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Medication Reconciliation in Primary Care Setting

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
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Abstract

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MSN, Walden University, 2016

BSN, Fort Hays State University 2007

Project Submitted in Partial Fulfillment

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Abstract

Polypharmacy entails the use of multiple drugs taken at the same time to manage the various comorbidities common among elderly patients. Polypharmacy is associated with increased health care spending due to drug duplication, adverse drug events, and medication noncompliance. Medication reconciliation has been shown to reduce the problems seen with polypharmacy. The purpose of this project was to review published evidence to develop a staff education program on medication reconciliation in a primary care setting and determine the efficacy of the program in relation to staff confidence and knowledge levels concerning medication reconciliation. The project was guided by Nola Pender's health promotion model. The education program was modeled after a medical staff education program on medication reconciliation and included a medication assessment questionnaire and its use when evaluating a patient's medications. The pretest and posttest questionnaire obtained from the education materials was administered to clinical staff at the practice site before and after presenting the education material. Data were analyzed for statistical changes after the education program using a *t* test. Results showed that participants increased their confidence and knowledge of medication reconciliation from an average score of 2.19 (*SD* 0.20) before the education to 4.37 (*SD* 0.12) ($p < 0.001$) on a 5-point confidence scale after the education. This staff education program will promote positive social change by increasing nurses' knowledge and confidence of medication reconciliation and potentially reducing the incidence of polypharmacy and its negative effects among the elderly patients.

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Dedication

I dedicate this work to all elderly people who grapple with multiple drugs for multiple illnesses.

Acknowledgments

I thank the Almighty God for the opportunity to reach such levels in my academic pursuit. I appreciate my professors who served in my project committee for their guidance. Particularly, I am grateful to Dr. Janice Long who has guided me throughout the steps of the project. Her valuable input and constructive criticism have brought out the best in me and helped me to remain focused. My special appreciation goes to my sisters and family for their encouragement and support throughout this work.

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Section 1: Nature of the Project

Introduction

Polypharmacy refers to the simultaneous use of multiple medications to treat multimorbidities, and it is most commonly defined as the use of more than five medications daily (Gnjidic et al., 2012). The aging process itself, genetics, or lifestyle behaviors may contribute to multiple comorbidities, which predispose the aging population to multiple medications to manage the resulting conditions. Polypharmacy is commonplace among elderly patients and is regarded as unavoidable when managing multiple comorbidities (Cadogan, Ryan, & Hughes, 2016). However, polypharmacy is inappropriate if it causes undesired health outcomes. The most common complications that arise from polypharmacy include adverse drug reactions from the interactions of various drugs and a high pill burden in the patients, which increases the chances of medication nonadherence (Maher, Hanlon, & Hajjar, 2014). When a patient uses many drugs, the provider may be reluctant to prescribe more drugs, even if they are necessary, which may lead to undertreatment (Morley, 2014). The large drug load also increases the medical expenses of the elderly, especially if certain drugs are duplicated (Maher et al., 2014).

The main cause of inappropriate polypharmacy is the insufficient documentation of all the drugs taken by a patient, which happens when patients are receiving care from multiple physicians (Payne, Abel, Avery, Mercer, & Roland, 2014). Inappropriate polypharmacy is associated with dementia among the elderly. Oyarzun-Gonzalez, Taylor, Myers, Muldoon, and Baumgartner (2015) reported that polypharmacy led to a 0.11±0.09

decrease in Mini-Mental State Examination scores (*p=0.23*) and an increased risk of mild cognitive impairment (odds ratio=1.95, 95% *CI*). Golchin, Frank, Vince, Isham, and Meropol (2015) claimed that 57% of all patients with polypharmacy had contraindicated drug combinations, which increased their risk of adverse drug reactions.

Polypharmacy was also associated with duplication of drugs in most of the patients (Alpert & Gatlin, 2015). There is a practice gap that must be filled by providing staff education on the right way to carry out medication reconciliation to boost their confidence and ensure the effectiveness of the process. Therefore, this DNP project aims at filling this practice gap by providing staff education on proper medication reconciliation processes to reduce the incidence of polypharmacy.

Problem Statement

Local Nursing Practice Problem

Each year, health care organizations spend significant amounts of money in caring for elderly patients. Approximately 52% of Medicare expenditure is allocated to people aged 65 years and above (Nardi, French, Jones, & McCauley, 2016). Existing multiple comorbidities and duplication of drugs are listed as causes for the expense (Lassman, Hartman, Washington, Andrews, & Catlin, 2014). According to medical records, patients aged 65 years and older who were receiving care at the local practicum setting where this project took place, were taking more than five medications; therefore, this population met the definition of polypharmacy as defined by Gnjidic et al. (2012). However, many of the patients return to the clinic with complications attributed to polypharmacy. In many cases, on patient interview, the patients were taking additional medications that were not

prescribed by the provider. Medication reconciliation, which entails the creation of a detailed list showing the drugs taken by a patient and their required dosages, has been reported to reduce the negative impact of polypharmacy (Sardaneh, Burke, Ritchie, McLachlan, & Lehnbom, 2017). However, the effectiveness of this intervention is not realized in most health care settings, including the current clinical setting. The efficacy of medication reconciliation as an intervention is diminished by factors, such as inadequate education regarding how the process should be done, low confidence levels in executing the process, and the lack of cooperation among crucial health care providers. The local nursing problem is the lack of an organized method to conduct medication reconciliation, which leaves uncertainty among medical providers regarding the right way to conduct medication reconciliation. Therefore, a staff education program to improve medication reconciliation processes and boost staff confidence levels is needed. In this project, I aimed to establish the impact of staff education on staff confidence levels when conducting medication reconciliation in a primary care setting.

The Local Relevance of the Need to Address the Problem

The practicum setting was an internal medicine clinic located in the Southern region of the United States. Some of the services provided by the clinic include annual wellness exams; routine tests for chronic illnesses, such as blood glucose tests in diabetes mellitus; outpatient services for minor illnesses; immunizations; and screening tests. Nurses are expected to ensure the wellbeing of the patients by making follow-ups and promoting compliance with treatments. Adherence to treatment is a consequence of several factors including the knowledge base of the client and the number of medications

being taken. Numerous medications bring about confusion and increase the chances of nonadherence. Additionally, multiple medications are likely to cause drug-to-drug interactions and result in adverse drug reactions. Therefore, it is in the interest of patients to ensure that only the required medications are taken. However, there is inadequate information about the right way to perform medication reconciliation for patients with multiple medications. Furthermore, patients are unaware of the consequences of self-medicating by taking over-the-counter drugs and herbal remedies. Consequently, the undesirable effects of polypharmacy continue to be reported. Therefore, a staff education program to boost nurse confidence in conducting medication reconciliation will improve the process and may also reduce the negative effects associated with polypharmacy.

Significance for the Field of Nursing Practice

The recent trends in the health care setting have led to changes in the roles of advanced nurse practitioners, who continue to take up roles in health care provision. Ensuring patient safety is one of the roles that nurses are expected to perform. Patient safety entails providing proper care during hospital care and empowering the patients to continue taking good care of themselves once discharged from the hospital. This care often includes taking all of the prescribed medications at the right time and in the correct manner, as well as making follow-ups on patients to determine the progress of therapy. Numerous drugs often lead to medication adherence issues, which may interfere with the overall treatment progress. Proper medication reconciliation procedures will help to reduce the number of drugs to the minimum essential, thus increasing the probability of medication compliance and reducing the chances of adverse drug events.

Purpose

Gap in Practice

There is a significant expenditure in the medical costs of elderly patients compared to other patient groups, which is attributed to polypharmacy (Lassman et al., 2014; Nardi et al., 2016). Polypharmacy causes problems, such as a high pill burden, medication nonadherence, increased medical expenses, and adverse drug reactions, which increase morbidity and mortality among the elderly (Maher et al., 2014). The gap in practice was the lack of an appropriate program or tool to guide nurses in implementing medication reconciliation. Therefore, the purpose of this project was to develop a staff education program on medication reconciliation to enhance staff confidence during medication reconciliation, thus bridging the gap in the execution of the procedure. Effective medication reconciliation will lead to improved patient outcomes by reducing adverse drug reactions, lowering patients' pill burden, minimizing the incidence of medication nonadherence, and reducing the cost of treatment for the elderly by avoiding duplication of drugs.

Practice-Focused Question

The practice-focused question for this project study was the following: Does staff education improve staff confidence of medication reconciliation and potentially reduce the risk of polypharmacy in a primary care setting?

How the Project Addresses the Practice Gap

With this project, I addressed the requirements of an effective medication reconciliation process. I also addressed the roles of nurses and other providers regarding

the practice problem. I included how to execute the medication reconciliation process effectively by ensuring that patients' medication lists reflect every drug taken by the patient, their significance, and potential side effects. As a result, nursing staff will be confident of the medication reconciliation process, thus ensuring its effectiveness and potentially reducing the negative effects of polypharmacy.

Nature of the Doctoral Project

Sources of Evidence

I used current, evidence-based literature to answer the practice question. Some of the databases that were useful in obtaining evidence for the project included Medline, CINAHL, ProQuest, and the Cochrane Library. I also used the resources of the Walden University Library to gather evidence. Primary and secondary peer-reviewed nursing articles were retrieved from the Google Scholar database. To evaluate the confidence levels, I included a pre and posttest questionnaire to determine whether the staff felt confident to reconcile medications to prevent polypharmacy as a result of the education program. The instrument used to measure the participants' level of confidence was used with medical students in the past. This gave a level of confidence that the staff had prior to the education and a follow up level after they participated in the education program. The questionnaire was developed using the Bray-Hall (2010) criteria and, although no validation of the instrument was identified, the instrument served to provide perceptions of the participants' confidence about medication reconciliation.

Approach

The project involved a review of literature on medication reconciliation approaches in peer-reviewed articles. The Melnyk pyramid matrix was useful in facilitating an evaluation of relevant data (Melnyk & Fineout-Overholt, 2011). I ascertained the strength and logic of different nursing research articles and used the information provided to create a staff education program to improve the medication reconciliation process. This approach ensured that only evidence-based research with the highest level of strength were incorporated into the staff educational program. The pre and posttest results provided evidence of the staff members' perceptions of their comprehension of the education content and their confidence in medication reconciliation.

Concise Statement

The purpose of this project was to develop an evidence-based staff development program on medication reconciliation to improve staff confidence in conducting medication reconciliation and to reduce the number of patients returning to the clinic with adverse drug events related to polypharmacy at the practicum site. The goal of this program was to guide staff members on the correct way to execute the medication reconciliation process to ensure that a comprehensive list of patients' medications, their indications, and potential interactions are included. The emphasis of this project lines up with the goal of DNP Essentials III on clinical scholarship and analytical method for evidence-based practice and Essential VI on interprofessional collaboration for improving patient and population health outcomes (American Association of Colleges of

Nursing, 2006). Appraising existing evidence to develop an evidence-based staff development program to improve medication reconciliation involves making use of analytical techniques. In addition, effective medication reconciliation efforts involve pharmacists in addition to other health care providers. Therefore, it was necessary to look into interprofessional collaboration to ensure the success of the medication reconciliation efforts.

Significance

Stakeholders

The key stakeholders of the project included the director of nursing, staff nurses, and medical assistants. Implementing an evidence-based staff education program would improve staff confidence about medication reconciliation and improve medication reconciliation accuracy and efficiency.

Potential Contributions to Nursing Practice

Staff education about medication reconciliation is crucial to preventing inappropriate polypharmacy. This process is likely to improve patient safety and enhance the quality care. Medication reconciliation is reported to reduce medication errors significantly (Ramjaun, Sudarshan, Patakfalvi, Tamblyn, & Meguerditchian, 2015). Medication reconciliation also promotes appropriate polypharmacy by eliminating inappropriately prescribed drugs (Hennen & Jorgenson, 2014). This process also increases the usage of appropriate medications by promoting adherence to evidence-based therapy. National Patient Safety Goal 8 requires that all drugs being taken by a patient be compared with those ordered by a physician while receiving care at an

institution and compiled in a list (Lancaster & Grgurich, 2014). This list should be availed to the next service provider following referral or transfer, as well as the patient upon discharge (Kwan, Lo, Sampson, & Shojania, 2013). Different providers play defined roles in this process. A staff education program for medication reconciliation would highlight and define the roles of each provider to smooth the process of medication reconciliation.

Potential Transferability of the Doctoral Project to Similar Practice Areas

The knowledge gained and data gathered from this project can shape other aspects of health promotion in nursing practice at the practicum site. Staff education affects other areas of health, such as the management of chronic diseases; prevention of obesity; and the use of preventive services, such as disease screening. An evidence-based staff education program on medication reconciliation can be copied to develop similar education programs to guide nursing staff in helping patients to improve their self-care in health problems such as cardiovascular disease and diabetes mellitus.

Potential Implications for Positive Social Change

Inappropriate drug use is associated with an increased risk of hospitalization among elderly patients, as well as in patients suffering from dementia (Pasina et al., 2014). Hospitalization takes a physical, mental, and emotional toll on the patients themselves, their family members, and caregivers. Addressing the issue of inappropriate polypharmacy through medication reconciliation may lead to social change by reducing the number of hospital admissions associated with adverse drug events.

Inappropriate polypharmacy also leads to the increased cases of mortality among the elderly patients (Eijsink, Zeeman, van Wijngaarden, Badings, & van't Riet, 2015), which causes grief and anguish to the families of the affected patients. Medication costs in elderly patients are usually high due to the comorbidities that come with the aging process. These costs are further increased by the duplication of drugs, thus increasing the financial burden to the affected patients (Maher et al., 2014). Therefore, eliminating the negative effects of polypharmacy by adhering to the recommended standards of prescription and medication reconciliation would lead to social change by minimizing preventable deaths associated with adverse drug events and eliminating unnecessary expenses used on duplicated medications (Greene, Steinman, McNicholl, & Valcour, 2014).

Polypharmacy causes undertreatment due to physician reluctance to prescribe more drugs to a patient who is already taking many drugs, even if the additional drug has therapeutic value (Maher et al., 2014). Therefore, addressing polypharmacy would reduce a patient's drugs to the minimum essential, thus providing room for proper prescription procedures.

Summary

The aging process weakens the body and makes the elderly susceptible to multiple comorbidities. Such a situation necessitates the use of multiple medications to keep the conditions in check. Polypharmacy, therefore, is described as the use of multiple drugs by an individual to manage one or several illnesses. Polypharmacy is sometimes inevitable because of situations such as the existence of multiple comorbidities that require different

medications for treatment. However, the inappropriate application of drugs has been reported to increase adverse drug reactions and increase the cost of treatment. Medication reconciliation is reported to reduce the chances of adverse drug reactions by avoiding medication duplication. Despite the knowledge of the medication reconciliation process, inappropriate polypharmacy continues to be reported in many hospitals. In this project, I aimed to improve staff confidence of the medication reconciliation process in a primary care facility. The project was based on the assumptions of Nola Pender's health promotion model that the influence of health care staff on patients plays a role in the behavior and overall wellbeing of patients. Evidence-based studies were used to identify education material to improve staff confidence of medication reconciliation. It was anticipated that the successful completion of this project would boost health care staff confidence to carry out medication reconciliation processes effectively. Consequently, the project would bring about social change by improving the quality of life of geriatric patients and their families.

Section 2: Review of Scholarly Evidence

Introduction

Polypharmacy among the elderly patients has led to high medical expenditure for Medicaid patients (Feng et al., 2017). The high incidence of chronic illnesses in the aging population plays a role in the current state of high medical expense. Apart from the high treatment costs, polypharmacy is associated with other unwanted outcomes. Medication reconciliation provides one of the most effective ways of ensuring that patients only receive relevant prescriptions. However, the effectiveness of medication reconciliation is curtailed by limited staff education about the process. The purpose of this project was to develop an evidence-based staff development program on medication reconciliation to improve staff confidence in medication reconciliation and potentially reduce the number of patients returning to the clinic with adverse drug events related to polypharmacy. In this section, I explain the concepts, models, and theories that inform this doctoral project. I also integrate key writings by nursing theorists and other scholars pertaining to staff education programs in medication reconciliation. Other components of this section include the significance of this project to nursing practice, the local background and context of the problem in my practicum setting, and my position as the DNP student. I have not included locally used terms or working processes other than those used applied in nursing practice universally. Therefore, definitions of such terms are not a part of this section.

Concepts, Models, and Theories

The Theory That Informs the Project

This educational project is guided by Pender's health promotion model (HPM), which was put forth by Pender in 1982 and amended in 1996 (Alligood, 2014). This model was meant to complement health protection models. The HPM includes a description of health as a positive dynamic status, not only the lack of disease. Health promotion is aimed at improving patients' level of health. The model includes the multidimensional disposition of people during their interaction within their environment to pursue health. The model includes three main areas: personal traits and experiences, behavior-specific thoughts and influences, and behavioral outcomes (Alligood, 2014). An individual has unique attributes and encounters that affect his or her ensuing actions. These factors have motivational significance and can be altered through nursing actions.

Synthesis of Primary Writings

Health-endorsing actions are the desired outcomes in the HPM model. It is anticipated that these behaviors lead to enhanced health outcomes, improved functional capability, and improved quality of life at all life stages. The ultimate behavioral requirement is also swayed by the instantaneous contending demand and penchants, which can affect a proposed health fostering.

The HPM is founded on several theoretical propositions, which is related to the problem of medication reconciliation in avoiding inappropriate polypharmacy. Professed proficiency or self-efficacy to perform a behavior increases the chances of dedication to action and the real performance of the behavior (Alligood, 2014). Staff competence to

perform medication reconciliation is likely to promote the efficiency of the practice and ensure patient safety by mitigating the dangers of inappropriate polypharmacy. In addition, according to the model, self-efficacy leads to fewer supposed obstacles to a particular behavior. Improving staff education on medication reconciliation will increase confidence and eliminate some of the barriers to the process, such as inadequate knowledge on the right way to execute the process.

A positive attitude towards a given action leads to greater self-efficacy, which causes an increase in positive consequences (Alligood, 2014). Staff education aims at exerting a positive influence on medication reconciliation, thus leading to positive patient outcomes following its execution (Keogh et al., 2016). The anticipated outcomes include better health among the elderly patients, reduced medical expenses from eliminating drug duplication, fewer emergency room visits, and fewer hospital admissions due to adverse drug events (Williams, Perillo, & Brown, 2015).

Associating positive emotions with a behavior increases the chances of commitment to the behavior (Aligood, 2014). Educating the staff members about the positive impact of effective medication reconciliation on patients and their families motivates them to learn how to do it effectively. Individuals have higher chances of committing to and participating in health-promoting actions when other significant people take part in the same behavior or expect it to occur and support the behavior (Aligood, 2014). Hospital administration expects that health care providers should provide quality health care services to patients (Zgierska, Rabago, & Miller, 2014).

Appropriate medication reconciliation process involves providing the patient with adequate discharge information regarding how to take his or her drugs, which can contribute to patient satisfaction. In addition, the Centers for Medicare and Medicaid established financial disincentives for hospitals that report patient readmissions in 30 days after their release from the hospital (Greysen, Cenzer, Auerbach, & Covinsky, 2015; Joynt & Jha, 2013; Zuckerman, Sheingold, Orav, Ruhter, & Epstein, 2016). Adverse drug reactions contribute to most cases of patient readmissions (Gerhardt et al., 2013). Such instances can be reduced by proper medication reconciliation procedures (Sganga et al., 2015). These are performance and quality issues that hospital management wishes to eliminate and are likely to provide support to the project. Family members, colleagues, and health care providers impact interpersonal influence, which may augment or diminish dedication to and participation in health-promoting behavior.

Relevance to Nursing Practice

History of the Problem in Nursing Practice

Although health care staffs undergo intensive training in learning institutions, workplace environments are faced with change. Additionally, advances in health care technology require that providers update themselves on the current changes and innovations in the health care arena. Educational meetings have been applied in continuing medical education to enhance professional practice and patient outcomes. Some of the approaches used in continuous education include educational meetings, short courses, symposia, discourses, workshops, and seminars. In most countries, professional and regulatory bodies require that health care providers give a demonstration of

continuing medical education. The incentives associated with these activities have led to their increase, which is attributed to improved health care practice and patient outcomes. The efficacy of continuing medical education efforts can be quantified through levels of staff proficiency, execution, and patient health standing.

Latino (2004) indicated that staff education plays a role in augmenting failure mode and effect analysis and root cause analysis (RCA) efforts in health care. RCAs aim to get at the root of health care problems and ensure that similar problems do not recur. Therefore, identifying the contentious issues, devising appropriate strategies to counter the problem, and educating the concerned staff members through staff education is the right approach to solving the problems. The negative effects of polypharmacy among the elderly have plagued the health care setting. Initially, workers used paper charts to document all the drugs being taken by a patient. However, without a review of the medication list, it was impossible to identify any drugs that were likely to cause undesired interactions. Additionally, it was difficult for providers in different health care settings to access this medication list. Therefore, chances of drug duplication or prescriptions of drugs that cause adverse reactions were high (Nuckols et al., 2014). With the advent of electronic health records, the documentation of patient data has changed, making it possible to for all providers to access patient information, including a list of current medications (Radley et al., 2016). However, the effects of polypharmacy continue to be reported, which points out to the need to educate health care staff about the appropriate way to conduct medication reconciliation.

Current State of Nursing Practice and Recommendations

The Institute for Safe Medication Practices endorsed that medication reconciliation should involve the collaboration of health care professionals with patients, their families, and care providers to guarantee precise and all-inclusive drug details are communicated across changeovers of care without a problem (Conklin, Togami, Burnett, Dodd, & Ray, 2014). Consequently, a methodical and broad assessment of all the drugs a patient is taking should be done to guarantee that drugs being included, substituted, or stopped are evaluated. The effective implementation of medication reconciliation may do away with avoidable adverse drug events and lower mortality and morbidity associated with polypharmacy (Ramjaun et al., 2015). Hospital authorization bodies in North America have mandated medication reconciliation processes in all hospitals (Ramjaun et al., 2015).

Despite the mandating of medication reconciliation in most hospitals, there is a poor observance of ideal medication reconciliation conventions with fewer than 20% of patients receiving this service (Belda-Rustarazo et al., 2015). Medication reconciliation encompasses the multidisciplinary participation of nurses and pharmacists. Nevertheless, it is the sole responsibility of the physician to authenticate the completed drug history and prepare and wrap up admission and discharge medicines. This role is usually performed by physicians-in-training in teaching hospitals. There is limited incorporation of safe patient transitioning and medication reconciliation into the curricula of few medical education programs. Educational interventions can play a role in streamlining the medication reconciliation procedure.

The provider should take into consideration other intermediations that minimize the dangers of medication-related problems. These interventions may be given by health care professionals, instructors, policy creators, and health care service architects. The conventional strategy of intervening in polypharmacy, founded on the supposition that polypharmacy is detrimental, has been to decrease unacceptable medications. By recognizing the risk factors for polypharmacy, it is possible to reduce its related illnesses, deaths, and costs (Nardi et al., 2016). Suggested approaches endorsed in numerous intervention studies include using computer data entry and feedback processes, which have demonstrated their effectiveness in reducing negative polypharmacy and drug-drug interaction (Patterson et al., 2014). Other approaches are the identification of prescriptions, medication appraisal, and patient edification to improve polypharmacy (Patterson et al., 2014).

Previous Strategies and Standard Practices

Other previously used strategies used to prevent polypharmacy include avoiding making prescriptions for mild, nonspecific complaints or those problems that are known to resolve on their own (Sino, Sietzema, Egberts, & Schuurmans, 2014). Providers should only give prescriptions to patients when there is sufficient evidence to warrant the need for the medication or evidence of probable efficiency. Carrying out frequent and accurate medication reviews preferably in the homes of those patients taking more than five drugs is a possible solution to the adverse effects of negative polypharmacy (Sino et al., 2014). Alternatively, the patients can be asked to bring with them all their medications both prescribed and nonprescribed to the health facility. The review entails evaluating the

suitability of the drugs, continuing need for treatment, unwanted side effects and interactions, the current dosage, drug formulation, and adherence to the recommended mode of usage.

Promoting the use of nonpharmacological approaches to managing certain diseases is also recommended. For example, the use of lifestyle modifications whenever possible as an addition or drug alternative should be considered (Pedersen & Saltin, 2015). For example, in patients with Type 2 diabetes, healthy diet and exercise can minimize the use of drugs (Pedersen & Saltin, 2015). Effective patient-provider communication is helpful in managing polypharmacy. Patients should air their concerns, anticipations, struggles in using the prescribed drugs, and their capability to adhere to the medication regimen. If any modifications to the patient's treatment are required, they should be discussed with other providers who are attending to the patient.

If possible, simplification of the treatment course to essential drugs should be done. The dosage intervals and quantities should be reduced to the fewest and lowest possible where appropriate. The usage of noncompulsory, inconsequential, and palliative medications should be avoided altogether. To counter adverse drug reactions, any medication should be initiated as a trial and suspended if proven ineffectual or when the side effects cannot be tolerated by the patient. Only those drugs whose ongoing need has been verified should be retained.

Another useful strategy is deprescribing, which is defined as the methodical procedure of pinpointing and stopping drugs in cases where the prevailing or possible dangers surpass the possible benefits of the drugs in the perspective of a single patient's

care objectives, the present level of operation, life expectancy, standards, and predilections. Deprescribing covers the instigation of therapy, titration of dosages, modifying or including drugs, and substituting or stopping drug treatments (Scott et al., 2015). This process does not aim at depriving patients of effective treatment. Instead, it is a constructive, patient-centered intermediation with innate reservations, which requires collective decision making, patient consent, and observation of drug effects. Deprescribing takes into consideration the dangers associated with distinctive drugs, as well as the aggregate risk from numerous drugs because of their pharmacokinetic and pharmacodynamic interactions (Scott et al., 2015).

Additionally, the dosing frequency should be reduced and titrated down where possible. While doing this, it is necessary to educate the patient on the importance of cutting down on the drugs (Garfinkel, Ilhan, & Bahat, 2015). Nevertheless, the cessation of drug therapy may lead to unpleasant drug withdrawal occurrences in certain cases. Some of the drugs that are known to have unpleasant withdrawal events include beta-blockers, hypnotics, sedatives, antidepressants, opiates, corticosteroids, and antipsychotics. The withdrawal of these drugs is done successively if the dosages are tapered rather than abrupt withdrawal.

How the Doctoral Project Advances Nursing Practice

This doctoral project advances nursing practice by providing evidence-based strategies for carrying out medication reconciliation to avoid the negative effects of polypharmacy among the elderly patients. Current efforts at medication reconciliation focus on the role of pharmacists, which cannot be overlooked. However, advanced

practice nurses play a role in patient care including patient education and health promotion. This project included the identification an evidence-based staff education program to address all these issues.

Local Background and Context

Summary of Local Evidence and Cultural Factors

The practicum clinic serves a diverse patient population, many of whom are aged 65 years and above. Several strategies have been attempted to ensure that this group of patients take only the prescribed drugs. For example, brown bagging efforts have been attempted where patients were asked to come to the clinic with all their current medications for review. However, few patients turned up for the activity. Additionally, the few patients who brought their medications were still taking discontinued medications. Other patients had expired drugs in their possession, while a few more admitted to taking over the counter medications for instant relief and herbal supplements to complement the prescribed treatment. These observations pointed towards the need for a medication reconciliation effort, as well as patient education sessions to emphasize the value of taking prescribed medications only. Nevertheless, the effectiveness of the sessions is dependent on the knowledge base and preparedness of nursing staff, which justifies the need for staff education to improve the confidence of medication reconciliation.

Institutional Context/Environmental Variables

The practicum site was located in the Southeastern part of the United States. The institution offers various health services including screening, immunizations, caring for

patients with chronic illnesses, and providing annual wellness examinations. The client base of the clinic included Africans, Hispanics, African Americans, Asians, and Whites. The facility's mission is to provide quality health care services to the community. The strategic vision is to provide holistic care to its patients.

Definitions of Locally Used Terms or Operational Processes

Polypharmacy is defined as the use of five or more medications on a daily basis (Gnjidic et al., 2012). No other new terms and operational processes have been included as all terminologies are consistent with those used conventionally in nursing practice.

State and/or Federal Contexts Applicable to the Problem

With the passing of the Affordable Care Act in 2010, there was extra emphasis on the quality of health care services provided (Zuckerman et al., 2016). Financial incentives and disincentives have been used to encourage health facilities to adhere to certain standards. Consequently, quality measures such as hospital readmission rates are used to evaluate the performance of health facilities. Adverse drug reactions contribute significantly to hospital readmissions (Morandi et al., 2013). Additionally, medication noncompliance worsens patients' conditions and increases the probability of readmission (Wimmer et al., 2014). The incidence of polypharmacy is directly proportional to adverse drug events and medication noncompliance (Sganga et al., 2015). Therefore, medication reconciliation serves to reduce adverse drug events and noncompliance to reduce hospital readmission rates in line with the current regulations.

Role of the DNP Student

My Professional Context and Relationship to the Doctoral Project

My professional role was an advanced nurse practitioner in an internal medicine clinic. Some of my work obligations included measuring and evaluating the health status of patients and endorsing appropriate services that promote health and wellbeing. This project was implemented at my practicum site, which was separate from my place of employment. Therefore, the DNP project was not related in any way to my employment duties.

My Role in the Doctoral Project

I was tasked with using evidence-based literature to create a staff education program that would improve the execution of medication reconciliation process in my practicum setting. Other roles included advancing the project to completion, bringing together the outcomes of my project, and presenting the final product to the practicum site. I was also expected to submit the final project report to Walden University.

My Motivations for this Doctoral Project

I chose to pursue this topic after having to witness elderly patients struggling with their medications. As much as they were suffering from different illnesses concurrently, the drug loads seemed too much for one person. I kept wondering whether the patients would remember when to take the drugs. I also wondered how the many drugs would react in the bodies of these patients. Surprisingly, upon inquiry, the patients responded that their providers advised them to take all those medications. I resolved to find a way of

cutting down the number of drugs to the bare minimum by improving the existing medication reconciliation efforts.

Potential Biases

I was likely to exhibit one forms of researcher bias because of my commitment to minimize polypharmacy through medication reconciliation. Confirmation bias occurs when a researcher has a preformed opinion and uses the subjects' data to validate the belief (Baack, Dow, Parente, & Bacon, 2015). Consequently, there was likelihood that I could consider responses that support my opinions and disregard evidence that does not support my suppositions. I eliminated this bias by enlisting the help of an impartial person to review my work. For instance, I worked closely with my preceptor to appraise my work for evidence of bias.

Role of the Project Team

The Use of a Project Team

The main project team members were the DNP student (self) and the medical director of the practicum site. I presented all the steps followed in the identification of an evidence-based staff education program to the key administration at the site for their contribution before I wrapped up the program. I also involved the director of nursing, other staff nurses, and medical assistants who were a part of the audience during my presentations.

Presenting Information to the Team Members

I presented information about the background of the practice problem, current evidence supporting the problem, and other summarized evidence through PowerPoint

presentations. I organized short meetings to present this information by sending emails to the target audience at least two weeks to the proposed presentation date. A prior notification allowed ample time for the concerned parties to look out any information that may be helpful in improving my project.

Summary

Polypharmacy occurs because of the necessity to treat multiple comorbidities. However, inadequate reconciliation of patients' health records and fragmentation of care may lead to polypharmacy. The negative consequences of polypharmacy include adverse drug events, increased medication costs, and medication non-adherence among many others (Nardi et al., 2016). Several evidence-based strategies have been used to minimize the negative consequences of polypharmacy. Most of these strategies require the efforts of medical providers to ensure that the patient receives only necessary medications to manage the pre-existing illnesses effectively. The health promotion model guided the education of staff members about medication reconciliation to make them proficient, increase their confidence in the process, and avoid the negative impacts of polypharmacy. The HPM focuses on three main aspects of personal traits and experiences, behavior-specific thoughts and influences, and behavioral outcomes, which have a significant impact on health outcomes. This model suggests that relating positive emotions with certain actions and confessed self-efficiency in doing these actions reinforce these actions. Comparing the positive aspects of medication reconciliation on the health of the elderly is expected to motivate healthcare staff members to implement medication reconciliation procedure appropriately to minimize the negative effects of polypharmacy.

The next section discusses the methods that were be used in the collection of data for this project.

Section 3: Collection and Analysis of Evidence

Introduction

Polypharmacy is the use of five or more medications simultaneously (Gnjidic et al., 2012). The use of multiple medications concurrently is often associated with undesirable effects, such as medication nonadherence and adverse drug reactions. Medication reconciliation can be used to develop a comprehensive list of all drugs taken by a patient to ensure that there is no duplication of drugs and that the possibility of adverse drug reactions is minimized. In my practice setting, the execution of medication reconciliation was constrained by the lack of staff confidence. The purpose of this project was to develop an evidence-based staff education program on medication reconciliation to improve staff confidence of medication reconciliation and potentially reduce the number of patients returning to the clinic with adverse drug events related to polypharmacy at the practicum site. In this section, I expand the sources of evidence that were used to answer the practice-focused question. I outline the relevant databases, as well as the search strategies in the collection of evidence, to develop the staff education program. I also explain how I ensured that the search was exhaustive and comprehensive, after which I describe the methods of analysis and synthesis of the collected data.

Practice-Focused Question

The practice-focused question for this project was the following: Does staff education improve confidence of medication reconciliation and potentially reduce the risk of polypharmacy in a primary care setting?

The current health expenditure on elderly patients is a high rate, and a proportion of this cost is attributed to the cost of drugs. Additionally, most of these patients are frequently readmitted to hospitals because of drug-related adverse occurrences and mismanaged conditions due to medication nonadherence. A similar scenario was replicated in my practicum setting despite attempts to carry out medication reconciliation to ensure that patients take only necessary drugs. This problem pointed towards the practice gap of insufficient medication reconciliation practices. Therefore, there was a need to educate staff members about the correct medication reconciliation practices using an evidence-based staff education program. In this project, I attempted to answer the practice problem by using an evidence-based staff education program to improve staff confidence of medication reconciliation, the risks of polypharmacy, and potentially reduce the incidence of the negative effects of polypharmacy among the elderly.

Clarification of the Purpose

The purpose of this project was to develop an evidence-based staff development program to improve staff confidence of medication reconciliation and potentially reduce the risks of polypharmacy at the practicum site. Included in the program was the issue of self-medication among elderly patients and the use of herbal supplements in addition to prescribed medications. As a result, there may be a reduction of the negative effects associated with polypharmacy among the elderly, as indicated by a Mueller et al. (2012), that effective medication reconciliation reduces the burden of polypharmacy and its negative effects.

Operational Definitions of Key Aspects

The project uses common terminologies applied in nursing practice. These terminologies were in this section as well as in subsequent chapters. The first term is polypharmacy, which has been defined as the use of simultaneous use of five or more drugs to treat multimorbidities (Gnjidic et al., 2012). The second term is medication reconciliation, which is the process of comparing a patient's medication orders to all of the medications that the patient has been taking (Conklin et al., 2014). This process aims at preventing medication errors **s**uch as noninclusions, replication, dosing errors, or adverse drug interactions. A standardized medication discrepancy tool (MDT) is a uniform medication reconciliation form that is used to harmonize the process of recording patients' drugs, their indications, dosages, and potential drug reactions from one setting to another.

Sources of Evidence

Evidence to Support the Practice-Focused Question

I used up-to-date, peer-reviewed literature to support the practice-focused question. The staff education guidelines proposed by The Joint Commission and the CMS from the Strategies for nurse managers website were also useful in planning for the implementation of the program (Strategies for Nurse Managers, 2017). This approach ensured that current and evidence-based literature was used to identify a staff education program that aligns with the health care policies and regulations. Additionally, the pre-posttest that was used was based on the content covered in the education program which was a modification of the Bray-Hall et al. (2010) curriculum developed and used in

training medical students. Because no validated instrument on this student-developed education was available in the literature, this previously used instrument was chosen.

The Relationship of Evidence to the Purpose

The purpose of this project was to determine the effectiveness of an evidence-based staff education program in improving staff confidence of medication reconciliation and potentially reducing the risk of polypharmacy in a primary care setting. The collected information for the education program included evidence-based approaches that have been used to improve the execution of medication reconciliation successfully. I identified and used an evidence-based educational program to educate staff at the primary care site and determined the effectiveness of the intervention using a pre and posttest strategy.

Evidence to Address the Practice-Focused Question

I looked into different databases to find an evidence-based approach to address the practice-focused question. Reviewing all of the collected data was the key to obtaining valid strategies. Therefore, the Melnyk pyramid matrix was valuable in guaranteeing that I undertook an adequate evaluation of relevant data (Melnyk & Fineout-Overholt, 2011). I established the coherence and strength of various nursing research articles to identify a suitable, standardized staff education program for improved medication reconciliation. By so doing, it was possible to integrate the highest level evidence-based staff education program into the project. This literature review matrix also facilitated the determination of the applicability of the proposed solutions in the reviewed articles to the practice gap (Melnyk & Fineout-Overholt, 2011).

Literature Search Strategy

To identify an evidence-based strategy that was applicable to my practice problem and practice site, I used databases such as Medline, ProQuest, CINAHL, OVID, and the Cochrane Library. The Walden University Library and the Google Scholar database were also helpful in retrieving full-text research articles with staff education programs. Some of the key search terms and phrases included *staff education on polypharmacy among elderly patients, medication reconciliation strategies,* and *reducing negative polypharmacy*.

I restricted my literature search to a range of 5 years. The search tools such as filters provided in various databases were useful for narrowing the search results to articles of interest. For example, the publication type option provided a range of research articles such as randomized clinical trials clinical trials (RCTs), systematic reviews of RCTs, original research articles, and review articles. My search was comprehensive by trying out key terminologies and permutations of search phrases that traversed the breadth of the practice problem. Limiting the search to articles published within the last 5 years also ensured the currency and comprehensiveness of the search.

Analysis and Synthesis

The analysis and synthesis of the project involved analyzing the literature to identify a suitable staff education program. The second part included the evaluation of the efficacy of the education program using pre and post testing on the content of the education. The third part, determination of the impact of education on medication reconciliation and reduction of polypharmacy, was long term and was not within the

scope of this DNP project. This project, however, provides adequate information for the staff members regarding how to evaluate the effectiveness staff education program in reducing the incidence of polypharmacy and its associated effects.

Analysis and Synthesis of the Literature

I documented the evidence gathered by hand in a prearranged table. The table format facilitated the capturing of crucial information to facilitate the identification of a suitable program. Some of the factors that were captured included the citation information, objective, methodology, key findings, recommendations, implications for nursing practice, and level of evidence. Analysis of the evidence was then conducted, as per the steps outlined by Melnyk and Fineout-Overholt (2011). I classified the articles based on the level of evidence. Articles portraying systematic reviews of randomized clinical trials were categorized as Level 1 evidence. On the other hand, articles that demonstrated cause-effect relationships and elements of randomization in the sampling were regarded as Level 2 evidence, while studies whose sampling did not involve randomization were classified as Level 3 evidence (Melnyk & Fineout-Overholt, 2011). Correlational studies were graded as Level 4 evidence while descriptive studies were grouped under Level 6 evidence. Exclusion and criteria facilitated the identification of a suitable staff education program that was used in the study. No software was necessary throughout this process.

I ensured the integrity of the collected evidence by using only peer-reviewed articles that had been subjected to scrutiny before publication. I also conducted an evaluation of the articles based on the clarity of the purpose, the transparency of the

methods, and the forthrightness of the results. Credible results were supported by statistical data for quantitative studies. I did not anticipate to meet outliers and missing information.

Presentation of the Program

I summarized the key points of the education program (Appendix E) in a PowerPoint presentation. Invitations to participate in the training program were sent to staff members at least 2 weeks before the presentation (Appendix C). On the due day, I presented the pretest questionnaire to the staff members before presenting the program. I allowed time for reactions and additional clarification about the content of the program. During the meeting, I asked for suggestions from the clinic administration and other staff members regarding additional improvements to the education program.

Program Evaluation

The effectiveness of the program in increasing staff confidence of medication reconciliation was determined by pre and posttest evaluations. A simple 10-question test before teaching and another one after teaching were used to evaluate a change in confidence. The test scores were obtained from a 5-point scale. Each questionnaire had only unique identifiers, so no participant names were collected. The data from the two tests were entered into SPSS and a *t* test was used to determine if there was a significant improvement in confidence after the staff members participated in the class. It was expected that participation in the education would improve the confidence of medication reconciliation and lead to better patient outcomes.

A plan for determining the effectiveness of the program in reducing the incidence of complications of polypharmacy on a long-term basis was also developed and included as part of the education. The plan included a method to compare patient data prior to implementation of the staff education program and after implementation. The plan encompassed recording the number of medications taken by each patient and the number of adverse drug events at the baseline period. At the end of the designated post intervention period, a similar procedure was done to identify whether there has been a reduction in the number of potentially harmful medications in this group of patients and in the number of adverse drug events. A student *t* test was also incorporated into the plan to determine whether the difference was statistically significant. This phase of the project was left for the site to complete at various intervals in the future and was not within the scope of this student project.

Summary

This project involved the collection of evidence from peer-reviewed literature published within the last 5 years. Key search terms related to the practice problem were used to narrow down the search. Combinations of different search phrases were attempted to retrieve a large number of relevant articles. Evidence from the relevant articles was synthesized and analyzed in a table format. A suitable, standardized staff education program was identified and used to educate the staff on medication reconciliation. An evaluation of the educational program was obtained by the analysis of the results of a pre- posttest.

Section 4: Findings and Recommendations

Introduction

Polypharmacy, which is the simultaneous use of five or more drugs, is a common health care problem in the care of geriatric patients (Gnjidic et al., 2012). Elderly patients are predisposed to multiple comorbidities, which necessitate the use of multiple drugs. However, polypharmacy is associated with increased health care costs, an elevated risk of adverse drug events, and medication noncompliance (Alpert & Gatlin, 2015). Therefore, there is a need to ensure that geriatric patients suffering from multiple comorbidities take the minimum possible number of drugs to keep their health conditions in check.

Medication reconciliation is reported to be one of the most effective strategies of reducing the negative effects associated with polypharmacy (Cadogan et al., 2016). However, its effectiveness is not realized in most practice settings due to the lack of education regarding the right way to go about it. The purpose of this project was to develop an evidence-based staff development program to improve confidence of medication reconciliation and potentially reduce the risk of polypharmacy in a primary care setting. However, data on adverse drug events related to polypharmacy would be collected as a secondary outcome on a long-term basis.

In this section, I report the findings of the analysis and synthesis of data regarding the impact of staff education. I also discuss the recommendations of the findings and their implication on nursing practice.

Sources of Evidence and Analytical Strategies

The databases used in this study to address the practice problem included Medline ProQuest, Medline, CINAHL, Google Scholar, Walden University Library, and the Cochrane Library. The key search terms were *staff education on polypharmacy among elderly patients, medication reconciliation strategies,* and *reducing negative polypharmacy.* The search settings were set to retrieve articles published within the last 5 years. However, the articles retrieved contained information regarding the impact of staff education on polypharmacy, whereas other articles provided the impact of medication reconciliation on polypharmacy but did not provide details about the staff education programs used. Therefore, there was a need to expand the search to retrieve articles published within the last 10 years. Four articles featuring education programs to minimize the effects of polypharmacy were retrieved. I then used the Melnyk pyramid matrix to evaluate the strength of evidence provided on the articles. A standardized education program proposed by Bray-Hall et al. (2010) was selected and used. The program contained five main aspects of education: didactics, role play, self-study, experiential, and small groups. The didactics aspect was chosen, expanded into a detailed staff education program and used to educate the staff members. Information from the Joint Commission and the CMS from the Strategies for nurse managers' website was also used to plan for the implementation of the program (Strategies for Nurse Managers, 2017).

Findings and Implications

Findings

A literature review was conducted, as indicated in the Section 3 of this project. The details of the literature search findings, exclusion, and inclusion criteria used in the selection of the education program are indicated in Appendix G. Staff members received invitations to participate in the study (Appendix C) 2 weeks before the proposed training date. A pretest questionnaire (Table 1 Appendix D), which was used as the posttest questionnaire, was adopted with permission (Appendix A) from a study by Bray-Hall et al. (2010). The pre and posttest questionnaire provided the participants' perceptions of their confidence in medication reconciliation. Only the didactics aspect of the transition in care curriculum proposed by Bray-Hall (2010) was adopted into the education program that was presented to the staff members (Appendix E). The entire curriculum included a standardized medication discrepancy tool that is included in Appendix F. This tool was chosen because of its reported effectiveness in ensuring smooth transitions to care and reduction of medication errors (Bray-hall et al., 2010; Coleman, Parry, Chalmers, & Min, 2006; Corbett, Setter, Daratha, Neumiller, & Wood, 2010). The pretest questionnaire was administered to a total of 10 staff members, who represented approximately 83.3% of staff members at the practicum site. Thereafter, the members received the education program, which was presented to them through a Microsoft PowerPoint presentation. Members were allowed an opportunity to ask any questions regarding the topic after the presentation. Members were free to respond to the questions and make additional suggestions regarding the right procedure to conduct medication reconciliation in a

primary care setting. The posttest questionnaire was then administered to the staff members. The data collected through the questionnaires were analyzed using a paired *t* test with significance set at 0.05. The questionnaire evaluated staff confidence in key components of effective medication reconciliation using a 5-point scale (1 = *minimal confident*; 5 = *very confident*; Table 2 Appendix D). Overall confidence was determined by combining all elements of the questionnaire and averaging them to find a single score. It was observed that the staff education program led to a significant increase in the staff's perception of their confidence in medication reconciliation from an average score of 2.19 (*SD* 0.20) to 4.37 (*SD* 0.12) ($p<0.001$) on a 5-point confidence scale (Table 1).

Table 1

T-test Output for Pre and Posttest

	Pretest	Posttest
Mean	2.1900	4.3700
Variance	0.0432	0.0157
Observations	10.0000	10.0000
Pearson Correlation	0.2861	
Hypothesized Mean Difference	0.0000	
df	9.0000	
t Stat	-32.8647	
P(T<=t) one-tail	0.0000	
t Critical one-tail	1.8331	
P(T<=t) two-tail	0.0000	
t Critical two-tail	2.2622	

Unanticipated Limitations or Outcomes

Most of the research proceeded as anticipated. However, one unexpected limitation was encountered in the literature search. There were no appropriate studies providing detailed staff education programs published in the last 5 years. Therefore, there was a need to expand the search range to obtain a suitable peer-reviewed staff education program.

Implications Resulting from the Findings

I found that staff education is crucial to conduct medication reconciliation effectively and ensuring a smooth transition of care in health care settings. The lack of medication reconciliation confidence as indicated by the pretest data explain why high incidences of polypharmacy and its negative consequences continue to be reported in most primary care settings. Also, effective medication reconciliation is hampered by the lack of a standardized medication reconciliation tool to direct the gathering of appropriate data (van Sluisveld, Zegers, Natsch, & Wollersheim, 2012). The use of a standardized medication reconciliation approach and tool might therefore improve the overall efficiency of the process thus reducing negative polypharmacy.

Potential Implications to Positive Social Change

The findings of this project can elicit positive social change for nursing practice by improving the quality of life of geriatric patients by lowering their pill burden. Well-informed and confident staff members are empowered to perform medication reconciliation effectively (Mueller et al., 2012; van Sluisveld et al., 2012). Elderly patients suffering from multiple comorbidities would have to take only the necessary drugs to keep their health conditions in check. There would be a reduced pill burden, improved medication compliance, minimal adverse drug events, and fewer hospital readmissions (Wimmer et al., 2014). In addition, there would be reduced expenditure on prescription drugs, thus helping to redirect financial resources towards healthy living behaviors, such as healthy diets and exercise. The overall outcome will be a reduction in the morbidity and mortality rates associated with polypharmacy among elderly patients.

Recommendations

Proposed Secondary Products

The goal of this project was to determine the impact of staff education on medication reconciliation and the impacts of negative polypharmacy. A literature search was conducted and used to identify a staff education program that was adopted to answer the practice-focused question. A secondary product arising from the project is a staff education program to enhance medication reconciliation, which is included in Appendix E. This program could be used as part of continuous staff education at the practice site to ensure that the tenets of effective medication reconciliation are entrenched into the organizational culture. Standardizing the location where all medical histories are found was suggested as one of the strategies to overcome the challenges encountered in medication reconciliation. It was proposed that this information would be conveyed to the information technology department and considered in the forthcoming system upgrade of the clinic's electronic health records system.

Implementation and Evaluation Procedures

The impact of the staff education program on polypharmacy can be determined by conducting regular staff education sessions using the proposed education program. A standardized medication reconciliation tool such as the MDT (Appendix D) can be adopted as part of the medication reconciliation procedure at the practice site and availed to each provider involved in care transitions of elderly patients. The effectiveness of the program can be evaluated by relating the frequency of polypharmacy and adverse drug events before and after the implementation of the education program. Statistical tests, like

the *t* test, can be used to compare the two data sets to ascertain the effectiveness of the intervention.

Contribution of the Doctoral Project Team

Roles of the Project Team

The project team consisted of the DNP student (self), the sites' administrator, medical assistants, and nurse practitioners at the practice site. I presented all of the steps followed in the identification of an evidence-based staff education program to the nursing director for approval before presenting the program to other staff members. All of the stakeholders contributed to the success of the project by agreeing to take part in the project. The feedback provided by the stakeholders yielded data that helped to answer the practice-focused question.

Plans to Extend the Project Beyond the DNP Doctoral Project

The director of nursing and other nurses agreed that polypharmacy and its negative problems were health problems at the practice site. The realization that staff education has a significant impact on the confidence of medication reconciliation was a step towards addressing the negative impacts of polypharmacy. Because the DNP doctoral project did not include determining the actual impact of the education on the negative effects of polypharmacy, plans were made to measure the incidence of adverse drug vents and polypharmacy following the education program. The efficiency of the program would be determined by comparing the rates of polypharmacy and adverse drug events before and after the implementation of the program.

Strength and Limitations of the Project

The main strength of the project is that I measured staff confidence on a 5-point scale, which made it possible for the respondents to gauge their confidence levels appropriately as opposed to yes or no questions. Additionally, the staff education program was adapted from a peer-reviewed article that had realized significant improvements in the confidence of medical students. The questionnaire contained 10 questions that covered aspects of care transition and medication reconciliation.

One major limitation of the project was the lack of a recent staff education program. Also, only the didactic aspect of the chosen program was implemented because of time constraints at the practice site. It was difficult to get adequate time to conduct the role play, self-study, and experiential aspects of the program because the participants of the study were staff members who were still expected to attend to patients.

Recommendations for Future Projects

Future projects targeting staff education on medication reconciliation should find more recent approaches to staff education. Also, it may be necessary to conduct face-to-face interviews or discussions to find first-hand data regarding some of the challenges that staff members face when conducting medication reconciliation. In so doing, it will be possible to develop interventions to solve the identified challenges thus improving the efficiency of medication reconciliation endeavors.

Section 5: Dissemination Plan

Dissemination Plan

I disseminated the research findings on the education program to the staff members through a PowerPoint presentation. The final findings and recommendations following analysis were presented to the site's administrator in the form of a project summary. I added the suggestions provided by the audience during the presentation to the final DNP product, which was accepted for additional dissemination by the nurse leader. The administrator decided that plans should be made to allow me to report my findings to other staff members during continuous education sessions. The final staff education program, alongside the MDT tool, will also be printed out and made accessible to staff members at the site.

Additional audiences that would benefit from the findings of this project are pharmacists, who are instrumental in the administration of drugs to patients. These findings will also benefit other medical providers in other practice sites as well as the entire medical community, given the gravity of negative polypharmacy among elderly patients. Therefore, the administrator advised me to prepare a brief oral presentation or poster presentation for an upcoming nurses' and physicians' conference to be held in September 2018. I also intend to develop my findings into a manuscript to be considered for publication in a peer-reviewed journal.

Analysis of Self

I have undergone growth in various aspects of my life during the last 3 years as a DNP student. These aspects include spiritual, intellectual, and professional growth. I

started looking into the practice problem of polypharmacy among elderly patients in the initial stages of my DNP program. Most of my practicum hours were spent studying the practical aspects of polypharmacy, which has led to an understanding of the challenges faced by elderly patients suffering from multiple comorbidities. I have also explored the literature on polypharmacy among geriatric patients and strategies for mitigating the negative effects of polypharmacy. As a result, I have enhanced my knowledge, dexterity, and capacity to cause a change in geriatric nursing with respect to polypharmacy.

My responsibilities as an adult-gerontology nurse practitioner involve conducting autonomous health assessments, physical examination, and patient education to many adult patients. I also engage in quality improvement pursuits. Exploring the impact of staff education on the confidence of medication reconciliation through this DNP project has given me a chance to execute quality assurance modifications that are backed by evidence in the literature. For example, I explored the use of an evidence-based staff education program to increase the confidence of medication reconciliation to avoid the negative effects of polypharmacy among elderly patients. This intervention is in line with the AACN (2006) Essential III of clinical scholarship and analytical methods for evidence-based practice. This DNP project has also provided a basis for the next phase of my career as a nurse leader by providing an opportunity to lead change.

Project Completion

The main challenge of this DNP project was the inability to implement the role play, self-study, and experiential aspects of the program. As a result, only the didactic aspect of the chosen program was implemented due to time constraints at the practice

site. Future scholars could consider dedicating adequate time to conduct all of the proposed education modalities. The completion of this project provided me with a useful insight that as much as patient involvement in their health (through medication compliance) affects the overall health outcomes, health care providers have a role to play by simplifying the medication regimen and reducing the pill burden. Health care staff require sufficient training, knowledge, and evidence-based strategies to handle patients' medication and to promote better health outcomes. This project emphasizes the need for staff education in conducting medication reconciliation in a primary care setting.

Summary

Polypharmacy, which is the use of five or more drugs simultaneously, is a common practice among elderly patients suffering from multiple comorbidities. Polypharmacy is associated with negative effects, such as adverse drug events, increased medical costs, and medication noncompliance. Sometimes patients receive unnecessary medications that do not do much to improve their conditions. Medication reconciliation is an evidence-based strategy of ensuring that patients take only the required medications whose safety and efficiency is assured. Medication reconciliation is best done at the health facility before discharging patients. However, the benefits of medication reconciliation are yet to be realized in my practice site due to low confidence about executing the process. The purpose of this project was to develop an evidence-based staff development program to improve staff confidence in medication reconciliation and potentially reduce the risk of polypharmacy at the practicum site. An evidence-based staff education program was used as the mode of education. Pretest and posttest surveys were

conducted before and after administration of the education program. There was a significant increase in staff confidence of medication reconciliation after the administration of the program. I found clinical practices should strive to educate their staff members about the correct way of performing medication reconciliation. I am hopeful that executing the recommendations indicated in this project will bring positive change by reducing the negative effects associated with polypharmacy and improve the wellbeing of geriatric patients.

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Appendices

Appendix A: Permission to Use the Transition in Care Curriculum

From: Bray-Hall, Susan <Susan.Bray-Hall@va.gov>
Sent: Tuesday, March 27, 2018 10:04 AM
To: Lawrence James-Osondu
Subject: RE: PERMISSION TO USE TICC FOR MY PROJECT

Mr. James-Osondu,

Thank you for reaching out. I am happy to grant permission as long as you cite the work. I hope your project goes well. Thank you and have a great day.

Susan Bray-Hall

Appendix B: Permission to Use the MDT Tool

From: Coleman, Eric <Eric.Coleman@ucdenver.edu>
Sent: Monday, March 26, 2018 5:43 AM
To: Nebel, Shelly; Lawrence James-Osondu
Cc: Rosenbek, Susan; Coleman, Eric
Subject: PERMISSION TO USE MDT FOR MY PROJECT

Dear Lawrence

Thank you for contacting our program.

You have our permission to use the MDT for the purposes you have outlined below.

I am not in a position to comment on the use of the TICC however

Best regards

Eric

Eric A. Coleman, MD, MPH

Director, Care Transitions Program

Appendix C: Invitation to Participate in a Staff Education Program on Medication Reconciliation

Dear Study Participant,

This is an invitation to all willing staff members at the clinic to participate in a staff education program on medication reconciliation and reducing the negative impacts associated with polypharmacy. Your participation will contribute to gaining better understanding of the provision of quality care during transitions, conducting medication reconciliation, and reducing the adverse effects of polypharmacy. It is expected that the findings of this study will improve the health of geriatric patients receiving care at the clinic. A summary of the results of this research will made available to you upon request after the completion and approval of the study.

The proposed training will take place on 12th February, 2018 at 10 am at the clinic's conference hall. The education program is expected to take a maximum of 45 minutes and will include a pretest questionnaire (10 questions), a 20 minute presentation that will be followed by a brief question and answer session, and a posttest questionnaire. Please confirm your willingness to participate in the study.

Thank you for your participation!

Sincerely,

Lawrence James-Osondu

Doctoral Student Walden University.

Appendix D: User Survey Questionnaire on Conducting Medication Reconciliation to Prevent the Effects of Negative Polypharmacy

Table 2

Staff Confidence in the Pretest and Posttest Survey

Question	Pretest mean (SD) N=10	Posttest mean (SD) N=10
1. How well can you identify important barriers an elderly patient faces helping to update medication lists during office visits?	2.3 (0.67)	4.3 (0.67)
2. How confident are you that your questions can elicit the right atmosphere for the patient to give you all the necessary information needed for medication reconciliation?	2.1 (0.57)	4.4 (0.70)
3. How effectively can you complete an evaluation of a patient's medication safety at home?	2.5 (0.85)	4.4 (0.52)
4. How confident are you in your ability to complete an evaluation of a patient's functional abilities at home?	1.8 (0.92)	4.3 (0.67)
5. How adequately can you communicate with a patient's follow-up provider about the important issues managed in the in-patient stay?	2.1 (0.99)	4.3 (0.48)

6. How confident are you in your ability to adequately communicate with a patient's follow-up provider about the important issues requiring follow-up after hospital discharge?	2.1 (0.74)	4.1 (0.74)
7. How confident are you in your ability to identify the appropriate discharge setting for a patient?	2.1 (0.57)	4.5 (0.53)
8. How confident are you in your ability to interact with other healthcare practitioners to execute medication reconciliation?	2.1 (0.99)	4.5 (0.71)
9. How confident are you in your competence to obtain a comprehensive medication list from patients?	2.4 (0.70)	4.4 (0.70)
10. How confident are you in your ability to complete a medication reconciliation with a patient?	2.4 (1.07)	4.5 (0.53)

Appendix E: Staff Education Program

Didactics

Introductory didactics provide staff members with foundational knowledge on:

The risks of care transitions

- Poor management of patient risks
- Duplication of drugs
- High incidence of hospital readmissions

Challenges faced by elderly patients on polypharmacy

- Large pill burden
- Drug administration
- Drug interactions and side effects
- Adverse drug events

Specific interventions to reduce these risks and challenges.

The teachings are based on Coleman's model that which focuses on four key elements of successful care transitions:

(1) Medication self-management and reconciliation,

(2) Patient activation for self-care,

(3) Timely follow-up, and

(4) A list of "red flags" and what to do when they occur.

The interventions include:

- Medication reconciliation
- Avoiding making prescriptions for mild, non-specific complaints

- Brown bag reviews: patients are asked to bring all their medications (including over-the-counter treatments and supplements to the clinic for review.
- Promoting the use of non-pharmacological approaches to manage certain diseases, for example, incorporating healthy diets and exercise in the management of type 2 diabetes and hypertension.
- Simplification of treatment course to essential drugs: providing the minimal drugs required to manage a health condition, for example, avoid prescribing additional drugs to treat side effects associated with an essential drug (e.g. prescribing a pain killer for headaches associated with the use of metformin in diabetes treatment).
- Deprescribing: This is the process of reducing or discontinuing drugs that have outlived their usefulness with the aim of managing polypharmacy.

Medication Reconciliation

- Obtaining and verifying the patient's medication history
- Documenting the patient's medication history:
    - prescription medications
    - herbals
    - vitamins
    - nutritional supplements
    - over-the-counter drugs
    - vaccines
    - diagnostic and contrast agents
    - radioactive medications

    - parenteral nutrition
    - blood derivatives
    - intravenous solutions.
- Writing orders for the hospital medication regimen
- Creating a medication administration record
- Determining the post-discharge medication regimen
- Developing discharge instructions for the patient
- Patient education
- Transmitting the medication list to the follow-up physician
- In ambulatory settings, the complete list of the current medications should be updated whenever medications are added or changed.

Challenges in medication reconciliation

- Tremendous variation in the process for gathering a patient's medication history
- Disagreement in the roles and responsibilities of the 3 major providers involved in medication reconciliation (physician, pharmacist, and nurse)
- Duplication of data gathering without comparisons to resolve discrepancies
- Patient acuity may influence the process of reconciliation
- Time requirements and staffing resources

Overcoming the challenges

- Using electronic health records to consolidate data on patient medical history.
- Standardizing the location where all medical histories are found
- Defining the roles of each provider in the medication reconciliation process

- Using a standardized approach to medication reconciliation process, for example, the medication discrepancy tool (MDT).

Appendix F: Medication Discrepancy Tool

Medication Discrepancy Tool (MDT)

To be completed by Home Health Clinicians at SOC/ROC
Information should be based on <u>your assessment</u> of the patient and the problems
<u>AND</u> the <u>patients perception</u> of the discrepancies

Medication	Causes and Contributing Factors *List all that apply from list below (By Number)*	Resolution *List all that apply from list below (By Number)*
1.		
2.		
3.		
4.		
5.		

Causes and Contributing Factors:	Resolution:
<u>Discrepancies (Patient Level)</u> 1. Adverse drug reaction or side effect 2. Intolerance 3. Did not fill prescription 4. Patient feels they do not need prescription 5. Money/financial barriers 6. Intentional non-adherence (*"I was told to take this but I chose not to"*) 7. Non-intentional non-adherence (Knowledge deficit – *"I don't understand how to take this medication"*) 8. Performance deficit *("Maybe someone showed me, but I can't demonstrate to you that I can")* **<u>Discrepancies (System Level)</u>** 9. Prescribed with known allergy/intolerance 10. Discharge instructions incomplete/ inaccurate/ illegible *(*includes use of "resume all meds" order) 11. Duplication (*Taking multiple drugs with the same action without any rationale*) 12. Incorrect label 13. Incorrect dosage 14. Incorrect quantity 15. Cognitive impairment not recognized 16. No caregiver/need for assistance not recognized 17. Sight/dexterity limitations not recognized	1. Clinician contacted primary provider and clarified medication regimen 2. Discussed potential benefits and harm that may result from non-adherence 3. Provided resources and information to facilitate adherence 4. Addressed performance/knowledge deficit 5. Encouraged patient to call their doctor 6. Primary provider will address problem at next visit 7. Encouraged patient to schedule an appointment with primary provider or to discuss problem at next provider visit 8. Other (*please explain*) _____

<u>Other Questions:</u>

Did the patient have a problem obtaining their medications when they went home? ☐ YES ☐ NO

Have all new prescriptions been filled? ☐ YES ☐ NO

How long was it before the patient was able to obtain new prescriptions? ____ (Hours/Days)

Patient Name: _____ SOC/ROC Date: _____

Name of facility where patient was discharged from: _____ Date: _____

Name of Clinician completing MDT: _____ ***Date:*** _____

Adapted from Medication Discrepancy Tool at www.caretransitions.org. Revised May 7, 2008

Medication Discrepancy Tool (MDT)

To be completed by Home Health Clinicians at SOC/ROC
Information should be based on <u>your assessment</u> of the patient and the problems
<u>AND</u> the <u>patients perception</u> of the discrepancies

Rationale and Directions for Use of the Medication Discrepancy Tool

Rationale:

- The Medication Discrepancy Tool (MDT) is designed to facilitate reconciliation of medications across settings and prescribers
- Medication discrepancies can occur when a patient is transitioning from one health care setting to the next, such as when they are discharged from an inpatient facility to home or when referred from the community to your home health agency
- Your agency is using the MDT as part of a pilot study to identify problems that may occur during patient transitions
- The Quality Improvement Team will be reviewing these tools and sharing them with their cross-setting team, that includes staff from your partnering hospital
- The goal is to fill the information gap between healthcare settings and better understand what the patient (and the home health clinician) go through when they get home and reduce the risk of adverse drug events and improve the patients well being
- Remember, your feedback is important during this process. If you identify that there are problems that aren't listed on the tool, please bring them to the attention of your Quality Improvement Team for considerations when modifications that may be conducted in the future

Directions:

- At the start of care/resumption of care (SOC/ROC) visit, during the assessment of medications, review the Discharge Summary, any other referral information and the medications that are present in the home, including non-prescription, over the counter medications (old and new)
- Any medication identified as a "discrepancy" should be listed in the first column entitled Medication.
- The most common Causes and Contributing Factors with patient medications are listed. Find the reason for the discrepancy that best describes the cause and put the corresponding number(s) in the second column entitled Causes and Contributing Factors.
- List all Causes and Contributing Factors that apply.
- The most common Resolutions are listed. Find the applicable Resolution taken and put the corresponding number(s) in the third column entitled Resolution.
- List all of the Resolutions that apply.
- Use additional MDT forms if necessary

THANK YOU for doing your part to improve patient care transitions!

Appendix G: Literature Search Findings

Citation	Type of Study/Objectives	Research Method	Findings/implications	Reason for inclusion/ exclusion	Level of Evidence
Sen, S., Siemianowski, L., Murphy, M., & Mcallister, S. C. (2014). Implementation of a pharmacy technician–centered medication reconciliation program at an urban teaching medical center. *American Journal of Health-System Pharmacy*, *71*(1), 51-56.	Randomized controlled trial (RCT). The objective of the study was to emphasize the role of pharmacy technicians in an inpatient medication reconciliation (MR) program.	An urban academic medical center executed a pharmacy technician–centered medication reconciliation program. Five technicians educated on MR methods conduct the process under the watch of a pharmacist.	1748 medication discrepancies on preadmission medication lists were recognized in the first three-month period. The study concluded that the PTMR was effective in conducting medication reconciliation (Sen et al., 2014).	No information about the staff education or training is included.	II
Ramjaun, A., Sudarshan, M., Patakfalvi, L., Tamblyn, R., & Meguerditchian, A. N. (2015). Educating medical	A systematic review of RCTs. The goal of the study was to determine the impact of educating	A systematic review of articles from the Medline and EMBASE databases was conducted. Articles including trainee-specific data were evaluated (Ramjaun et al., 2015).	Medication reconciliation education achieved varying success, for example, improving the competence and	No specific details about the education programs.	I

trainees on medication reconciliation: A systematic review. *BMC Medical Education*, *15*(1), 33.	medical trainees on medication reconciliation.		confidence of the trainees.		
Chan, A. H. Y., Garratt, E., Lawrence, B., Turnbull, N., Pratapsingh, P., & Black, P. N. (2010). Effect of education on the recording of medicines on admission to hospital. *Journal of General Internal Medicine*, *25*(6), 537-542.	RCT. The goal of the study was to determine the impact of a multimodal intervention on the number of medication errors at the time of hospital admission.	Target patient groups (75 years and older; taking 5 or more drugs) were identified. A second medication history was conducted leading to the recognition of discrepancies, which were communicated to providers alongside an educational intervention.	71.9% of 470 admissions had medication discrepancies out of which 33% were clinically significant. The fraction of admissions with clinically significant discrepancies declined from 46% to 24% (Chan et al., 2010).	Specific details of the multimodal education are not included for replication.	II
Bray-Hall, S., Schmidt, K., & Aagaard, E. (2010). Toward safe hospital discharge: A transitions in care curriculum for medical students.	RCT. The goal of the study was to create a sustainable and effective Transition in Care Curriculum	The TICC curriculum comprised group interactive sessions, experiential learning, a pre-post intervention confidence measure, and a standardized medication discrepancy tool.	The TICC improved the students' confidence in transitional care from a mean score of 2.7 to 4.0 ($p<0.01$) on a 5-point confidence scale (Bray-Hall et al., 2010).	Details regarding all aspects of the TICC are provided in addition to a sample medication	II

Journal of General Internal Medicine, *25*(8), 878-881.	(TICC) by increasing student confidence and knowledge of care transitions and identifying medication discrepancies (Bray-Hall et al., 2010).	discrepancy tool. The study was adopted in the development of a staff education program.