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A RETROSPECTIVE ANALYSIS OF MEDICATION ERRORS

A Retrospective Analysis of Self-Administered Medication Errors within Mental Health Residential Rehabilitation Treatment Programs

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A RETROSPECTIVE ANALYSIS OF MEDICATION ERRORS

Abstract

of

A Retrospective Analysis of Self-Administered Medication Errors within Mental Health Residential Rehabilitation Treatment Programs

by

Lorraine M. Rodriguez

Patients admitted to Mental Health Residential Rehabilitation Treatment Program’s (MHRRTP’s) often require education regarding medication self-management to increase medication adherence. Nurses play a fundamental role in educating and assessing a patient’s ability to administer their own medication. This retrospective study explored whether patient self-medication management errors decrease with the implementation of the Assessment Tool for Safe Medication Management. A literature review revealed a lack of research and indicated the need to help patients learn to self-administer medications while admitted to a hospital or recovery facility. De-identified data comprised of numbers of self-administered medication errors from January 2012 to December 2019 were collected from two veteran served MHRRTP’s in southern California. A two tailed independent samples t-test was applied to examine whether there was statistical significance between self-administered medication errors before and after the implementation of the Assessment Tool for Safe Medication Management using an alpha value of 0.05. The results were not statistically significant however, there was a small trend in decreasing medication errors indicative of a need for further research.
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Chapter One

Mental health residential rehabilitation treatment programs (MHRRTPs) have been essential in providing tools, education, and recovery options for patients who struggle with addiction and mental health diagnoses (Gaddy, 2018). A priority component within the MHRRTP is self-medication administration and management. One of the most significant challenges for patients diagnosed with mental health and substance abuse disorders is the ability to maintain medication compliance when discharged from a MHRRTP. When patients discharge home, they often fall into a cycle that starts with medication non-adherence. A study by Ho, Chong, Chaiyakunapruk, Tangiisuran, and Jacob (2016) found that 33%-69% of medication-related admissions were associated with lack of medication compliance. Often, patients need urgent mental health services from the psychiatric emergency clinics or emergency departments. They are then readmitted to the hospital on a psychiatric hold order or are admitted for detoxification with the transition plan of reentering the MHRRTP. This cycle costs the government, hospitals, clinics, and MHRRTPs approximately $1 billion each year and is challenging financially and emotionally for the individual patients and their families (Smith, Stocks, & Santora, 2015).

MHRRTPs effectively treat patients with both substance use disorder and a variety of mental health disorders such as depression, anxiety, post-traumatic stress disorder (PTSD), and other trauma related disorders (Gaddy, 2018). Since residential programs have the capacity to incorporate curricula such as yoga, tai chi, recreational outings, self-medication management, medical consequences, healthy eating and choices,
and relapse prevention, programming is generally received well by veterans overall and many of them continue to use recovery principles past their residential admission. Gaddy (2018) found that the use of integrative medicine, the wholistic approach to mental health care, in MHRRTPs was helpful in improving the health, success, and welfare of veterans receiving treatment. Many of the classes, such as medication education and management taught by nurses, encourage patients to not only be compliant with a medication regime but also promote self-care.

The need for medication compliance in mental health is more than just having patients take medication. To foster self-administration compliance with a medication regimen, it is essential that the patients understand and learn why, when, and how to take medication. Patient education should also encourage discussion with providers in the event patients no longer want to take medication or feel they need medication changes. Empowering patients to administer their own medication is an excellent start to learning everyday life skills through this transfer of responsibility. Learning self-medication management can not only improve patient outcomes, but also improve their satisfaction with the care received from MHRRTPs. Research has shown that when patients share decision-making and participate in their own health care, trends improve regarding medication compliance, quality of life, and overall health (Lorig, Ritter, Pifer, & Werner, 2014).

It is important to investigate how well patients can administer their own medication while admitted to MHRRTPs. Registered nurses assess and educate patients admitted to the MHRRTP about safety and accuracy of self-administering medication.
However, to date, a paucity of research has been reported on the incidence rate of medication errors associated with self-medication management. This retrospective analysis studied the impact of using a comprehensive nursing assessment tool, on reported self-administered medication errors within MHRRTPs. A need for this research was identified by the mental health nursing leadership within a veteran’s medical center in a large metropolitan hospital in southern California.

**Background and Significance**

Since MHRRTPs have instituted patient self-medication management programs, there has been a lack of research examining medication adherence and reported medication errors. In addition, little is known about the nurses use of a comprehensive assessment tools to decrease patient self-administered medication errors. The severity of a patient’s mental health, substance use, cognition, and suicidality are important factors to be assessed in deciding whether a patient can or cannot safely self-administer and manage his or her own medications. Nurses play a fundamental role in assessing the patient’s knowledge and misconceptions associated with medications.

Several tools have been developed for nurses to use to analyze a patient’s understanding of prescribed medications and patterns of administration that could detect risks associated with medication errors (Persell et al., 2018). A thorough assessment by registered nurses is important to understanding what education the patient needs to comply with self-administration of medication. A multidisciplinary team, including this researcher, conducted a root cause analysis to evaluate the way patients were assessed for self-medication management by registered nurses. It was found that an assessment of a
patient’s abilities to administer their own medication and was essential to promote patient safety. As a result of the committee work, the nursing Assessment Tool for Safe Medication Management (see Appendix A) was developed along with a program for its use. The intention was to help nurses assess the patient’s medication administration ability through shared decision making.

**Problem Statement**

Patients who suffer from mental illnesses often required admission to a MHRRTP to help strengthen life skills and coping mechanisms to assist them on their journey toward mental health wellness and rehabilitation. Self-medication management is one aspect of rehabilitation that has become increasingly acknowledged as a life tool that has potential to improve medication adherence. Nursing has been at the forefront of educating patients about self-medication management and its benefits. Currently, there is insufficient knowledge about the efficacy of using a comprehensive nursing assessment tool to evaluate a patient’s medication knowledge, patterns of medication management, mental health including suicidality, and physical ability to take their own medications, to reduce self-medication errors.

**Purpose of the Research**

The purpose of this research was to explore whether the implementation of a comprehensive nursing assessment tool, Assessment Tool for Safe Medication Management, would decrease medication errors for patients participating in self-medication management within MHRRTPs located in southern California from January 2012 to December 2019.
Research Question and Hypothesis

Do self-medication management errors decrease with the implementation of the Assessment Tool for Safe Medication Management?

Hypothesis: Self-medication management errors will decrease with the implementation of the Assessment Tool for Safe Medication Management within a MHRRTP setting.

Research Variables

The research variables for this study were the number of self-medication errors per annual ward days of care (dependent), collected before and after the implementation of the Assessment Tool for Safe Medication Management (independent). The self-medication management error is a data point generated when the nurse enters a patient event report based on a patient’s self-report of a medication administration error. These errors are usually discovered during either the weekly self-medication management reassessments completed between the primary nurse and patient, or daily interaction in which the patient reports an error. The reassessments are documented in the electronic medical record and the error is entered into the patient event reporting system where it is then sent to a data repository. It was hypothesized that the use of the Assessment Tool for Safe Medication Management would result in a decrease in the incidence rate of self-medication management errors.

Assumptions

There were many assumptions found in the research literature involving self-medication management. Individuals with mental health disorders and disease processes
have similar self-management problems (Lorig, Ritter, Pifer, & Werner, 2014). It has been assumed that people can learn to take accountability for daily self-management of problems and illness-related tasks such as medication management. Patients may experience overall enhanced health status if they are participating in self-management (Lorig, Ritter, Pifer, & Werner, 2014). Based on Bandura’s (2012) self-efficacy theory, the assumption has also been made that one’s own belief in self-efficacy can be a catalyst for motivation and inspiration.

**Importance**

Research has shown that mental health rehabilitation programming along with medication management education reduced hospital re-admissions (Tsoutsoulis, Maxwell, Menon Tarur Padinjareveettal, Zivkovic, & Rogers, 2018). Nursing was primarily responsible for education, including providing medication management guidance to patients within the MHRRTP. The Assessment Tool for Safe Medication Management evaluated patients and allowed programs to safely introduce patients to self-medication management. Safe administration was the desired outcome along with a reduced risk of medication errors. Ensuring patients knew what medications they were taking, as well as dose and route of administration, was a 2019 National Patient Safety Goal and one indicator that patients were appropriately self-administering their medications (Joint Commission publishes 2018 National Patient Safety Goals, 2018).
Chapter Two

The databases used for this search were PubMed, CINAHL, and Google Scholar. The search was limited to English with articles dating from 2012 in order to obtain recent research. Search terms included: self-medication management, medication self-administration, mental health residential rehabilitation treatment program (MHRRTTP), medication errors, self-medication assessment tool, and nursing medication assessment. The literature reviewed for the purposes of this paper focused on self-medication management, nursing role in self-medication management, and medication errors.

Literature Review

Anderson, Manias, Kusljic, and Finch (2014) tested a tool that examined the utility, reliability, and validity of a patient’s ability to self-administer medications during admission to a rehabilitation program. The purpose of this study was to identify if the use of an assessment tool could help indicate a patient’s ability to self-administer medication. Additional objectives looked at the relationship between measures of the patient’s independence and activities of daily living in relationship to knowledge and ability to self-administer medications. The methodology evaluated associations made between perceived patient competence and total scores of the self-administration of medication (SAM) tool. The tool was designed with two sections of questions. The first section asked questions regarding desire to self-administer medications and overall competency. The second section looked at discharge planning and the patients desire and capacity to self-administer medications at home. The questions were designed on a
Likert scale with the highest possible score being 96, and 60 being the lowest possible score to self-administer medications competently.

The SAM tool was administered by nursing staff to 100 participants during the process of the study. The participants were a minimum age of 18 and had the ability to comprehend English. Consistency was met as the same staff member completed the SAM tool with all 100 patients. The study used Microsoft, IBM, and Minitab software. Pearson coefficients determined validity of the scores concerning the patient’s and nurse’s perception of the ability to self-administer medications. The SAM tool showed good reliability and utility using a Cronbach’s alpha score of 0.7 or greater. The research concluded that the tool had good internal consistency and that the SAM tool was aligned with the assessment protocol the rehabilitation unit was presently using.

Results showed strong correlation between a patient’s independence and activities of daily living in relationship to knowledge and ability to self-administer medications. It was noted that the introduction of the SAM tool could encourage nurses to give patients the chance to self-administer medications. Concurrent use of the independence and activities of daily living rating scales with the SAM tool showed limitations and it was suggested that patients should be given the assessments at the same time. Consistent training of the staff administering the tool was proposed to increase reliability and validity. The creation of a standardized tool for residential programs has potential, however further research should be done with larger studies.

In another study on the self-administration of medication, Vanwesemael, Van Rompaey, Petrovic, Boussery, and Dilles (2017), aimed to assess the prevalence of self-
administration of medication in the hospital setting. This observational study used a convenience sample in 12 different Belgium hospitals. The researchers interviewed and completed medication surveys with the head nurse regarding each of the 1,269 patients. The questionnaire consisted of health condition, age, gender, medications, discharge destination, and care dependency. Surveys were also completed for 56 units by the head nurse concerning self-medication protocol and unit information such as bed capacity, occupancy, medication storage, and unit type.

Researchers found that 17.9% of the units surveyed had a self-medication administration policy or procedure, and 7.1% had a tool designed to assess a patient’s ability to administer their own medications. It was found that whether a unit had a policy or not did not impact the percentage of patient’s who started self-administration of medication. There was no consistency concerning the decision to start self-administration of medications. There was collaborative decision between the patient, the nurse, and the doctor, but there was also incidence of collaboration between the patient and either the nurse or the doctor. In rare cases, family members were involved in the shared determination. A minimum of one and a maximum of sixteen medications were self-administered by 22% of the patients in the study. Patients only took on average 13.1% of their medications as self-administered.

A variety of reasons such as a patient’s desire to self-administer, health condition, mental status, physical ability, and caregiver opinion were suggested for either permitting or denying patient self-administration. The study revealed that more patients could have been started on self-administration of medications as nurses assessed over 40% of
patients would have had the ability and competency to do so. Results also indicated that younger female patients with less medications were more likely to desire self-administration than patients over the age of 60. The research suggested additional patients would be able to self-administer medications; however, there was a lack of assessment tools, education, and procedures to evaluate appropriateness of patient abilities. The study concluded that policies and procedure needed to be established, as well as standardized assessments through an interprofessional team, in order to utilize self-administration of medication in a hospital setting.

In a subsequent article, Vanwesemael, Dilles, Van Rompaey, and Boussery, (2018) reported a practice procedure for the self-administration of medication (SelfMED). The procedure was validated by a multidisciplinary team of providers. Analysis of the previous research indicated a need to rule out bias regarding three statements in the assessment. This was done by testing inter-rater reliability using Cohen’s Kappa, between two nurses, who each assessed 158 patients.

SelfMED was created as a phased procedure with three assessments for nurses, patients, and doctors. Nurses started with an eligibility assessment. If the nursing assessment indicated a patient was eligible to start the SelfMED procedure, patients then completed a questionnaire regarding desire and ability to participate. Through the nurse’s assessment and patient questionnaire, the final decision was made by the patient’s doctor. The doctor would then determine what medications would be started on SelfMED. If a patient were not placed on SelfMED at that time, they could be reassessed in the future.
The SelfMED procedure consists of a daily tool for the patient to document the date and time of self-medication administration. There were columns for nurses to initial for SelfMED monitoring, as well as additional columns to indicate changes in status and if a patient was still able to perform self-administration. Education was incorporated throughout the procedure and was particularly important in the event an error was made. If SelfMED errors continued to occur, the procedure could be stopped, and a reassessment done at a later date. SelfMED is a multidisciplinary procedure that allowed for patient education and encouragement. The protocol gave hospitals a guide to develop individual SelfMED programs and at the same time create consistency.

Lorig, Ritter, Pifer, and Werner (2013) evaluated disease self-management in patients diagnosed with serious mental illness (SMI) living in Michigan. Health and wellness recovery for patients with SMI was widely used for improving outcomes related to quality of live and symptom management. The desired outcome was for improved self-care through peer counseling and health education. The aim of this study was to evaluate health indicators in 139 patients enrolled in a self-management program intervention after 6 months of participation. Data were obtained through questionnaires that included demographic information and inquiries about the patient’s physical health, mental illness, and insurance.

The self-management program consisted of workshops providing quality-of-life tools for problems such as sleep, medication adherence, and health distress. The data were collected during the initiation of the workshops and at 6 months. The workshops varied in setting including faith-based facilities, community clinics, and mental health
agencies. The study found that patients living with mental illness were underserved by self-management programs and that the program was an effective resource for this population of patients. Improvements were significant in eight out of the ten health variables within the quality-of-life tool for those patients who completed the program. Those who consistently attended the workshops had improvements in self-management behaviors, overall health, and adherence. The program has since become commonly used throughout the state of Michigan and the country.

In a systematic review by Richardson, Brooks, Bramley, and Coleman (2014), the effects of self-administration of medication (SAM) were analyzed in association with patient medication compliance, medication errors, success of self-administration, and patient satisfaction. The researchers reviewed 43 studies, all of which utilized established tools and interventions implemented in a healthcare setting for patient self-administration of medication. Each SAM program evaluated assessment of patient knowledge, patient medication compliance and medication errors, patient and staff satisfaction, patient success and completion, workload, and costs. Mixed results were found regarding overall outcomes and there was not enough evidence that SAM programs decreased medication errors.

A significant amount of time is required for staff to implement a SAM program. One barrier to implementation was the need for additional support from interprofessional team members such as nursing and pharmacy. The time involved in assessment, education, and medication preparation exceeds the traditional medication administration in the hospital setting. However, the potential for patient medication compliance was
observed throughout much of the information reviewed. The researchers proposed that healthcare systems, patients, and staff would benefit from patient self-administration of medication. They also indicated that an increased sense of control was noted for patients who endure longer hospital stays. The literature review concluded that some improvements were made in medication compliance, but that further studies needed to be conducted to improve consistency.

Morrison, Cope, and Murray (2018) explored medication errors through a retrospective root cause analysis. In 2017 the World Health Organization (WHO) identified reporting safety issues, including medication administration errors, as an important practice that should be done globally. The purpose of this analysis was to investigate why medication errors were still underreported considering the no-fault culture, and the importance of understanding medication errors entered through the electronic reporting system particularly within the mental health setting. The analysis took place in Australia investigating medication errors reported by staff through an electronic event management system. De-identified data was utilized from the electronic system that spanned over a three year period from April 1, 2014 and April 1, 2017. The researcher’s main objectives were to understand the rate of medication errors, when the errors were identified, and the error characteristics such as timing of the error and results.

The electronic system found 73 errors related to medications administered on the mental health unit. The errors consisted of additional doses being given, the wrong medication being administered, wrong dose, medications administered too early,
inadequate medication administration documentation, pharmacy dispensing errors, and prescribing errors. The medications commonly associated with mental health medication errors were antipsychotics and anxiolytics. The major contributing factors associated with medication errors surrounded communication, not following policy, lack of skill, medication administration competence, staff scheduling, and work environment.

The results indicated the need for leadership to implement stronger medication administration policies, adjustments to staff duties, additional training, and improving the unit culture. They suggested this could be done by having a second verifier for the medications identified as most at risk for error, improved patient collaboration and education regarding medications, encouraging patient safety awareness, staff education, and changing the culture to be proactive. The research showed that medication administration errors continue to be problematic in all healthcare settings and that continued changes to culture and practice are needed. Patient-focused care and a culture of shared decision making toward medication administration could help provide safe patient outcomes within the behavioral health setting.

**Major Variables Defined**

As previously stated, the research variables for this study self-medication errors per annual ward days of care (dependent) and the use of the Assessment Tool for Safe Medication Management (independent). Self-administration of medication is defined as one’s ability and capacity to manage his or her own medications (Vanwesemael, Dilles, Van Rompaey, & Boussery, 2018). MHRRTP’s are residential rehabilitation programs that treat mental health disorders including post-traumatic stress disorder (PTSD) and
substance use disorders (SUD); (U.S. Department of Veterans Affairs, 2016).

Medication errors are defined as adverse events associated with medication-related harm (Morrison, Cope, & Murray, 2018). Nursing medication assessment is defined as using clinical skills to safely and successfully administer medications while avoiding harm (Davies, Coombes, Keogh, & Whitfield, 2019).

**Theoretical Framework**

Peplau recognized that the interpersonal relationship between nurses and patients developed throughout the four phases of orientation, identification, exploitation, and resolution (Peplau, 1989). During the self-medication management assessment, patients and nurses have not yet established a therapeutic relationship as the assessment is completed within the first 12 hours of admission. It is important to understand that during those first interactions, the nurse and patient are in the orientation phase (Peplau, 1989). Throughout the orientation phase the patient must have some insight into the reason they are seeking help in order to offer accurate information that the nurse can use in the assessment. Patients must be open to learning and feedback, and nurses must be understanding and flexible while knowing when to listen and when to guide. During this phase nurses are also able to help the patient understand the importance of medication management and educate the patient about the self-medication program and expectations (Peplau, 1989).

Hochberger and Lingham (2017) wrote that when psychiatric nurses partner with patients through education and support with self-administration of medication, they promote wellbeing and relationships. Peplau’s interpersonal relations theory discussed
the importance of the psychiatric nurse’s ability to foster self-care through strong assessment skills, active listening, empathy, empowerment, and patient centered care (Hochberger and Lingham, 2017). Patients who have had the opportunity to participate in self-administration of medication programs often receive nursing instruction and guidance that reduce relapse and re-hospitalization and increase medication compliance. Peplau felt that engaging in shared decision making with patients who are the experts of their own life experience created the interpersonal relationship needed to help patients reach their mental health goals. Nurses assist in the development of new patterns and views; this in turn can help patients make positive life changes including wholistic self-care.

Through self-administration of medications, patients work on a personal accomplishment that can aid in motivation toward self-care. Bandura theorized that a belief in one’s self was an important factor in gaining self-efficacy. In order to obtain this goal, patients must find motivation and inspiration (Bandura, 2012). In the MHRRTP setting, nurses are available to help patients reach their goals by encouraging, educating, and collaborating through patient centered treatment. Patients can attain goals with this approach thus increasing confidence in themselves and maintaining adherence to self-medication management.

Summary

Nursing assessment plays a vital role in understanding a patient’s capacity and ability to self-administer medications. Medication management is important to help prevent re-hospitalization of patients with mental illness. When patients can manage
their own medications in a rehabilitation setting through nursing education and guidance, they have better medication adherence post-discharge. Understanding if comprehensive nursing assessment tools help decrease patient self-medication errors will further assist in the way self-medication management programs are sustained throughout MHRRTPs. The review of literature indicates the need for self-medication management programs, thorough nursing assessment, medication compliance for patient with mental illness, and further investigation into outcomes related to self-administration of medication errors.
Chapter Three

As previously mentioned, there are strong associations between the comprehensive nursing assessment of a patient’s ability to self-administer medications and medication adherence. This study will explore the influence of the Assessment Tool for Safe Medication Management on patient self-medication errors. According to the literature review, nurses play an essential role in self-medication management within MHRRTPs. Further research is needed to see how nursing assessment effects medication error rates. This chapter will discuss the research design, data collection process, setting, analysis, and bias.

Research Question

Do self-medication management errors decrease with the implementation of the Assessment Tool for Safe Medication Management?

Hypothesis

Hypothesis: Self-medication management errors will decrease with the implementation of the Assessment Tool for Safe Medication Management within the MHRRTP setting.

Setting

The physical settings for the research study were two veteran served MHRRTP’s in southern California from which the data was obtained. Each of these MHRRTPs are staffed and lead by an interprofessional team consisting of registered nurses, family and psychiatric nurse practitioners, licensed vocational nurses, psychiatrists, psychologists,
addiction therapists, social workers, and peer support specialists. Patient stays vary in length of time depending on the individual treatment plan with an average of 30-90 days.

**Research Design**

For this study, a retrospective analysis was utilized to gather data about self-medication management errors from two MHRRTPs. The researcher requested the total number of self-medication management errors per annual ward days of care from before and after the implementation of the Assessment Tool for Safe Medication Management over a period of 8 years from January 2012-December 2019. The process information management system (PIMS) provided completely de-identified data from the healthcare organization’s data repository. The researcher compared the results using a two-tailed independent samples t-test. The two independent samples of ratio and nominal variables were tested to determine whether the implementation of a comprehensive nursing assessment tool impacted patient self-medication errors.

**Variables Defined**

The research variables for this study were self-medication errors per annual ward days of care (dependent) before and after the implementation of an Assessment tool for Safe Medication Management (independent). The dependent variable consisted of ratio data and the independent variable consisted of nominal data. Annual ward days of care were established through the hospitals recording of bed movements and ward statistics. This information was available to the researcher through the facilities staffing methodology. The self-medication management error is a data point generated when a patient is enrolled in a MHRRTP and placed on the self-medication management protocol
when the error occurs. The Assessment Tool for Safe Medication Management was the variable hypothesized to decrease the number of patient self-medication management errors. The Assessment Tool for Safe Medication Management implemented within southern California veteran’s medical center was created by a multidisciplinary team after a root cause analysis investigated the way patients were assessed for self-medication management by registered nurses with admitting privileges.

**Population and Sample**

For the purposes of this research, the population was comprised of veterans admitted to MHRRTPs from January 2012 to December 2019 who were placed on a self-medication management protocol. The data represented de-identified self-medication errors per annual ward days of care. The sample was divided into two groups: patients who were assessed on admission by a registered nurse prior to the Assessment Tool for Safe Medication Management implementation, and those admitted by a registered nurse with the Assessment Tool for Safe Medication Management. Exclusionary criteria included any patient who was not admitted to the MHRRTPs during this time frame.

**Measurement Methods**

All data collected for the purposes of this research was extracted from a repository within a southern California veteran’s medical center. The data supplied by PIMS represented the number of self-administered medication errors per year per program.

**Data Collection Process**
Institutional Review Board (IRB) approval was obtained through the southern California veterans’ healthcare facility providing de-identified data (Appendix B). A request for an exempt review was approved through California State University San Marcos (CSUSM) as it met standard 4 of the university’s criteria for exemption: secondary research utilizing existing data that does not require consent (Appendix C.). Data was requested for the specific 8 year period from two MHRRTP’s. De-identified self-medication management error data was obtained through PIMS as an electronic file.

Coding and Scoring

No coding or scoring was required for the completion of this research.

Data Analysis

This researcher employed Intellectus Statistics: Statistics for the Non-Statistician for the purposes of data analysis. A two-tailed independent samples t-test was performed to test the hypothesis that there would be a decrease in the occurrence of self-administered medication errors after the implantation of the Assessment Tool for Safe Medication Management. An alpha score of 0.05 was set as the test statistic for this analysis. The patient self-medication management errors were divided into two groups. The first group represented the number of medication errors prior to the utilization of the Assessment Tool for Safe Medication Management (no) and the second group represented medication errors with the utilization of the tool on admission (yes). The period consisted of data collected over 8 years before and after the implementation of the assessment tool.

Bias
No biases were indicated due to the automated manner of retrospective data extraction which the researcher did not control.

**Ethical Considerations**

There were no ethical considerations detected due to the de-identified nature of the data collected. The data collected through PIMS were only the numbers of patient self-medication management errors.

**Summary**

Through a retrospective analysis of patient self-administration of medication in the MHRRTP setting, a reduction of medication errors with the implementation of the Assessment Tool for Safe Medication Management was predicted. Data were obtained from a medication error repository at a southern California veteran’s medical center. All data used for the purposes of this study was de-identified. Using Intellectus Statistics: Statistics for the Non-Statistician, data was organized and using a two-tailed independent samples t-test the hypothesis was tested. No biases or ethical considerations were identified.
Chapter Four

This study aimed to explore the influence of the Assessment Tool for Safe Medication Management on patient self-administered medication errors within Mental Health Residential Rehabilitation Treatment Programs (MHRRTPs). Nurses play an essential role in the assessment and education of self-medication management within MHRRTPs. This research examined how a comprehensive nursing assessment tool impacted patient self-administered medication error rates. This chapter discusses the sample, data collection, preparation, and results.

Sample

The sample population comprised of veterans admitted to two MHRRTPs from January 2012 to December 2019 who were placed on a self-administered medication management protocol. The sample was divided into two groups (see Appendix D), those patients who were assessed on admission prior to the implementation of the Assessment Tool for Safe Medication Management implementation (control group), and those admitted with the comprehensive nursing assessment tool (intervention group) being used. Patients varied in age, gender, and ethnicity, but specific demographic information was not available to the researcher. All patients included in the research were United States veterans and maintained a diagnosis from the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5). Exclusionary criteria involved any patient who was not admitted to the MHRRTPs from during that period of time.

Data Collection and Preparation
The researcher obtained permission from a southern California veteran’s medical center through the hospital’s Internal Review Board (IRB) to obtain the requested medication error data. The process information management system (PIMS) within the veteran’s medical center, provided the researcher with numbers of de-identified self-administered medication errors per annual ward days of care and number of admissions over an 8-year period from January of 2012 to December of 2019. There were 1,182 patients in the control group and 1,118 in the intervention group.

The Intellectus Statistics software was utilized for the purposes of data analysis. The patient self-medication management errors were divided into two groups. The control group represented the number of medication errors prior to the implementation of the Assessment Tool for Safe Medication Management (no) and the intervention group represented medication errors with the utilization of the tool on admission (yes). A two-tailed independent samples t-test was performed to explore whether the mean of errors was significantly different between the groups. An alpha score of 0.05 was used for the purposes of this research as suggested in the literature review.

Results

The research question originally identified for this study was, do self-medication management errors decrease with the implementation of the Assessment Tool for Safe Medication Management. There were 28 medications errors prior to the implementation of the assessment tool and 23 medication after implementation. The statistical analysis results indicated there was no statistical significance between the mean of errors prior to and after the implementation of the Assessment Tool for Safe Medication Management.
This result indicates that self-medication management errors did not decrease with the intervention.

The directional hypothesis indicating that self-medication management errors would decrease with the implementation of the Assessment Tool for Safe Medication Management within a MHRRT setting was rejected. The result of the two-tailed independent samples t-test, analyzing the mean of errors, was not deemed statistically significant based on an alpha value of 0.05, \( t(14) = 0.49, p = .635 \) (Intellectus Statistics, 2021). The data are shown below in Table 1 and depicted in Figure 1 is a bar plot of the mean. In Figure 2 a line plot depicts the number of self-medication errors per sight by year (Intellectus Statistics, 2021).

**Table 1**

*Two-Tailed Independent Samples t-Test for Errors by Intervention*

<table>
<thead>
<tr>
<th>Variable</th>
<th>no</th>
<th>yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Errors</td>
<td>3.50</td>
<td>3.30</td>
</tr>
</tbody>
</table>

*Note.* \( N = 16. \) Degrees of Freedom for the \( t \)-statistic = 14. \( d \) represents Cohen's \( d \).
Figure 1

The mean of Errors by levels of Intervention

![Bar chart showing the mean of Errors by levels of Intervention.](image)

Figure 2

Number of Errors per Site by Year

![Line chart showing the number of Errors per Site by Year.](image)
Using a Pearson correlation analysis, the researcher evaluated the relationship between errors, admissions, and ward days based on an alpha value of 0.05 shown in Table 2 (Intellectus Statistics, 2021). The scatterplots in Figure 3 show a negative correlation between admissions and ward days ($r_p = -0.88$, $p < .001$, 95% CI [-0.96, -0.69]), as well as a large effect size between admissions and ward days indicating with an increase in Admissions there is a decrease in ward days (Intellectus Statistics, 2021). This finding is likely related to the difference in the size of units. There were no additional significant correlations found.

### Table 2

**Pearson Correlation Results Among Errors, Admissions, and Ward_days**

<table>
<thead>
<tr>
<th>Combination</th>
<th>$r_p$</th>
<th>95% CI</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Errors-Admissions</td>
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<td>.506</td>
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<tr>
<td>Errors-Ward_days</td>
<td>-0.12</td>
<td>[-0.58, 0.40]</td>
<td>.667</td>
</tr>
<tr>
<td>Admissions-Ward_days</td>
<td>-0.88</td>
<td>[-0.96, -0.69]</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

### Figure 3

*Scatterplots between each variable with the regression line added*
Summary

The research sought to answer the question, do self-medication management errors decrease with the implementation of the Assessment Tool for Safe Medication Management. Although the statistical results of the data did not suggest significance, medication errors did decrease marginally with the implementation of the Assessment Tool for Safe Medication Management. There was no difference found in number of admissions between the intervention and the control group. Additionally, there was no difference found in number of ward days between the intervention and control group.
Chapter Five

Medication management and compliance are integral parts of a patient’s mental health treatment. Inadequate medication adherence continues to be an indicator for hospital readmissions (Ho et al., 2016). Providing patients with education and the opportunity to self-administer their own medications while they are admitted to a treatment facility may offer increased medication compliance post-discharge. An essential piece of the self-administered medication program is the assessment of the patient’s ability and motivation to participate. This retrospective analysis researched the impact of a comprehensive nursing assessment tool in relation to patient self-administration of medication errors. This chapter discusses major findings, limitations, generalizability, implications for advanced practiced nurses, and future recommendations.

Major Findings

The aim of this study was to find out if the implementation of the Assessment Tool for Safe Medication Management administered to patients prior to starting a self-administered medication protocol would decrease the number of medication errors within Mental Health Residential Rehabilitation Treatment Programs (MHRRTPs). Although the research was not statistically significant, a trend of decreasing self-administered medication errors by was identified. This downward trend is an indicator that further studies should be conducted.

Limitations

The researcher identified multiple limitations of the study. The researcher did not have control over the variables and relied on accurate patient reporting. Under reporting
of errors by both patients and nurses continues to be a significant problem throughout the healthcare system due to the negative connotation associated with medication errors which could potentially impact research results and validity. Due to the potential of low reporting, it may take a larger sample size to see statistical change. Additional time and a larger sample size would aid in the collection of a more robust analysis. Another limitation noted was that the researcher... These are all facets that should be taken in account for future studies.

**Generalizability**

This retrospective analysis is not generalizable as it is specific to a very narrow patient population. The results cannot be duplicated in universal healthcare settings and are not universally applicable.

**Implications for Advanced Practice Registered Nurses**

Advanced practice registered nurses (APRNs) often prescribe to vulnerable populations such as those diagnosed with mental health and substance use disorders. Within MHRRTPs, Psychiatric Mental Health Nurse Practitioners (PMHNPs) prescribe necessary medications for patients and have the potential to impact patient medication adherence. This can be accomplished by the APRN through encouraging patients to develop a new pattern of positive behavior, such as consistently self-administering medication in a safe recovery environment. “Nurses play a primary role in influencing patients’ attitudes toward, acceptance of, and adherence to medication regimens” (Hochberger & Lingham, p. 122, 2017). The PMHNP will develop a therapeutic relationship with the patient and then use a collaborative approach to create a
treatment plan including medication the patient agrees would positively impact his or her quality of life. Utilizing the Assessment Tool for Safe Medication Management, the APRN can gauge how capable the patient is of engaging in a self-medication management program. There must be education about when and how to self-administer medication as well as how the patient can best communicate with the APRN to make changes if needed.

APRNs encourage patient empowerment as they follow the individual closely for the duration of their recovery. Maintaining a therapeutic alliance and shared decision making are important aspects of the relationship. The overall idea is that the APRN and the patient are both experts working on the same mental health goals. The APRN provides clinical expertise, and the patient provides their own life experience (Hochberger & Lingham, 2017). This rapport allows for challenging conversations to be had when patients are having difficulties maintaining a medication regimen or are non-participatory with self-administration of medications. The APRNs continued work of guiding patients to self-efficacy remains crucial in supporting clients with goal attainment.

**Recommendations for Future Research**

Future research will be needed to explain this trend and should consider a larger study identifying and incorporating MHRRTPs throughout the veteran’s healthcare system over an extended period of time. MHRRTPs should also establish a non-punitive system of reporting medication errors and may even contemplate changing the language and culture associated with medication errors to help correct the negative associations.
Additionally, researchers should investigate the way medication errors are categorized and potentially institute an algorithm for consistent reporting.

Summary

There is a lack of research regarding self-administration of medication within MHRRTPs. Although the small sample size utilized for this research did not suggest a substantial difference in identified medication errors based on the intervention of the Assessment Tool for Safe Medication Management, there was a downward trend in reported errors. Additional research on a larger scale could identify areas for improvement indicating enhancements to the self-medication management program.
References


Appendix A.

Safe Medication Management Initial Assessment

DOES THE VETERAN ....

1. Take medications as prescribed consistently without missed doses?
   Yes/No Comments:

2. Verbalize understanding of storage and security requirements for Medications?
   Yes/No Comments:

3. Name their medications from recall or refer to a list to identify prescribed medication?
   Yes/No Comments:

4. Report how to administer each medication (route, dose, and when) either from recall, use of the medication label, or medication list?
   Yes/No Comments:

5. State what symptom his/her prescribed medications are meant to help?
   Yes/No Comments:

6. State what, if any, side effects he/she is to be aware of with regard to his/her medications?
   Yes/No Comments:

7. Report when medications make him/her feel bad or sick before stopping medications unsupervised?
   Yes/No Comments:

8. Verbalize how to ask for changes in medications?
   Yes/No Comments:

9. Verbalize ability to read and understand administration instructions on his/her medication label?
   Yes/No Comments:

10. Verbalizes medications do NOT negatively impact quality of life or lifestyle:
    Yes/No Comments:

11. Verbalizes assistance NOT required with set-up and/or administration of daily medication?
    Yes/No Comments:

12. Verbalizes NO suicidal ideation in last 60 days and no suicide attempts within the last year:
    Yes/No Comments:

Safe Medication Management Score:

SMM1. DEPENDENT (Less than 7 YES answers)
SMM2. SEMI-INDEPENDENT (7-9 YES answers)
SMM3. INDEPENDENT (Answered YES to #12 AND YES to 9 or more other questions)

Veteran will be reassessed on (weekly): (Date)
Veteran understands and agrees with the treatment plan.
Yes/No Comments:
Date: December 20, 2019
From: Performance Improvement Management Service (170)
Subj: Request for De-Identified Data for Research
To: Lorraine Rodriguez, Assistant Nurse Manager, Mental Health Service (116)
Thru: Cathie R. Range, MSN, RN, Chief, Performance Improvement Management Service (170)

Project Title: Medication Errors Among Veterans Admitted to Mental Health Residential Rehabilitation Treatment Programs

Dear Ms. Rodriguez,

On 09/30/2019, the VASDHS Institutional Review Board authorized your request to obtain de-identified research data for a retrospective analysis of medication errors within VA San Diego Mental Health Residential Rehabilitation Treatment Programs, for the Substance Abuse Residential Rehabilitation Treatment Program (SARRTP) and the ASPIRE Center, for your master’s thesis project through California State San Marcos University. As a result, you will be provided with this de-identified medication error data for these two units upon your request.

Sincerely,

Kirsten Poss, MSN, MS, MHA, RN VASDHS
Patient Safety Manager
Signed by: Kirsten L. Poss
136864
Appendix C.

Institutional Review Board for the Protection of Human Subjects (IRB)
California State University San Marcos
San Marcos, CA 92096-0001
Tel: 760.750.4029. Fax: 760.750.3150 irb@csusm.edu www.csusm.edu/irb

DATE: May 12, 2020
TO: Lorraine Rodriguez, BSN
FROM: California State University, San Marcos Institutional Review Board
PROJECT TITLE: [1601630-1] A Retrospective Analysis of Self-Administered Medication Errors within Mental Health Residential Rehabilitation Treatment Programs

REFERENCE #:
SUBMISSION TYPE: New Project
ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: May 5, 2020
REVIEW CATEGORY: Exemption category # 4

Thank you for your submission of your exempt application. The California State University San Marcos (CSUSM) Institutional Review Board has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations 45 CFR 46.104(d).

Even though your project is exempt from IRB review, the research must be conducted according to the proposal submitted to the CSUSM IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. Please be aware that changes to the research protocol may prevent the research from qualifying for exempt review and require submission of a new IRB application or other materials to the CSUSM IRB.

Please note that all research activities that require face-to-face interaction are suspended by the university due to COVID-19 at this time. You can resume your research once the university lifts the restrictions on human subject research.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact the IRB office at CSUSM by calling (760) 750-4029 or by email to irb@csusm.edu. Please include your project title and reference number in all correspondence with this committee.

Wishing you well with your research, CSUSM IRB
## Appendix D.

<table>
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<th>SARRTP</th>
<th>ADMISSIONS</th>
<th>WARD DAYS OF CARE</th>
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<table>
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