2022

Medication Reconciliation Education to Promote Patient Safety in a Family Practice Setting

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This is to certify that the doctoral study by

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Walden University
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Abstract

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MS, Walden University, 2018

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Project Submitted in Partial Fulfillment

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Abstract

Medication reconciliation is a process in which the medications a patient is taking (or should be taking) are compared with newly ordered medications to identify and resolve discrepancies. Morbidity and mortality associated with the use of medication have become a public health concern. It was identified in this family practice setting that medication reconciliation guidelines were not being followed. This prompted the practice focused question if educating providers about medication reconciliation will improve their knowledge and intent to use guidelines about medication reconciliation. Peplau's theory of interpersonal relationships provided the framework for the study. Data were collected from nine participants using the Multi-Center Medication Reconciliation Quality Improvement Study model, which favors staff education on medication reconciliation for reduction in medication errors in health care settings including outpatient family practice clinics. Descriptive statistics were used to describe the participants and to show improvement in knowledge and intent to follow the guidelines. Overall, there was an improvement in knowledge and 100% intent to follow the guidelines, which indicated that the staff education project was successful. Knowledge gained can be useful in reconciling medications, preventing errors, and promoting patient safety. The strength of this project was that medication reconciliation takes place daily as long as there is communication between a provider/pharmacist and a patient. The limitation of this project was the size of the site and the number of participants. This project aligns with the Walden mission for positive social change by improving provider knowledge which can then improve patient outcomes.

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Dedication

I dedicate this project to my daughter, Ogechukwu; my parents, Venerable and late Mrs. Kolo; my siblings, Charles, Kike, Grace, Klem, Josephine, Rosie, and Joy; and friends too numerous to mention who have encouraged me throughout this journey. I am forever grateful. I love you all.

Acknowledgments

I would like to express my gratitude to Dr. Melissa Rouse for your endless support throughout my doctoral study. I could not have finished my project without your guidance and encouragement. Thank you for dedicating your time to help, always keeping me motivated, and taking your valuable time to listen to me on the phone. I am forever grateful. To the rest of my project committee members, Dr. Cheryl McGinnis, Dr. Allison Terry and Dr. Donna Bailey, thank you for all your guidance, encouragement, and support.

I also would like to thank my family. To my daughter, Ogechukwu, thank you for always being a good child, understanding, caring, and worrying for my health because I stayed up all night to study. I love you and I live for you. With you, my motivation and ambition never end. To my father and my late mother, thank you for your unending support and sacrifices all your lives to my siblings and me. I would not be able to find any other parents like you in life. To my siblings, what can I say? Thank you for your motivation, support, and encouragement. We have stood by each other even in our weakest moments. I am so thankful! Without all of you, I would not have been able to succeed and be where I am today. I also thank my friends, Caroline, Jayne, Enai, Rita, Irene, Edwige, Roselande, Carolyn, Elizabeth, Sunny, and many more. I cannot conclude this without mentioning Dr. Onwura Michael Obiekwe, MD, who precepted me throughout my practicum experiences. Above all, I thank God almighty for thus far He has seen me. I am grateful O Lord.

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Section 1: Nature of the Project

The Joint Commission (2015) defined *medication reconciliation* as creating a current and accurate list of all patient medications including the name of the drug, the dose, frequency, and the route of administration. The Joint Commission also noted that the process of transitioning from one care environment like inpatient to another care environment like outpatient is the most likely time that medication errors occur and has thus emphasized medication safety since 2005 as one of their National Patient Safety goals. Medication reconciliation is a process in which the medication a patient is taking (or should be taking) is compared with newly ordered medications to identify and resolve discrepancies (The Joint Commission, 2015). The purpose of comparing these medications is to address duplications, omissions, and interactions, and to assess the need to continue current medications. Discrepancies that are not resolved can cause adverse reactions that can result in patient harm (Salanitro et al., 2013). According to Stockton et al. (2017), approximately 40% of medication discrepancies occur as a result of poor communication or lack of communication. Even when patients are given a printed list of their medications, it is important for providers to explain each medication to patients in a way they will understand. This has become necessary because medication errors occur in every aspect of health care, whether ambulatory, inpatient, outpatient or long-term care.

Problem Statement

Although medications are widely used to treat health problems, successful outcomes can be achieved only if they are used effectively and in a safe manner (Romero et al., 2016). Morbidity and mortality associated with the use of medication is so high that

it has become a public health problem (Nuez et al., 2016). Research has shown that failures associated with pharmacotherapy are common, with direct implications in terms of clinical, economic, and humanistic outcomes (Romero et al., 2016). According to Stockton et al. (2017), approximately 40% of medication discrepancies occur because of poor communication. In another study, retrospective charts were reviewed in an internal medicine clinic within an academic medical center (Holt & Thompson, 2018). Medication reconciliation data were analyzed for 3,263 patients seen over a course of 6 months, and 4,479 discrepancies were found. Results showed that 71% of the discrepancies were medications still on the patients' medication list that patients were no longer taking.

Medication reconciliation should become an important part of each encounter with patients. The practice is recommended by the Agency for Healthcare Research and Quality (AHRQ, 2015). Medication errors have been known to occur when medication frequencies were incorrect, or patients were taking medications that had been discontinued. Even when patients are given a printed list of their medications, they may not follow instructions after they leave the provider's office. It is important for providers to explain each medication to patients in a way they will understand and to reconcile medications on each visit or after changes in care such as after hospitalization or when medications are changed, when doses change, when new medications are ordered, or when medications are discontinued.

A practice gap was identified in an outpatient family practice setting in which medications were not being reconciled during transitions of care and regular office visits.

To address this issue, staff education was provided to increase provider knowledge of the importance of reconciling patients' medication each visit or during transitions of care. Better communication between health care providers and patients about medication reconciliation may improve patient safety.

Purpose Statement

Since the Institute of Medicine released *To Err is Human* (1999), there have been concerns about medication errors and how they impact patient outcomes and associated cost of health care, which increases with every error. Safety of health care is one of the six quality domains proposed by the Institute of Medicine & Committee on Quality of Health Care in America in their follow-up report *Crossing the Quality Chasm* (2001), and medication reconciliation was suggested as a means of meeting this quality domain. The current project focused on staff education for nurse practitioners and physicians regarding medication reconciliation with the aim of improving the medication reconciliation process in an outpatient family practice setting. The practice focused question was: Will provider (MD, NP, and Pharm D) education about medication reconciliation improve knowledge and intent to use guidelines about medication reconciliation to promote patient knowledge and safety regarding their medications?

Nature of the Doctoral Project

This DNP project focused on staff education about medication reconciliation using the Multicenter Medication Reconciliation Quality Improvement Study (MARQUIS) model. The MARQUIS model resulted from a study to investigate ways to minimize medication discrepancies and improve patient safety (Salanitro et al., 2013).

The study indicated that the only way to minimize medication discrepancies is through performance of high-quality medication reconciliation. In this study, medication reconciliation was defined as the process of comparing patients' stated medications with what is on file in the clinic so that the patients will have accurate list of medications, and providers within the health care system will have the most current and accurate list at all times. Medication reconciliation interventions include assigning roles and responsibilities to clinical personnel, encouraging patient-owned medication lists, educating providers regarding how to take the best possible medication history, and implementing discharge counseling that includes patient or caregiver education and teach back (Salanitro et al., 2013). The purpose of this education was to emphasize to providers the importance of medication reconciliation for patient safety. This will allow them to promote knowledge of medications to their patients. If patients are aware of the medications they take, it can help prevent polypharmacy and confusion especially for patients who take more than one medication. Patients will be aware of medications that have been discontinued so they can discard them, which will help prevent duplication and taking medications that are not needed. Medications to be reconciled include prescribed medications, over-the-counter medications, and any herbal or dietary supplements the patient is taking.

Significance

Approximately 40% of medication discrepancies occur because of poor communication, lack of communication, and poor medication reconciliation process (Stockton et al., 2017). Research has shown that failures associated with pharmacotherapy are common, with direct implications in terms of clinical, economic,

and humanistic outcomes (Romero et al., 2016). The current staff education project was intended to raise awareness among nurse practitioners and physicians regarding the importance of medication reconciliation. With this knowledge, they can promote medication safety with their patients in the outpatient setting. This education project may positively impact social change for patients because the providers will encourage their awareness, engagement, and participation in managing their medications.

Summary

This chapter addressed the problem of medication reconciliation, which is a process of comparing medications a patient is taking with currently ordered medications; addressing duplications, omissions, and interactions; and identifying discrepancies (The Joint Commission, 2015). The purpose of comparing these medications is to ensure patient safety and avoid negative patient-related events. Medication discrepancies that are not resolved can cause adverse reactions that can result in patient harm (Salanitro et al., 2013).

This chapter also addressed the nature of the current project, which focused on staff education about medication reconciliation with the aim of improving the medication reconciliation process in an outpatient family practice setting to address the practice gap in which medications were not being reconciled during transitions of care and regular office visits as recommended by the AHRQ, (2015). In Section 2, the background and context of the problem are discussed including concepts, models and theories; the role of the DNP student and the project team; and the relevance of medication reconciliation to nursing practice.

Section 2: Background and Context

Medication errors are a serious patient safety concern especially when a patient transitions from one health care setting to another. Various theories and concepts have been used by researchers in the process of finding best practices regarding medication reconciliation in diverse health care settings for the purpose of safety and preventing harm to patients. I adopted the MARQUIS2 protocol for medication reconciliation education process, which was a revision from MARQUIS1. The MARQUIS1 protocol was a medication reconciliation best practice toolkit that decreased total unintended medication discrepancies in five selected hospitals (Mixon et al., 2019). The MARQUIS2 protocol is a pragmatic, mentored implementation quality improvement best practice toolkit supported by clinical and implementation outcomes that demonstrated that implementation of a medication reconciliation best practice toolkit decreased total unintentional medication discrepancies in 18 participating sites varying in size, teaching status, location, and electronic health record platform (Mixon et al., 2019). The toolkit, according to Mixon et al. (2019), can also be adopted in other health care settings including inpatient long-term care settings, hospices, or outpatient settings. This model showed that staff education about medication reconciliation may decrease medication discrepancy in the outpatient family practice setting.

Concepts, Models, and Theories

Medication reconciliation is a process of identifying an accurate list of all current medications a patient is taking and using this list to provide the appropriate medications for patients within the health care system, regardless of the medical specialties the patient

is visiting for health care needs. Medication reconciliation also involves educating the patient about following up with their primary care physician to update their medication records anytime there is a change (Mixon et al., 2019). ‘Staff education is provider training, which is an intervention that focuses on the management process (Salanitro et al., 2013).

Various models have been used by researchers to promote medication safety in health care settings. I used the MARQUIS2 protocol for the medication reconciliation staff education process. The MARQUIS2 model favors staff education on medication reconciliation as an evidence-based practice intervention for reduction in medication errors in health care settings, which include outpatient family practice clinics (Mixon et al., 2019).

This project was based on Peplau’s (1952;1988) theory of interpersonal relationships, which asserts that the nurse–client relationship is the foundation of nursing practice. Peplau’s theory involves communication between two or more people who share a common goal. Peplau defined *nursing* as a process of therapeutic interactions between two individuals, one who is sick or in need of health services and a nurse who is trained to recognize and respond to the needs of such individuals (Gastmans, 1998). Peplau stated that nursing functions are both educative and therapeutic in which the nurse interacts with the patient and educates them where necessary to elicit positive outcomes. One assumption of this theory is that communication and interviewing skills are fundamental nursing tools because both the nurse and the patient are aiming toward the attainment of the same goal, which is the promotion of well□being (Gastmans, 1998).

This is important because in the interpersonal relationship between the nurse and the patient, the nurse questions the patient about medications they are taking, which reveals whether the patient is not taking their medication correctly and leads to the medication reconciliation process.

Relevance to Nursing Practice

Holt and Thompson (2018) stated that discrepancies in medication orders at transitions of care have been shown to negatively affect patient outcomes. One way of preventing these discrepancies is to periodically reconcile patient medications. Implementing this practice was stressed to the learners during the current staff education project.

Medication reconciliation education is relevant to nursing practice because a patient cannot be well or achieve therapeutic levels of health if their medications are not taken as expected. Romero et al. (2016) stated that although medicines are the most widely used therapies to treat health problems, successful outcomes can be achieved only if medications are used in an effective and safe manner. Many factors were given regarding why patients may not take their medications as prescribed (Romero et al., 2016). One of the reasons proposed by Romero et al. (2016) was that the patients were taking more than one medication, and some did not know the names of the medications they were taking. Medication reconciliation fulfils one of the rights of medication administration, which is relevant to nursing practice. Jones and Treiber (2018) stated that if a nurse ensured the right patient received the right medication at the right dose via the right route at the right time, medication errors would not occur. Nurses in any practice

setting must at all times strive to honor these rights to prevent medication errors. An example of the importance of medication reconciliation is if a patient is not taking their blood pressure medications as ordered by the provider, there are chances of the patient's blood pressure being too high and uncontrolled, which may put the patient at risk for cardiovascular diseases or a stroke. On the other hand, if the patient takes more than is prescribed, the patient may suffer low blood pressure, which may cause syncope and syncopal episodes that may result in patient injury. It is important that patients take their medications as ordered.

Local Background and Context

Medication reconciliation is an important aspect of health care because it identifies errors and ensures patient safety. According to the National Coordinating Council for Medication Error Reporting and Prevention (2017), a medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Reconciling patients' medications after transitions of care or during regular office visits is necessary to prevent errors and adverse drug effects.

During chart audits in an outpatient family practice setting, medication discrepancy was found regarding what medications the patients reported taking compared to their medication list in the chart. There were several occasions in which medication discrepancy and medication adherence were significant and could have led to patient harm. During patient interviews about their medications, the replies were consistent with Romero et al.'s (2016) finding that among other factors, inadequate medication

knowledge (the use of more than one medication and not knowing the name of the medication dispensed) contributed to some patients not taking their medications as prescribed. This prompted the current DNP staff education project to educate providers (MDs, NPs, and Pharm Ds) regarding the importance of medication reconciliation to promote patient safety and prevent harm to patients. The practice focused question was the following: Will provider (MD, NP, and Pharm D) education about medication reconciliation improve knowledge and intent to use guidelines about medication reconciliation to promote patient knowledge and safety regarding their medications?

Role of the DNP Student

The role of the DNP student as defined by the American Association of Critical Care Nurses (2010, as cited in Zaccagnini & White, 2017) is to focus on the needs of a panel of patients, a target population, a set of populations, or a broad community by developing and evaluating new practice approaches based on nursing theories and theories from other disciplines. In the current medication reconciliation staff education project, the aim was to educate providers regarding the importance of reconciling patients' medications at each visit and during transitions to promote patient safety.

It is important for providers to realize that patients should be better engaged in the medication reconciliation process so that they will be aware of their medications, thereby improving accuracy and consistency. After the education, the providers are better equipped to educate their patients about following up with the clinic about medication changes after hospitalizations or when they visit other specialists. By communicating medication changes to clinic staff, patient medication lists will be updated and stay

current and accurate. Per the Meaningful Use Measure put forth by the Centers for Medicaid and Medicare Services (2015), it is expected that medication reconciliation should be completed during at least 50% of all patient encounters, which include transitions of care, anytime new medications are prescribed, or more than 3 months between appointments. In the project site outpatient clinic, patients get prescribed new or different medications during most visits, while medication refills are also done regularly, so medication reconciliation is advisable for all patient visits.

Role of the Project Team

As part of content preparation for staff education, an expert panel made up of three advance practice registered nurses and one pharmacist evaluated the education content and pre- and post-education surveys for content validity. To prevent errors and adverse drug events stemming from oversight, duplication, and other discrepancies in a patient's medication record, the Institute of Healthcare Improvement (2004, as cited in Manno & Hayes, 2006) made medication reconciliation a key strategy in its 100,000 Lives Campaign. For this to happen in the outpatient setting, a team of providers and pharmacists must work together in the reconciliation process.

The project team was relevant to the current project because they are currently involved in the medication reconciliation process. According to Manno and Hayes (2006), communication and clarification of information should involve the patient, health care providers who care for them, and the pharmacist who fills the patient's medications. In the evaluation of medication reconciliation in an outpatient nephrology clinic, two clinicians (pharmacist and nurse practitioner) were asked to classify the discrepancies

identified in the reconciliation process. Medication reconciliation is relevant in medication prescription and dispensing so providers can reconcile medications from the prescriber's perspective and the dispenser's perspective (Phillips et al., 2019). Providers and pharmacists are involved in educating patients regarding medications and can also address discrepancies such as discrepant doses, incorrect doses, or incorrect drugs.

Summary

This section included a discussion of the MARQUIS2 protocol, which was used for this staff education project. I also described Peplau's (1988) theory, which was used to guide this project. The need for medication reconciliation was identified at an outpatient family practice clinic. This staff education project was intended to fulfill the DNP student's role of focusing on patients' needs by developing and evaluating new practice approaches based on nursing theories and theories from other disciplines (see Zaccagnini & White, 2017). The role of the project team was described. This staff education project was designed to help providers understand, explain, and implement medication reconciliation. Section 3 addresses the collection and analysis of evidence.

Section 3: Collection and Analysis of Evidence

Content for this DNP staff education project came from review of the literature focused on medication reconciliation in the outpatient setting to promote medication knowledge and patient safety. A staff education presentation was developed based on the MARQUIS2 toolkit to draw staff attention to evidence-based practice guidelines concerning medication reconciliation in the family practice setting. The expert panel reviewed the education content and survey questions, and revisions were made based on their feedback. The staff education was completed in an outpatient privately owned family practice clinic in the Southeast United States, with seven providers (six nurse practitioners and two physicians) who see approximately 800 patients a month. There was also one pharmacist who participated in the education session.

A letter of introduction was sent to the providers in the organization introducing the proposed outcome of the education (see Appendix A). They were informed that participation was optional but that the education would be beneficial in filling a practice gap and improving patient safety. They were also informed that their demographics would not appear in any documentation, and that they would be assigned identifiers for statistical analysis. After the introduction letter was sent to all providers in the organization, including one pharmacist, a preeducation survey requesting demographic data such as age, gender, years in role (MD, NP, or PharmD), and ethnicity and containing seven questions was given to the participants to determine their knowledge of medication reconciliation and whether they had used the process of medication reconciliation with their patients. If they had, they were asked how often they used this

process. They were also asked whether they were aware of the MARQUIS model and whether they had used that model. After the pretest surveys were completed, the staff education was conducted by presenting a 45-minute PowerPoint presentation in the conference room. Due to the current pandemic, participants were allowed to log in remotely to the education session via Zoom. After the presentation, participants participated in open discussion. They were also given the opportunity to ask questions. The participants were asked to complete a postsurvey online, which sought to determine whether they understood the importance of medication reconciliation and whether they intended to reconcile patients' medications after this education. Questions were also asked about the clarity of the PowerPoint presentation and whether it was easy to understand.

Pre and post surveys were administered to determine whether there was an improvement in knowledge and intent to follow the guidelines. After education, the intent was that the clinicians would follow the evidence-based practice guidelines that were presented in the class to promote patient knowledge and safety regarding their medications. According to Stockton et al. (2017), consistent medication reconciliation process is essential for patient safety and positive health outcomes.

Practice-Focused Question

The practice focused question was the following: Will provider (MD, NP, and Pharm D) education about medication reconciliation improve knowledge and intent to use guidelines about medication reconciliation to promote patient knowledge and safety regarding their medications?

Sources of Evidence

A minimum of 10 relevant systematic reviews as well as articles from peer-reviewed journals, either written in or translated to English , with date range from 2015 to the present were used. Databases such as Academic Search Complete, CINAHL & MEDLINE Combined Search, Medline, Ovid Nursing Journals, and ProQuest Nursing & Allied Health Source were used. Key search terms were *medication reconciliation*, *medication knowledge*, *patient medication knowledge*, *nurse practitioner knowledge*, *medication discrepancy*, and *medication safety*. The articles were reviewed to identify the importance of medication reconciliation in the outpatient setting to promote medication knowledge and safety among the patient population. According to the AHRQ (2015), medication reconciliation should be done during transitions of care and during outpatient visits. Medications to be reconciled should include prescribed medications, over-the-counter medications, and any herbal or dietary supplements the patient is taking. The goal that was expected after the current education project was that the medication reconciliation process (verify, clarify, reconcile, and transmit; see Gilbert, 2019) would be adhered to and patient medications would be reviewed every 3 months and whenever changes were made to a patient's medication, including after hospitalization, during visits to other specialties, or during visits to the clinic.

A review of the literature regarding medication reconciliation was conducted to identify best practices that would prevent adverse medication occurrences, with specific attention to nursing interventions. Many studies suggested reconciliation of medication in the outpatient setting as a way of preventing harm and promoting medication safety.

Romero et al. (2016) stated that the prevalence of visiting emergency departments due to negative outcomes related to medicines in Spain was 35.7%, of which between 73% and 81% were preventable. Romero et al. mentioned patient medication knowledge as one factor that contributes to preventable events associated with the use of medications. Medication reconciliation and patient education were mentioned as strategies for improving patient medication knowledge and safety for medication management and optimized outcomes. Kwan et al. (2013) recognized that transitions in care, such as admission to and discharge from the hospital, can lead to unintentional changes, putting patients at risk for errors due to poor communication and inadvertent information loss. Kwan et al. summarized evidence about the effectiveness of hospital-based medication reconciliation interventions, focusing on the effect of medication reconciliation on unintended discrepancies with the potential for harm after patient discharge. Findings showed that most successful interventions relied on pharmacists and that, overall, medication reconciliation remains a potentially promising intervention. Kwan et al. recommended future studies to examine the effect of medication reconciliation post discharge follow-up care in outpatient settings. van der Gaag et al. (2017) suggested reconciling patients' medications at each visit or during transitions of care. van der Gaag et al. concluded that after the second time medications were reconciled for a control group, medication discrepancy decreased from 83% to 39%. In the intervention group, discrepancies were still present because patients forgot to tell the pharmacy team about drugs that were also used, such as creams, ointments, or vitamins. It is possible that the

second medication reconciliation triggered patients in the control group to include these drugs as well.

Studies have shown the importance of medication reconciliation to prevent adverse effects and promote patient safety. Some researchers proposed the processes of medication reconciliation. Hoeksema et al. (2012) revealed that 44% of discrepant medications were active in the electronic medical record (EMR) but were no longer taken by the patient. Patients were also taking medications not listed in the EMR 29% of the time. Hoeksema et al. also stated that obtaining medication histories from patients, transferring medication reconciliation performed on paper into the EMR, and sharing an updated medication list with the patient would decrease incidents of medication errors due to transition of care or prescription of new medications in addition to the medications the patient was currently taking. Mason (2011) recommended a structured medication assessment process for evaluation of therapy, assessment of patients' medication adherence, and resolution of medical record discrepancies. This multistep process includes not only a comprehensive medication history interview, structured therapy assessment, and monitoring, but also a collaborative effort of open communication between health care providers and other members of the medical team (Mason, 2011).

For new or first-time patients, Manno and Hayes (2006) and McCarthy et al. (2016) suggested that the provider ask open-ended questions about medications the patient is currently taking, prompting the patient to try to remember every medication including patches, creams, inhalers, eye drops, or ear drops, and to pursue unfamiliar information until clarified by checking previous records, asking a family member to bring

in the patient's medications, or calling the patient's home pharmacy for a list of medications the patient has been filling. Other strategies proposed by Manno and Hayes and McCarthy et al. included encouraging the patient to get all medications from the same pharmacy, asking the patient to keep a medication wallet card, and asking the patient to bring all medications to the hospital and appointments with health care providers.

According to Stockton et al. (2017), consistent medication reconciliation is essential for patient safety and positive health outcomes. In a study of incidence of medication errors in 151 patients, 71 patients (47%) were found to be exposed to 112 medication errors on admission to the hospital (Stockton et al., 2017). Hoeksema et al. (2012) assessed 45 patients in an outpatient palliative care clinic over a 5-month period and found that 100% of patients had at least one medication discrepancy with an average of 4.6 discrepancies per visit. A study by Romero et al. (2016) showed that the prevalence of visiting emergency departments due to negative outcomes related to medicines was 35.7%, of which between 73% and 81% were preventable. Although there are many factors that contribute to preventable events associated with the use of medications, patient medication knowledge has been found to be one of them (Romero et al., 2016). These results show the importance of medication reconciliation.

Analysis and Synthesis

The purpose of the current staff education project was to answer the practice-focused question addressing whether provider education about medication reconciliation would improve knowledge and intent to use the guidelines to promote patient knowledge

and safety regarding their medications. The responses from the posttest were compared to the responses from the pretest to determine whether education was successful and what percentage of providers acknowledged improved knowledge and intent to use guidelines learned about medication reconciliation to promote patient knowledge and safety regarding their medications.

Descriptive statistics were used to describe the participants and to show improvement in knowledge and intent to follow the guideline. Overall, there was an improvement in knowledge, which indicated that the staff education project was successful. The participants also confirmed intent to follow the guidelines. All analyses were performed using Statistical Package for the Social Sciences Version 26.

Summary

This section focused on medication reconciliation in the outpatient family practice setting to prevent medication errors and promote patient safety. Literature was reviewed to buttress the relevance of medication reconciliation. This project was a staff education project, so the information from the literature review was used to educate physicians, nurse practitioners, and a pharmacist in an outpatient family practice setting regarding the importance of medication reconciliation during transitions of care or regular office visits. The practice-focused question was reviewed along with the plan for developing and establishing content validity. The course plan was discussed and the data analyzing methods were reviewed. Section 4 includes a presentation of the findings and recommendations.

Section 4: Findings and Recommendations

The DNP project was a staff education project that focused on educating MDs, NPs, and one Pharm D in a family practice outpatient setting with the hope of improving knowledge after the education. It was identified in this family practice setting that medication reconciliation guidelines were not being followed. This prompted the practice focused question if educating providers about medication reconciliation will improve their knowledge and intent to use guidelines about medication reconciliation. A 45-minute education class was organized in the conference room of the family practice. Participants were invited formally and were given the option of attending in-person or via Zoom due to the pandemic. A questionnaire that contained a preeducation survey was given to participants before the education session. Opportunity for discussion, which included questions and answers, was provided after the education session ended. A post education questionnaire was given after the education to determine whether the education was successful as indicated by the participants' responses.

Findings and Implications

Statistical Methods

An attempt to perform McNemar's tests to assess change across time in the sample for each survey question was unsuccessful due to the small sample size, different language being used in the survey items from pre to post, and the fact that some of the distributions were constant. Therefore, frequency and percentage statistics were used to describe the sample's distributions of each survey question for the pre- and post-intervention surveys. All analyses were performed using SPSS Version 26.

Statistical Results

The demographic characteristics for the sample are presented in Table 1. For the pretest survey, all participants ($N = 9$, 100%) understood the term medication reconciliation. For Question 2, respondents reported that they sometimes ($n = 3$, 33.3%), almost always ($n = 3$, 33.3%), or always ($n = 3$, 33.3%) reconcile medications. All participants (100%) reported that they check with patients to ensure they understand their medications. Most respondents ($n = 8$, 88.9%) said that patients do not know the medications they are taking and that patients have reported adverse effects from not taking their medications as prescribed. Most respondents ($n = 8$, 88.9%) reported that they would benefit from receiving education about medication reconciliation. The same number of participants ($n = 8$, 88.9%) said that they complete medication reconciliation for patients during office visits and transitions of care.

For the postsurvey, all respondents ($N = 9$, 100%) reported that they had an improvement in knowledge, checked with their patients to ensure they understood their medications, believed they benefited from receiving education about medication reconciliation, and completed medication reconciliation for their patients during office visits and transitions of care. Respondents also reported that they always ($n = 7$, 77.8%) and almost always ($n = 2$, 22.2%) complete medication reconciliation. In response to the last part of the practice-focused question regarding intent to follow guidelines, 100% of participants answered that they intended to follow them.

The practice focused question was the following: Will provider (MD, NP, and Pharm D) education about medication reconciliation improve knowledge and intent to

use guidelines about medication reconciliation to promote patient knowledge and safety regarding their medications? The result of the analysis showed that there was an improvement in knowledge after attending the class and that the providers committed to following the guidelines. Overall, this staff education project was successful.

Table 1

Demographics

Variable	Level	Frequency (%)
Age	20–30	1 (11.1%)
	31–40	1 (11.1%)
	41–50	2 (22.2%)
	51–60	5 (55.6%)
Gender	Male	2 (22.2%)
	Female	7 (77.8%)
Current role	MD	2 (22.2%)
	NP	6 (66.7%)
	PharmD	1 (11.1%)
Years in role	0–5 years	5 (55.6%)
	11–20 years	2 (22.2%)
	21–30 years	2 (22.2%)
Race	Black	8 (88.9%)
Row 3	White	1 (11.1%)
Row 4	Non-Hispanic	9 (100.0%)

Recommendations

According to the statistical analysis, all participants ($N = 9$, 100%) understood the term medication reconciliation, as indicated by a response of "yes" to post education Survey Question 5. Because 100% of participants responded positively to knowledge about medication reconciliation and agreed to reconcile patients' medications going

forward, I concluded the education project was successful. The limitation of the project was the site used and the small number of participants. If additional and more diverse practice settings and participants had been involved, the results may have been different. For future projects, researchers may consider educating staff about medication reconciliation in the outpatient setting, multiple practice settings, and specialty settings.

Contribution of the Doctoral Project Team

The contribution of the project team was relevant to this project because the project team comprised two NPs and one pharmacist who are involved in the medication reconciliation process. Their knowledge of medications guided me in composing my education PowerPoint. According to Manno and Hayes (2006), communication and clarification of information should involve the patient, health care providers who care for them, and the pharmacist who fills the patient's medications. This is relevant in medication prescription and dispensing because this approach can be used to reconcile medications from the prescriber's perspective and the dispenser's perspective (Phillips et al., 2019). Providers and pharmacists are involved in educating patients regarding medications and can also address discrepancies such as discrepant doses, incorrect doses or incorrect drugs.

Strengths and Limitations of the Project

The purpose of this education was to emphasize the importance of medication reconciliation for patient safety and to promote knowledge of medications used by patients. The strength of this project was that medication reconciliation takes place daily as long as there is communication between a provider/pharmacist and a patient.

Knowledge gained can be used in reconciling medications, preventing errors, and promoting patient safety. The questionnaire responses showed that knowledge was gained, and this may contribute to the process of medication safety, thereby reducing incidence of medication errors. The limitation of this project was the size of the family practice center used and the small number of participants. A large, multispecialty practice setting, and a larger number of participants may have produced the same or varying results.

Section 5: Dissemination Plan

Medication reconciliation has been shown to decrease medication discrepancies and adverse drug interactions (Salanitro et al., 2013). In the outpatient family practice setting, patients are frequently treated with medication interventions; therefore, an accurate medication reconciliation list is essential to preventing adverse outcomes. It is proposed that by improving the quality, consistency, and accuracy of the family practice clinic's medication reconciliation process, patient safety and best care outcomes will be maintained. This DNP project increased the providers' knowledge of the importance of reconciling patients' medication on each visit and during transitions of care. All providers in this family practice outpatient setting were involved in the staff education project and were aware of the importance of medication reconciliation. Because providers change jobs from time to time, electronic handouts and references to this project will be provided to the medical director of this clinic, providers and the office manager so they can use this project for reference. It will also be helpful for orientation of new providers hired to work in this clinic.

Analysis of Self

My role as practitioner and scholar in this DNP project strengthened my knowledge about completing a project and enhanced my determination to translate my project into a scholarly article. This project was difficult but rewarding. This project enhanced my insight as a project manager by challenging my ability to adapt through difficulties and make adjustments in the midst of the COVID-19 pandemic, which resulted in clinic lockdown, reduced days and hours of operation, and changing my mode

of education from in-person face-to-face education in the family practice clinic conference room to accommodating virtual participation, which required me to learn more about electronic presentation.

Completing a DNP project during a pandemic was met with personal challenges, which included making alternative arrangements for my family during the lockdown. However, my will to succeed kept me from losing focus on my work. I am satisfied with my project and hope that this work will impact providers by helping them understand the importance of medication reconciliation. This may lead to a decrease in the incidence of adverse outcomes from not reconciling patients' medications.

Insights that I have gained from this scholarly journey include willpower, professional empowerment, and professional development. These things cannot be overemphasized. This project taught me that even in difficult times, goals can be achieved. I am grateful that I met the goals of my practice-focused question.

Summary

Developing a medication reconciliation staff education doctoral project to increase provider knowledge of the importance of reconciling patients' medication on each visit or during transitions of care involved a collaborative effort of open communication between health care providers and other members of the medical team (see Mason, 2011). This project did not involve interactions with patients. During the course of this project, there was constant interaction between me and the providers in the practice. The pre and post education survey results addressed the purpose of the project, which was to increase providers' knowledge. This project was successful because results

of the post education survey showed that there was an improvement in knowledge and 100% of the participants committed to following the guidelines.

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Appendix A: Introduction Letter

My name is Oghaleoghene Kolo, a family nurse practitioner and a Doctor of Nursing Practice (DNP) student with Walden University, Minneapolis, Minnesota. I am writing my final Capstone project on the topic: *Medication Reconciliation Education to Promote Safety in a Family Practice Setting*. This is a staff education project which will involve educating providers in a family practice setting. To get accurate data for analysis, I need participants to complete a two-part survey which will include demographics and questions regarding their knowledge and use of medication reconciliation. A post-education survey will be completed again after the staff education is completed. Participants' demographics will not appear in any documentation, but they will be assigned identifiers for statistical analysis.

I want to invite you to please complete the survey below. Thank you.

Oghaleoghene Kolo, MSN, RN, FNP-C.

Appendix B: Pre-Survey

Part 1: Demographics

1 What is your age?

- 20-30
- 31-40
- 41-50
- 51-60
- > 60

2 What is your gender?

- Male
- Female
- Non-Binary

3 What is your current role?

- MD
- NP
- PharmD

4 How many years have you been in this role?

- 0-5 years
- 6-10 years
- 11-20 years
- 21-30 years
- > 31 years

5 What is your race?

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or other Pacific Islander
- White

6. What is your ethnicity?

- Hispanic or Latino
- Not Hispanic or Latino

Part 2:

1. Do you understand the term ‘medication reconciliation?
   - Yes
   - No
2. How often do you reconcile patients’ medications?
   - Never
   - Almost Never
   - Sometimes
   - Almost Always
   - Always

3. Do you check with your patients to ensure that they understand what medications they are taking and why?
    - Yes
    - No
4. Have patients ever reported that they do not know the medications they are taking?
    - Yes
    - No
5. Have your patients reported adverse effects from not taking their medications as prescribed?
    - Yes
    - No
6. Do you believe you will benefit from receiving education about the importance of medication reconciliation and how to do it?
    - Yes
    - No
7. Do you complete medication reconciliation for your patients during office visits and transitions of care?
    - Yes
    - No

Appendix C: Class Content PowerPoint Presentation

MEDICATION RECONCILIATION EDUCATION TO PROMOTE SAFETY IN A FAMILY PRACTICE SETTING.

Oghaleoghene Kolo. MSN,RN, FNP-C,
Walden University DNP Student

Objective:

- To increase provider knowledge of the importance of reconciling patients' medication on each visit or during transitions of care.

Medication Reconciliation

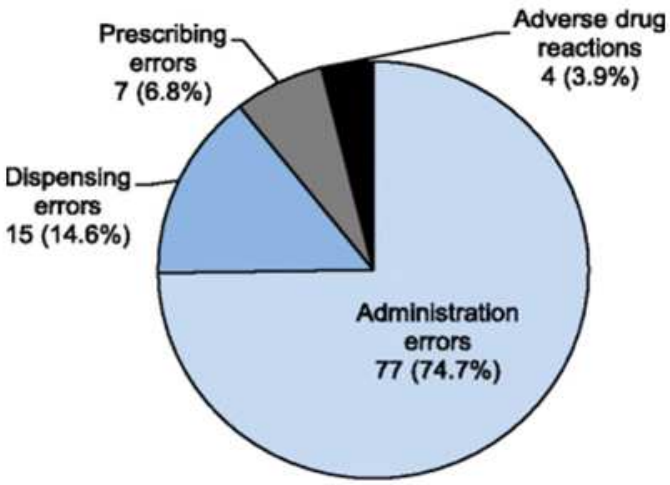
- Formulating a current and accurate list of all patient medications (the Joint Commission, 2015).
- A process where the medication a patient is taking (or should be taking) is compared with newly ordered medications to identify and resolve discrepancies (The Joint Commission, 2015).

Practice-Focused Question

- Will Provider (MD, NP & Pharm D) education about medication reconciliation improve knowledge and intent to use guidelines about medication reconciliation to promote patient knowledge and safety regarding their medications?

Approximately 40% of medication discrepancies occur because of poor communication and inadequate medication reconciliation process (Stockton et al., 2017).

EXAMPLE: A patient's blood pressure log shows persistent high blood pressure. Patient states he takes his medications as prescribed. Medication reconciliation showed that patient was taking only one blood pressure medication (Lisinopril 40mg by mouth daily). He stated he did not know he was prescribed a second blood pressure medication (Hydrochlorothiazide 25mg by mouth daily). This medication was prescribed 6 months prior to this visit. This is patient's 3rd visit to the clinic since blood pressure medications were adjusted.



What Does Research Say about Medication Reconciliation?

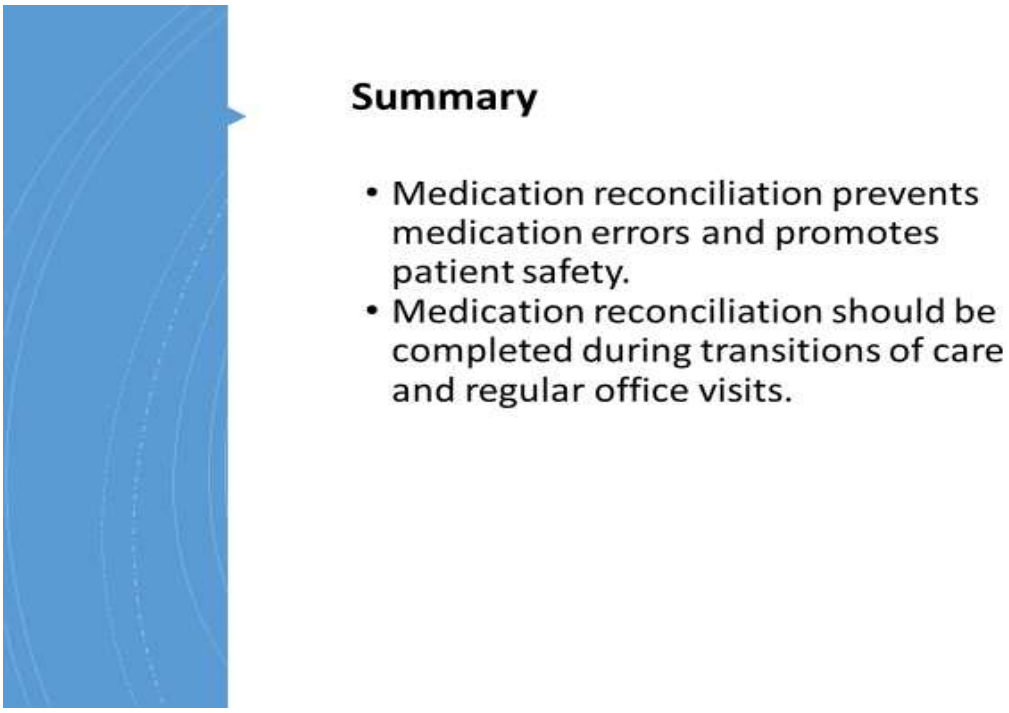
- Failures associated with pharmacotherapy are common, with direct implications in terms of clinical, economic, and humanistic outcomes (Romero et al., 2016).
- Approximately 40% of medication discrepancies occur because of poor communication (Stockton et al., 2017).
- Medication reconciliation should become an important part of each encounter with patients (www.ncbi.nlm.nih.gov).
- A specific research study showed that 71% of the discrepancies were medications on the list that patients were no longer taking (Holt & Thompson, 2018).

Model: *Multi-Center Medication Reconciliation Quality Improvement Study* (MARQUIS2) protocol for medication reconciliation education process.

- Favors staff education on medication reconciliation as an evidence-based practice intervention for reduction in medication errors in healthcare settings which include outpatient family practice clinics (Mixon et al., 2019).

Theory: Peplau's Theory of Interpersonal Relationships

- Emphasized the nurse-client relationship as the foundation of nursing practice (Peplau, 1988).
- Involves an interaction between two or more individuals with a common goal.
- Stated that nursing functions are both educative and therapeutic where the nurse interacts with the patients and educates them where necessary to bring positive outcomes.
- One assumption of this theory is that communication and interviewing skills remain fundamental nursing tools because both the nurse and the patient are aiming towards the attainment of the same goal which is the promotion of well-being (Gastmans, 1998).



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Appendix D: Post-Survey

1. Do you have an improvement in knowledge about medication reconciliation?
    - Yes
    - No
2. How often will you complete medication reconciliation?
    - Never
    - Almost Never
    - Sometimes
    - Almost Always
    - Always
3. Will you check with your patients to ensure that they understand what medications they are taking, and why?
    - Yes
    - No
4. Do you believe you benefitted from receiving education about the importance of medication reconciliation and how to do it?
    - Yes
    - No
5. After attending this education, will you complete medication reconciliation for your patients during office visits and transitions of care?
    - Yes
    - No