDA-approved medications. This scholarly project aims to improve the HCPs' baseline knowledge in early identification of TD in patients on antipsychotics and compliance with the new screening AIMS protocol.
Project Question	In psychiatric HCPs caring for patients on FGA's and SGA's, would implementing an evidence-based AIMS-focused educational protocol, compared to current practice, increase the utilization of AIMS tools within five weeks? Problem/Population/Patient: Healthcare providers (Nurse practitioners, Psychiatrist, Therapists, and Nursing staff) in the outpatient psychiatric setting Intervention: Focused educational intervention and implementation of AIMS protocol Comparison or issue of interest: current practice Outcome: Improve current practice in utilizing the AIMS tool for TD assessment and improve the documentation of AIMS assessment in patient's electronic medical record Time: 5 weeks

Project Timeline	
The purpose of this timeline is to keep you and the project team on track during the implementation phase of DNP Project III. The intervention or project timeline should be clearly described. The time to implement, collect data and evaluate the project should be delineated. Please plan the activities you will perform each week during the implementation phase. Please set concrete dates for training, interventions, data collection, and analysis.	
Week 1 **Dates: July 6-12**	• Notification emails to HCP • Completion of all the logistics for the PowerPoint presentation • Collection of pre-implementation data for the past four weeks (6/6 /2022 to 7/6/2022) • Delivered the PowerPoint presentation with the pre-test and post-survey attached to the individuals wishing to participate via the online version • Set a date for the in-person presentation next week (7/13/2022) at the project site for the providers there.
Week 2 **Dates: July 13-19**	• Still on data collection, collaborating with staff and HCPs, and answering questions relating to the PPT. • Received feedback on the online pre-test and post-tests • Conducted in-service training for a few staff; however, the online version was more accessible in keeping proper documentation of the pre/post-test analysis. The google doc used for these tests analyzed the results in a presentable format following completion of the tests. • Having observed that, I advised the few staff that attended the in-service training to go back to the online version and re-enter the pre-test and post-test for better capturing and analyses of the data. • Stakeholders were impressed with the QI project because they realized the gap amongst the HCPs in identifying these patients, assessing them, and documenting the AIMS on the EMR. • The PI received feedback on the Sample documentation slide; it was suggested to add a few examples of the TD symptoms even though they were mentioned in one of the slides in the PPT. This I will correct later to reflect the suggestion. • Still collecting pre-implementation data and monitoring the progress of the post-implementation results. • The PI will start post-implementation data collection in week 4 to mirror the four weeks pre-implementation phase. This allows enough time for the HCPs to apply the learning from

	the PPT presentation; it also provides a better outcome metric comparison.
Week 3 **Dates: July 20-26**	• Still on data collection on pre-implementation • Fine-tuning the information collected, collaborating with the staff, and answering questions related to the project. • Began looking at the data on the post-implementation; still waiting for some staff to complete their online posttest. • Posttest will be closed at the beginning of the 5th week to allow for analysis. • So far, there are 12 responses with matching pretest to posttest.
Week 4 **Dates: July 27-August 2**	• Ended pre-implementation data collection • Continued the post-implementation data collection • Still troubleshooting and answering vital questions regarding the project. • One major request from the participating providers was to have a hard copy of the EMR documentation sample provided to them as a reference because they could not print it from the PPT.
Week 5 **Dates: August 3-9**	• Both the online version of Pre and post-tests have been completed. • The following are the primary Project Objectives that required some answers because of the implementation: 1. Does TD identification increase because of the educational intervention? 2. Is there an 80% increase in Knowledge in the post-test score due to the educational intervention 3. Is there a 90% increase in EMR documentation of AIMS assessment after the implementation • Next step is to immerse deeply into the analysis to answer the above objective questions using accurate statistical analysis

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Weekly Summary	
Clearly and succinctly summarizes project status, and discussion includes any updates to the project timeline. **DO NOT COMPLETE THIS NOW- SAVE THIS FOR DNP PROJECT III**	
Week 1	The PI initiated the implementation as planned. The PI emailed the PowerPoint to some of the participating providers on 7/11/2022. The PI will conduct the in-person training at the project site on 7/13/2022 during lunchtime for providers who wish to participate live. This training will include a PPT presentation, collection of the pre-test survey before presentation, and the post-test survey after training. So far, pre-implementation data collection is still going on. However, the PI shortened the timeline to 4 weeks because it was discovered that each provider sees an average of 30 patients a day. Data collection over three months anticipated for 30 providers is not feasible for the time allotted for this project and might compromise the data collection.
Week 2	Week 2 is progressing well; so far, 12 responses have been received from the online PPT training. PI is still collecting pre-implementation data and responding to questions from HCPs. Post-implementation data collection will resume in week 4 to allow comparative evaluation between pre- and post-implementation data.
Week 3	Week 3 continues to progress nicely. Still collecting pre-implementation data, I underestimated the magnitude of the data collection process, given that the providers see many patients daily. I am also monitoring online participation. So far, I have 12 responses, and I have started pairing the pre-test with the post-test. I am analyzing the failed questions and still assisting HCPs with questions on documentation on the EMR.

Week 4	Week 4 is moving smoothly, with participants applying their learnings from the PPT to their practice. PI received good compliments. However, PI had to print out the EMR documentation samples for the providers because some complained that they could not download it from the PPT. Post-implementation data collection has been in full force to allow enough time for data analysis in the following weeks.
Week 5	Week 5 is the end of data collection and implementation of this DNP quality improvement project. The next phase is the data analysis using accurate statistical analysis to answer the objective questions to prove if the implementation did what it was supposed to do, and if it did, was it by chance, or can we feel confident that it is accurate, not because we got lucky in choosing the proper sample.

APPENDIX T

Interview Transcript

Change in the workplace

9/13/2022

DNP student: Hi, my name is Jennifer, and I am currently in my DNP program. I would like to interview you on the change process in the workplace, do you mind?

Staff 1: Not at all

DNP student: What is your take on the change process in the workplace?

Staff 1: Change is important in a work environment but has to be real, make sense, and benefit everybody in the company- both staff and management.

DNP student: Can you tell me ways one can implement change in this medical group without resistance

Staff 1: change needs to be introduced to the staff in a way that does not intimidate or interfere with the work process, and the change agent should be open to listening and explaining to the staff without additional burden. The process should be slow and consistent.

DNP student: what do you think could make a change inevitable

Staff 1: drastic change almost always hits resistance from the people receiving the change. More workload due to change will produce some resistance in the process. The lack of adequate staff or resources will negatively impact the change process. Low staff morale and lack of benefits perception will make change inevitable.

DNP student: I just recently completed my DNP project implementation, which you are aware of; how do you think we can maintain the sustainability of the AIMS tool protocol in this medical group?

Staff 1: Is easy; you need to make it mandatory for all the providers to use as part of assessment tools, incorporate it into their performance evaluation checklist, and make it part of the new hire module.

DNP student: Woo!! It was nice interviewing you. Thank you for the information

Staff 1: Is my pleasure. I wish you luck in your endeavor.

Interview Transcript

Change in the workplace

9/13/2022

DNP student: Hi, my name is Jennifer, and I am currently in my DNP program. I want to interview you about the change process in the workplace. Do you mind?

Staff 2: No, I don't mind

DNP student: What is your take on the change process in the workplace?

Staff 2: change is difficult but necessary. However, people need to understand how change affects their lives or work. They should be able to see the bigger picture of change as it relates to their current situation and the benefits of the change.

DNP student: Can you tell me ways one can implement change in this medical group without resistance

Staff 2: That is a difficult question, but If I were to give my opinion, you should start by first seeking approval from the major stakeholders like the CEO, medical director, administrator, and supervisors because they are the decision-makers of the medical group. Half of the work is done if they can buy into your change ideas.

DNP student: what do you think could make a change inevitable

Staff 2: some barriers, like staff resistance to change, not enough resources, and change not aligned with the company's mission and vision, could be some of the obstacles that can impede change in a workplace.

DNP student: I just recently completed my DNP project implementation, which you are aware of; how do we maintain the sustainability of this project in the medical group if the stakeholders approve the use of the AIMS protocol drafted?

Staff 2: I think your DNP project is sustainable in this clinic because of the tool's usefulness in the routine assessment of patients on antipsychotic medications. To be sustainable, it must be an integral part of the onboarding process of new employees, used in the performance evaluation of providers, and incorporated into the annual review risk assessment.

DNP student: Thanks for your time and all the information. It's been a pleasure interviewing you.

Staff 2: You are welcome. Good luck.