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Clinical Guideline to Support Diabetes Education for Adult Nursing Home Residents

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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
the review committee have been made.

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Abstract

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MS, Walden University, 2016

Project Submitted in Partial Fulfillment

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Abstract

Diabetes is a major cause of increased disease burden and cost of care for patients in long-term care (LTC) settings. Of common diabetes-related complications, hypoglycemia has the most catastrophic implications for this population. Poor understanding, reporting, and management of hypoglycemia by LTC staff can cause increased diabetes-related hospitalizations, disability, deaths, and financial burden for LTC patients and nursing homes. This DNP project focuses on developing a clinical guideline to address the recognition and management of hypoglycemia in LTC settings. It will advance the skills and knowledge of LTC staff regarding hypoglycemia management. The project is grounded in nursing theoretical models including the John Hopkins nursing evidence-based practice model, Neuman's system model, and Roy's adaptation model. The 2019 Walden Clinical Practice Guideline Manual guided the development of the clinical guideline, based on data from randomized control trials, meta-analyses, expert opinion, and review by the LTC stakeholders. A review panel including an endocrinologist, a nurse practitioner, a member of the local diabetes practice guidelines committee, and an expert from the hypoglycemia support foundation appraised the clinical guideline using the AGREE II instrument. The aggregate scores across the six areas of the AGREE II instrument ranged between 80-95%. All reviewers agreed that they would use the instrument, two reviewers made recommendations for modification and those modifications were made in the final version of the clinical guideline. This DNP project will support social change by helping to reduce the average medical expenditure per diabetic patient receiving long-term care and improve the overall quality of life outcomes for this population.

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Dedication

I dedicate this project to all nurses who work tirelessly to ensure that their patients have the best care notwithstanding the many challenges they face in their line of work. I pray that God blesses you and your families abundantly. I hope that He gives you the strength and wisdom to navigate the most difficult situations in your lives. In the most intricate moments of your work, remember that you are heroes. You have given a second chance to millions of men, women, and children who were on the brink of death. Your actions will never be forgotten. I appreciate all the staff at the institution's School of Nursing and Health Studies and my instructors during the entire program. You addressed my needs and concerns promptly. To my instructors, you taught me the skills and knowledge required to complete this project. You set high standards for me and pushed me to pursue excellence. I have learned so much from you.

To my practicum site preceptors, thank you for your presence in my quest to acquire the relevant clinical practice skills and experience. You sacrificed your time to ensure that I meet the practicum objectives associated with this project. I appreciate the members of the DNP project committee for their unrelenting support. You provided timely and professional feedback regarding even minor issues. You pushed me to excel in this project and broadened my professional skills and knowledge. I will never forget your contribution. To my family, I would not have completed this project without your understanding and support. You did everything possible to ensure that I achieve this feat. Your love for me remained steadfast despite my growing absence from your lives as I worked on the project. My special regard goes to my parents who taught me the values I

have. You sacrificed so much to ensure that I never lacked anything. You never stopped believing in me. You will live in my heart forever. Thank you.

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My deepest gratitude goes to God. He has given me life, strength, intelligence, and wisdom to complete this project. Throughout the program, He has helped me to overcome the most difficult situations. I will glorify his name forever.

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I cannot forget to thank the Chancellor of this institution for nurturing its vision and creating a favorable environment for learners and instructors to interact and grow socially and intellectually. You ensured that I had access to the resources required to complete my project.

To my fellow students, I appreciate your continuous support and cooperation. I could not have tackled this project successfully without the ideas, advice, and research materials you shared with me. Your inspired me to work hard and stay competitive.

I thank all my friends wherever they are. You were a great source of support throughout the program and the project. You never stopped encouraging me. Your confidence and faith in me kept me focused on my academic journey.

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Section 1: Nature of the Project

Introduction

The management of diabetes in the long-term care (LTC) population is problematic due to the unique characteristics of this population and poor diabetes management knowledge among the LTC staff involved in providing most diabetes care. According to Subramanian and Hirsch (2014), clinical guidelines emphasize the need for personalized diabetes management goals to ensure optimal patient outcomes. Educational interventions for frontline LTC staff are critical elements of evidence-based individualized diabetes care (Subramanian & Hirsch, 2014). The purpose of this DNP project is to develop clinical guidelines to support effective glycemic control in LTC facilities. These guidelines will contain recommendations for identifying and treating atypical presentation of hypoglycemia, a prevalent diabetes complication in LTC facilities. The project will bring forth positive social changes for diabetic patients by providing suggestions for positive lifestyle changes. It will also provide an easy means of identifying and treating atypical hypoglycemia, a prevalent diabetes complication among LTC patients. A personalized approach will be an asset in the provision of effective care in combating the negative long-term care outcomes.

Problem Statement

Nursing Practice Problem

According to the American Diabetes Association (2020), by the year 2018, there were more than 30 million Americans living with diabetes. The incidences of diabetes and diabetes-related complications are highest among Americans aged 65 years and

above and in the LTC population. According to Centers for Disease Control and Prevention (CDC, 2018), the key risk factors for diabetes complications include being overweight or obese, physical inactivity, hypertension, hyperlipidemia, and hyperglycemia. Hyperglycemia and hypoglycemia account for significant incidences of preventable diabetes-related emergency department visits. In 2015, the national emergency department (ED) visit rate for hyperglycemic crisis in diabetic adults was about 29 per 1000 visits (CDC, 2019a). In the same year, the national ED visit rate for hypoglycemia in diabetic adults was about 14 per 1000 visits (CDC, 2019b).

Prince George's County has one of the highest diabetes rates in Maryland. In 2015, about 12.2% of the adults aged 20 years and above in the County had diabetes (Prince George's County Health Department, 2017). This diabetes prevalence rate was higher than Maryland's average and the fifth highest in the state in 2015. According to the CDC (2019c), about 66% of adult diabetics in Maryland perform daily self-monitoring of blood glucose. Only 60% of adult diabetics in the state have attended a diabetes self-management education program (DSME). About 72% of adults with diabetics understand the risks of hypertension, while 62% understand the risks of high cholesterol. About 34% of adult diabetics from the state are physically inactive. Despite the high awareness of risk factors associated with diabetes, there is increasing evidence that people are doing very little in terms of living a healthy lifestyle to avoid diabetes and its complications. As such, it is important to involve families and caregivers in lifestyle management to avoid potential complications in adults with diabetes.

Patient risk for hypoglycemia is the leading determinant of glycemic controls established for the LTC population (Munshi et al., 2016). Of all the diabetes-related complications, hypoglycemia has the most catastrophic consequences, involving physical and cognitive decline for those in LTC (Munshi et al., 2016). Factors such as impaired renal function, hormonal regulation, and varying nutritional intake increase the risks of hypoglycemia in the LTC population. LTC facilities should develop facility-specific procedures for hypoglycemia management.

The main challenge in the management of hypoglycemia among LTC patients is poor understanding and reporting of diabetes complications by LTC staff. This challenge arises because of the prevalence of comorbidities that mimic the clinical presentation of hypoglycemia (Abdelhafiz et al., 2015). Furthermore, hypoglycemic symptoms tend to become more unspecific with age. Consequently, LTC staff have difficulties diagnosing and managing these episodes. Unrecognized and recurrent hypoglycemic episodes have significant chronic implications for diabetics. Providing a clinical guideline that focuses on the recognition and management of hypoglycemia will give nurses the skills and knowledge to improve care for persons with diabetes living in LTC facilities.

Significance to Nursing Practice

According to Lega et al. (2020), nurses, registered dietitians, and nursing assistants provide the bulk of diabetes care in the LTC facilities. However, most of these providers have a poor understanding of the manifestation of diabetes complications in the LTC population, which impedes effective reporting of complications and timely implementation of the appropriate interventions. Poor diabetes knowledge significantly

affects hypoglycemia management, exposing patients to catastrophic outcomes. According to Abdelhafiz et al. (2015), the prevalence of comorbidities that mimic the clinical presentation of hypoglycemia is a major cause of poor understanding and management of hypoglycemia and other diabetes complications. Hypoglycemic symptoms tend to become more unspecific with age. Consequently, LTC staff have difficulties diagnosing and managing these episodes. Unrecognized and recurrent hypoglycemic episodes have significant chronic implications for diabetics (Mccoy et al., 2018). Providing clinical guidelines that focus on the recognition and management of hypoglycemia will give nurses the skills and knowledge to improve care outcomes for diabetics in LTC facilities.

Purpose Statement

The doctoral project will develop clinical guidelines to address recognition and management of hypoglycemia, a diabetes-related complication for older adults in LTC. Currently, most healthcare facilities implement standardized diabetes self-management education programs and clinical practice guidelines that mainly focus on lifestyle modifications while disregarding the unique predictors of poor self-management outcomes for the targeted LTC population. Consequently, the current programs have failed to deliver sustained reductions in diabetes-related complications, hospital admissions, readmissions, and mortality.

Practice-Focused Question

The practice-focused question, "Does a clinical guideline regarding recognition and management inform nursing practice regarding the diabetes-related complication,

hypoglycemia, in a long-term care setting?" will address the gap in practice by providing a clinical guideline to improved health outcomes for persons with diabetes in LTC. Answering the question will advance the knowledge about the unique circumstances that hinder LTC staff from providing appropriate response when LTC residents with diabetes experience hypoglycemic episodes. Residents of nursing homes have various self-care deficits associated with aging, disabilities, and complex medical conditions. The project will highlight evidence-based interventions that can support staff in LTC facilities to respond effectively to assist individuals with diabetes who are experiencing hypoglycemia. The appropriate clinical guidelines should improve the ability of the staff to recognize, diagnose, and manage hypoglycemic episodes among LTC patients with diabetes and thus prevent the long-term implications of poorly recognized and recurring hypoglycemic episodes.

Addressing the Gap in Practice

Most current clinical guidelines and programs for treating and managing diabetes focus on lifestyle modifications but disregard predictors of poor outcomes in targeted LTC populations. These programs have failed to deliver sustained reductions in diabetes-related complications, hospital admissions, readmissions, and mortality (Rubin et al., 2015). In this doctoral project I will develop a clinical guideline to address recognition and management of hypoglycemia, a diabetes-related complication for older adults in LTC. Developing the recommendations for an evidence-based approach to hypoglycemia evaluation and strategies for glycemic control will give the LTC staff the ability and confidence to manage diabetes complications.

Nature of the Project

The project will provide a clinical practice guideline (Appendix A) to support LTC staff who work with adult persons with diabetes in LTC. The proposed guideline will be used by medical staff including nursing assistants, RNs, diabetes educators, nursing supervisors and managers, and specialists such as occupational therapists and dieticians.

Procedural Steps

The clinical guideline for recognition and management of hypoglycemia will be developed for use by LTC staff who work individuals with diabetes. The Walden Clinical Practice Guideline Manual (Walden University, 2019) will be used to direct the approach and procedural steps of this project. The stated practice problem will guide the project, which will be developed from the evidence-based literature. The analysis of the project will use the Appraisal of Guidelines for Research and Evaluation II (AGREE) instrument (AGREE Next Steps Consortium, 2017).

The AGREE instrument will be evaluated by a panel of content experts to assess six domains of the educational material and guideline: scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial independence. The panel will consist of a member of the facility's diabetes clinical practice guidelines committee, an endocrinologist at my facility, a nurse practitioner involved in hypoglycemia management at the facility, and an external expert from the hypoglycemia support foundation. Revisions will be made based on their recommendations. The data will be analyzed using descriptive statistics. After approval,

the clinical guideline will be disseminated to LTC facilities that would like to use the guideline for their staff.

Statements Connecting the Purpose and Findings

There is a widespread appreciation of the need for glycemic controls for diabetics in LTC settings. However, the implementation of individualized hypoglycemia management is lacking, especially for patients with atypical symptoms. I expect that the clinical guideline will facilitate enhanced hypoglycemia management by enabling the LTC staff to evaluate and treat diabetics with atypical symptoms. Ultimately, effective hypoglycemia management will lead to reduced incidence of diabetes-related admissions, readmissions, and deaths in the LTC settings.

Significance

Stakeholders

The project will provide a clinical practice guideline (Appendix A) to support LTC staff who work with adults with diabetes. The focus of the proposed guideline will involve the medical staff including nursing assistants, RNs, diabetes educators, nursing supervisors and managers, and specialists such as occupational therapists and dieticians.

Contributions to Nursing Practice

Nurses have a key role in identifying and responding to hypoglycemia. Clinical guidelines for diabetes management enable objective and systematic responses, especially for the patients who present with atypical symptoms of hypoglycemia. LTC staff nurses have the most contact with the LTC residents (Munshi et al., 2016). The nurses can often operate for long periods without the presence of a physician or nurse

practitioner. Instructing or advising nurses on what to do when dealing with hypoglycemic patients and when to call a physician or nurse practitioner will support optimal patient care outcomes. Falls among the elderly LTC population constitute one of the most significant implications of poor hypoglycemia management. Hypoglycemic symptoms such as trembling, shakiness, and heart palpitations increase the risks of falls. According to Kachroo et al. (2015), the risk of falls in elderly diabetic patients who suffer repeated hypoglycemic episodes increases twofold within a year. Fall-related injuries increase the healthcare burden on LTC facilities. Hypoglycemia increases the risks of multiple comorbidities in elderly LTC patients including dementia, myocardial ischemia, microvascular complications, cardiac arrhythmia, and certain cancers (Kong & Chan, 2015). Depression, renal dysfunction, and altered lipid profile aggravate the risks of hypoglycemia in the elderly. Therefore, guidelines to assess patients with silent comorbidities that may be either precursors or consequences of hypoglycemia are vital in the LTC setting.

Social Impact

This doctoral project will contribute to a reduction in preventable diabetes complications and deaths and the average medical expenditure per diabetic (Rashed et al., 2016). The project will support Walden University's mission to promote positive social change by promoting improved health outcomes for persons with diabetes in long-term care.

Ethical Concerns

There are no identified ethical risks involved in completing the guideline development. Ethics approval will be obtained to show compliance with the Institutional Review Board (IRB) requirements. Each expert panelist will a letter introducing them to the form.

Alignment

Diabetes-related complications lead to increased cost of care, frequent hospital admissions and readmissions, poor quality of life, and reduced life expectancy (Powers et al., 2015). Persons with diabetes in nursing homes face various challenges due to complex conditions that impede their capacity to learn and implement the relevant self-care activities (Fritz, 2017). Hypoglycemia poses a serious risk for persons with diabetes in LTC. These risks include cardiovascular problems such as heart failure, myocardial infarction, and cardiac arrhythmia, cognitive functional decline and dementia, fall-related injuries, and death. According to Abdelhafiz et al. (2015), the risks of hypoglycemia tend to increase with age due to the prevalence of multiple comorbidities, poor nutrition, and polypharmacy in the elderly. Silent and chronic comorbidities lead to physical and cognitive dysfunction in the elderly and an increased risk of death with recurrent hypoglycemic episodes. The practice-focused question will address the practice problem by providing a guideline to fill the LTC staff's gap in knowledge regarding hypoglycemia recognition and management.

The problem is supported by literature identifying a need for increased staff guidance on hypoglycemia recognition and management in LTC settings. The problem is

also supported by the lack of current LTC staff guidelines for hypoglycemia currently available in the literature. The purpose of this project is to bridge the gap between current practice and current evidence. The practice-focused question: “Does a clinical guideline regarding recognition and management inform nursing practice regarding the diabetes-related complication, hypoglycemia, in a long-term care setting?” will guide the project. This question will prompt an investigation in the literature to support closing the gap in practice concerning regarding hypoglycemia recognition and management in LTC settings. The project will be guided by the clinical practice guideline development manual from Walden University. As directed in the manual, a panel of experts will be asked to provide feedback using the AGREE instrument. Revision to the guidelines will be made based on the expert’s review. The final guideline will be disseminated to LTC facilities,

Summary

Adequate clinical guidelines for LTC staff responsible for providing the bulk of diabetes care are crucial to the attainment of effective glycemic controls. A project to develop a clinical guideline regarding the recognition and management of hypoglycemia will inform the nursing practice and improve the health outcomes for LTC patients living with diabetes. Section 2 of this project will examine the relevant concepts, models, and theories, the local background and context of the project, and the role of the DNP student.

Section 2: Background and Context

Introduction

Poor glycemic controls lead to worsened disease burden and cost of care for diabetes. Atypical manifestation of diabetes complications among the elderly residents of LTC facilities hinders effective disease management leading to poor patient outcomes. This section provides background and context to address the question of whether a clinical guideline for the recognition and management of hypoglycemia, a significant diabetes-related complication, can inform improving practices by LTC staff, leading to better health outcomes for diabetics in LTC settings.

Concepts, Models, and Theories

The major concepts throughout this project are glycemic control, hypoglycemia, atypical hypoglycemia presentation, LTC staff, and a clinical guideline. The John Hopkins nursing evidence-based practice model will guide the development of the clinical guideline (Melnyk & Fineout-Overholt, 2015). Hypoglycemia refers to a condition in which the blood sugar level is lower than the recommended level, therefore, the administration of hypoglycemia relates to the treatment of diabetes. Clinical guidelines refer to the established procedures and plans that guides how healthcare services are administered. LTC staffs need how to administer this plan of care. Comprehensive guidelines emphasize an individualized approach towards setting goals for diabetes care and treatment among the adults in the LTC facilities.

Models

Neuman's system model will guide this project by considering the patient as an open system that responds to stressors within their surroundings. When handling the patient, this nursing theory emphasizes that it is vital for nurses to ensure that they are aware of the spiritual, developmental, social-cultural, psychological and physiological stressors that the patient experiences. The usual level of health is viewed as normal lines of defense protected by the flexible lines of defense. The system is considered invaded when a health condition breaks the flexible line of defense, activating the line of resistance. At this level, the system is considered to be moving towards illness. This model will be used to show that nursing intervention occurs through the three modalities of prevention including primary, secondary, and tertiary prevention.

Roy's adaptation model of nursing helped to identify three important aspects involved in the administration of care. These aspects include: the focus of the nursing care, the target for the nursing care, and when the nursing care is indicated. According to Roy, adaptation takes place when people respond positively to the changes in their environment (Barone et al., 2008). Human and environmental integration come into place through individual and group consciousness. The model emphasizes that health is an inevitable dimension of people's life as represented by the health illness continuum.

Theories

The project will be based on the nursing process theory. Nursing process theory pays special interest to the immediate experience of the patient and focuses on providing direct help to the patient in whatever setting they are located. According to nursing

process theory, the main role of the nurse should be to supply help to the patient and ensure that their needs are met in the most personalized approach. The theory states that nurses have a responsibility to prioritize the needs of the patient in whichever setting healthcare services are offered.

Relevance to Nursing Practice

Historically, hypoglycemia management strategies have been based on the classical presentation of hypoglycemia. However, declined physiological functioning and the prevalence of comorbid conditions in the LTC population increase the incidence of atypical hypoglycemia symptoms, which impedes timely evaluation and treatment of patients. The doctoral project will address this challenge by providing a clinical guideline to enable the LTC staff to manage hypoglycemia effectively.

Munshi et al. (2016), argued that managing diabetes among older adults in LTC facilities is challenging due to the heterogeneity associated with the population. Therefore, it is essential to conduct a careful evaluation of comorbidities and overall healthcare needs before developing treatment strategies and goals on diabetes management. Golden et al. (2017) noted that diabetes management among LTC patients calls for different approaches since unique challenges are faced by this population and nursing staff working in such facilities.

Munshi et al. (2016) found that the clinical heterogeneity of adults with diabetes creates challenges in providing care. There is considerable variability in their living arrangements and social support needs, which significantly affects diabetes management. Munshi et al. (2016) concluded that disparities in diabetes management are linked to the

fact that some older adults live independently, some live in assisted care facilities, and others live in fully supervised LTC facilities.

Researchers also showed that to overcome the challenges associated with varying living arrangements, it is necessary to adapt diabetes management recommendation to each environment (Subramanian & Hirsch, 2014). For instance, glucose lowering steps should be in accordance with the ADA recommendations. Therefore, in addressing care goals and management strategies for LTC patients there is need to acknowledge the heterogeneity in terms of disease progression, self-care ability, complications, and comorbidities (Munshi et al. 2016).

Local Background and Context

Prince George's County has one of the highest adult diabetes rates in Maryland. The diabetes burden disproportionately affects the elderly residents of the County with a sizeable percentage ending up in nursing homes. About 14% of the County's population consists of persons aged 65 years and above (U.S Census Bureau, 2019). Therefore, effective glycemic control is crucial to avert increased local healthcare burdens.

At Maryland, the cost of treating senior citizens is significantly high compared to the cost of other chronic conditions. Across the state, diabetes is one of the leading contributors of death. According to the American Diabetes Association (2018), the cost of diagnosing diabetes increased to $327 billion from $245 billion in the year 2012. In addition, Prince George's County has one of the leading diabetes rates in Maryland. In 2015, about 12.2% of the adults aged 20 years and above in the County had diabetes

(Prince George's County Health Department, 2017). In Maryland, the hospital inpatient cost is about 30% of the total medical cost in the diagnosis and treatment of diabetes.

According to Munshi et al. (2016), the patient's risk for hypoglycemia is the leading determinant of the glycemic controls established for the LTC population. Though there are various complications that comes with diabetes, hypoglycemia has the most catastrophic consequences involving physical and cognitive decline among LTC patients (Munshi et al., 2016). It also contributes to other factors such as impaired renal function, impaired hormonal regulation, and varying nutritional intake that worsen the risks of hypoglycemia for the LTC population. Therefore, it is essential for LTC facilities to develop facility-specific procedures for hypoglycemia management.

Role of the DNP Student

As a DNP student, I have the knowledge and skills to perform a variety of nursing practice roles. The DNP Essentials relevant to this project are *Scientific Underpinnings for Practice* and *Organizational and Systems Leadership for Quality Improvement and Systems Thinking* (AACN, 2006). My role in the DNP project is to review and integrate the current evidence on the management of atypical manifestation of hypoglycemia in the LTC population. I will use the knowledge and skills acquired in the learning process to identify the most viable remedies backed by evidence from the literature and other evidence-based practices to enhance glycemic management among LTC staff.

I will identify challenges in the management of hypoglycemia among LTC patients and promote enhanced diabetes care by providing a clinical guideline for glycemic management by LTC staff. Throughout this course, I have learned the

importance of team collaboration, and I will use this knowledge to collaborate with other professional and project teams in gathering data for analysis and deriving meaningful results. I will also utilize my personal and professional skills in developing clinical guidelines and procedures for the management of hypoglycemia among LTC patients.

Summary

A clinical guideline to improve diabetes care in LTC facilities is crucial to reducing diabetes-related admissions, readmissions, and deaths. Developing statements to guide clinical practices related to glycemic control will ensure the best interventions by the LTC staff. Section 3 of the project will examine the current evidence relating to diabetes management in LTC facilities, describe the procedures for carrying out the project, and discuss the data analysis approaches to answer the practice-focused question.

Section 3: The Collection and Analysis of Evidence

Introduction

Hypoglycemia remains a common cause of new and recurrent readmissions among elderly diabetics. A clinical guideline to enable the early identification of potential hypoglycemia episodes will provide opportunities for LTC staff to reduce the readmission and mortality rates and improve the quality of life for the diabetics in LTC settings. In this section I will discuss the sources of evidence used to develop the clinical guideline and details of the data analysis and synthesis.

Practice Focused Question

Currently, most LTC facilities in Prince George's County have implemented standard diabetes management strategies focused on dietary modifications, pre- and post-meal glucose monitoring, medication management, and physical activity. However, incidences of diabetes-related admissions, readmissions, and deaths remain significantly high for the LTC population. I developed a practice-focused question after identifying the poor knowledge of the atypical presentation of hypoglycemia by the LTC staff as a significant contributing factor to the high incidences of recurrent readmissions and deaths among the LTC diabetic population. The question is as follows: Does a clinical guideline regarding recognition and management inform nursing practice regarding the diabetes-related complication, hypoglycemia, in a long-term care setting?

Purpose

The purpose of this DNP project is to develop a clinical guideline to enable LTC staff to implement effective glycemic controls for diabetics. The project will include an

evidence-based approach for LTC staff to assess, diagnose, and treat patients with atypical symptoms of hypoglycemia. The statements captured in the clinical guideline will improve the knowledge of diabetes care for LTC staff, leading to enhanced decision-making in specific clinical situations.

Operational Definitions

Hypoglycemia: A condition characterized by blood sugar levels below 70mg/dL.

Atypical hypoglycemia presentation: Nonspecific symptoms of hypoglycemia, which are mainly behavioral and neuroglycopenic in nature (Broz et al., 2019). These symptoms include ataxia, delirium, and hallucinations.

Glycemic control: Interventions applied to maintain the blood sugar level within the normal range in a diabetic person.

LTC staff: Personnel involved in caring for the residents of nursing homes and other long-term care facilities. Personnel include nurses, nursing assistants, physicians, dieticians, and physical therapists.

A clinical guideline: This is a set of evidence-based statements to assist healthcare personnel in implementing appropriate clinical interventions in specific circumstances (McCaffrey, 2012).

Sources of Evidence

Clinical guidelines for diabetes management enable objective and systematic responses, especially for patients who present with atypical symptoms of hypoglycemia. Nurses have the most contact with the LTC residents (Munshi et al., 2016). Therefore, the first source of data will be nursing staff working with LTC patients. The study will

use the AACN evidence-rating framework to classify the strength of the research studies and determine the best evidence to incorporate in developing the clinical guideline (Peterson et al., 2014). The project will prioritize findings from random controlled trials and meta-analyses of controlled trials. It will also incorporate expert opinions and experiential evidence from LTC staff. A literature review of selected studies will synthesize the best evidence to develop an appropriate set of recommendations for optimal hypoglycemia management.

Participants

The project's participants will include an expert panel consisting of a member of the facility's diabetes clinical practice guidelines committee, an endocrinologist at my facility, a nurse practitioner involved in hypoglycemia management at the facility, and an external expert from the Hypoglycemia Support Foundation. Revisions will be made based on their recommendations.

Analysis and Synthesis

The clinical guideline on the recognition and management of hypoglycemia will be developed for use by LTC staff involved in the everyday delivery of diabetes care. The Walden Clinical Practice Guideline Manual (Walden University, 2019) will direct the approach and procedural steps of this project. The stated practice problem will guide the project, which will be developed from evidence-based literature. Analysis will be guided by the Appraisal of Guidelines for Research and Evaluation II (AGREE) model (AGREE Next Steps Consortium, 2017). The AGREE instrument will be evaluated by a panel of content experts to assess six domains of the educational material and guideline:

scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial independence. The data will be analyzed using descriptive statistics. After approval by the expert panel, the clinical guideline will be disseminated to LTC facilities that would like to use the guideline for their staff.

Protections

There are no identified ethical risks in developing the guideline. The project will comply with Institutional Review Board (IRB) ethics approval requirements. Each panelist expert on the project team will receive a letter introducing them to the form.

Summary

Evidence-based recommendations that guide LTC staff in managing atypical hypoglycemia will promote effective therapy and optimal outcomes for diabetics in LTC settings. Drafting, revising, and polishing the clinical guideline for hypoglycemia management using the best research, experiential evidence, and expert opinions will ensure the validity, reliability, and applicability of the guideline in local LTC facilities.

Section 4: Findings and Recommendations

Introduction

Hypoglycemia is a major cause of health complications and deaths among elderly diabetics in long-term care facilities. However, achieving effective hypoglycemia management for this population is difficult due to the poor understanding and reporting of hypoglycemic episodes by LTC staff. Although most LTC facilities utilize standard diabetes management procedures and practices such as regular glucose monitoring and dietary adjustments, these interventions have failed to deliver optimal hypoglycemia outcomes. Therefore, developing clinical guidelines to help LTC staff identify and address hypoglycemic episodes on time is vital.

This DNP project answered the practice-focused question: Does a clinical guideline regarding recognition and management inform nursing practice regarding the diabetes-related complication, hypoglycemia, in a long-term care setting? The project used evidence from randomized controlled trials, meta-analyses, expert opinion, and experiential evidence from LTC staff nurses and nursing assistants. The AACN evidence-rating framework was used to evaluate the strength of the identified studies and the best evidence to utilize to develop the clinical guideline. This section will discuss the findings, implications, recommendations, and the strengths and limitations of the project.

Findings and Implications

The AGREE II instrument was used to evaluate the quality of the clinical guideline for hypoglycemia management in the LTC population. Six different aspects of the guideline were evaluated as indicated in the AGREE II instrument (AGREE Next

Steps Consortium, 2017). The panel of experts who evaluated the clinical guideline comprised an endocrinologist at my facility, a nurse practitioner involved in hypoglycemia management at the facility, and a member of the facility's diabetes practice guidelines committee. The panel also included an expert from the Hypoglycemia Support Foundation. The panel approved the clinical practice guideline (Appendix A). The total scores across the six areas of assessment ranged between 80 and 95 percent. These scores are presented in Table 1 in Appendix B. The areas of weakness were revised to optimize the practical implications of the clinical guideline (Appendix B).

Implications

Untreated hypoglycemia has devastating health implications for diabetics in LTC facilities. The approval of the clinical guideline by a panel of experts set the stage for the dissemination and implementation of the guideline in LTC facilities in Prince George's County and across the United States. The guideline is most useful to the LTC staff nurses and nursing assistants responsible for everyday care of LTC patients. These providers can now make critical decisions regarding hypoglycemia management even in the absence of physicians or nurse practitioners. The recommendations in the guideline enable the LTC staff to implement evidence-based, consistent interventions for atypical hypoglycemia. These interventions will significantly reduce the cases of disability, hospitalizations, deaths, and the financial burden associated with poorly managed hypoglycemia. The approval of the clinical guideline means that LTC facilities will need to revise their standards of care to align with the new recommendations. The facilities will need to invest in educating their staff on the implementation of the new guidelines.

Recommendations

Although a panel of experts reviewed and approved the clinical guideline, they indicated that some aspects of the guideline needed improvement. LTC facilities should recognize this when implementing the guideline and measuring the practice outcomes. The clinical guideline is not a foolproof solution for hypoglycemia management in the LTC population (Franco et al., 2020). Therefore, healthcare providers must always apply their critical-thinking and problem-solving skills to adapt the clinical guideline to changing circumstances.

Strengths and Limitations of the Project

The project has several strengths. First, it prioritized the evidence from randomized controlled trials, meta-analyses of RCTs, and expert opinion. This choice of the sources of evidence ensured that the development of the clinical guideline utilized quality and consistent evidence (Kredo et al., 2016). Furthermore, the project incorporated experiential evidence from LTC nursing staff. These providers are the key personnel that will utilize the guideline during practice. The incorporation of first-hand evidence enhanced the quality of the clinical recommendations. Engaging a panel of experts to review the clinical guideline using the AGREE II instrument strengthened the practical value of the guideline (Seto et al., 2017). The feedback from the experts supported further refinement of the guideline to optimize its reliability in clinical practice.

The project has several limitations. First, no pilot testing of the clinical guideline was performed. Therefore, although a panel of experts approved the guideline, one

cannot conclusively determine its practice outcomes. Secondly, the personal beliefs and professional experiences of the experts tasked with reviewing the clinical guideline may have influenced subjective feedback on the different AGREE II items (Boudoulas et al., 2015). Consequently, the judgment of the value of the guideline for the LTC population may have been biased. The lack of time to scrutinize every aspect of the guideline may have also caused subjective judgments of the appropriateness of the guideline.

Section 5: Dissemination Plan

The focus of this DNP project was to develop a clinical guideline to facilitate evidence-based management of hypoglycemia among diabetics in LTC facilities. Sharing the guideline with relevant stakeholders is vital to ensuring that the targeted population benefits from the developed clinical recommendations. Once the final report is approved by the Chief Academic Officer at Walden University, I will disseminate the information through meeting with LTC staff, publishing the guideline in the relevant peer-reviewed journals with open access, and sharing the guideline with nurses in my social and professional networks (Schipper et al., 2016).

First, I will contact nurse managers in selected LTC facilities in Prince George County to arrange face-to-face meetings where I can present and discuss the guideline with LTC staff. These interactive meetings will provide an inexpensive approach to share and clarify the clinical guideline. Secondly, publishing the guideline in peer-reviewed journals will allow me to cheaply reach a wide audience locally and internationally. The relevant journals include *International Journal of Clinical Practice*, *Journal of Diabetes Nursing*, *BMJ Open Diabetes Research & Care*, and *Clinical Journal of Diabetes Care and Control*. Thirdly, as a member of ANA and AANP, I will utilize these platforms to share the guideline with other nurses. These professional organizations have regular events and conferences where nurses interact and share the current evidence on various aspects of clinical practice (Brownson et al., 2018). I will also use Facebook and LinkedIn to share information about the guideline. On Facebook, I will utilize nursing pages, groups, and events to reach the intended audience.

Analysis of Self

As a DNP-prepared nurse, I possess the skills and experience to lead changes in clinical practice. I can confidently apply analytical methods for evidence-based practice and integrate nursing knowledge and evidence from other relevant disciplines to advance nursing practice. I can effectively direct the translation of new nursing knowledge into practice. I can communicate practice knowledge effectively both orally and in writing and utilize different modalities to disseminate the evidence generated through practice inquiry to different audiences. I can lead interprofessional teams to develop and implement practice models, guidelines, and standards of care (National Organization of Nurse Practitioner Facilities, 2017). Furthermore, I am an active member of professional organizations that allow me to participate in activities that can influence advanced nursing practice and patient outcomes. Having worked in different practice settings, I have participated in several quality improvement initiatives relating to diabetes management in the geriatric population. These initiatives include self-care management for diabetes, fall prevention, and polypharmacy management. However, my experience working in long-term care facilities is limited.

Summary

A panel of experts specializing in diabetes management approved the clinical guideline for recognition and management of hypoglycemia in the long-term care setting. The implementation of this guideline will significantly advance the practice of the LTC staff and improve patient outcomes. The guideline will encourage LTC facilities to update their standards of care to accommodate the current recommendations. Users of the

guideline must recognize that it has some areas of weaknesses. Therefore, applying analytical and problem-solving skills to adapt the guideline to specific clinical situations is important. The dissemination plan for the clinical guideline will involve face-to-face meetings with the LTC stakeholders, the publication of the guideline in peer-reviewed journals, and utilization of social and professional networking. As a DNP-prepared nurse, I have the skills and experience required to develop quality and practical clinical guidelines and lead the implementation of such guidelines in practice. Having participated previously in quality improvement initiatives relating to diabetes, I am confident that the developed guideline will have a positive impact on LTC nursing practice.

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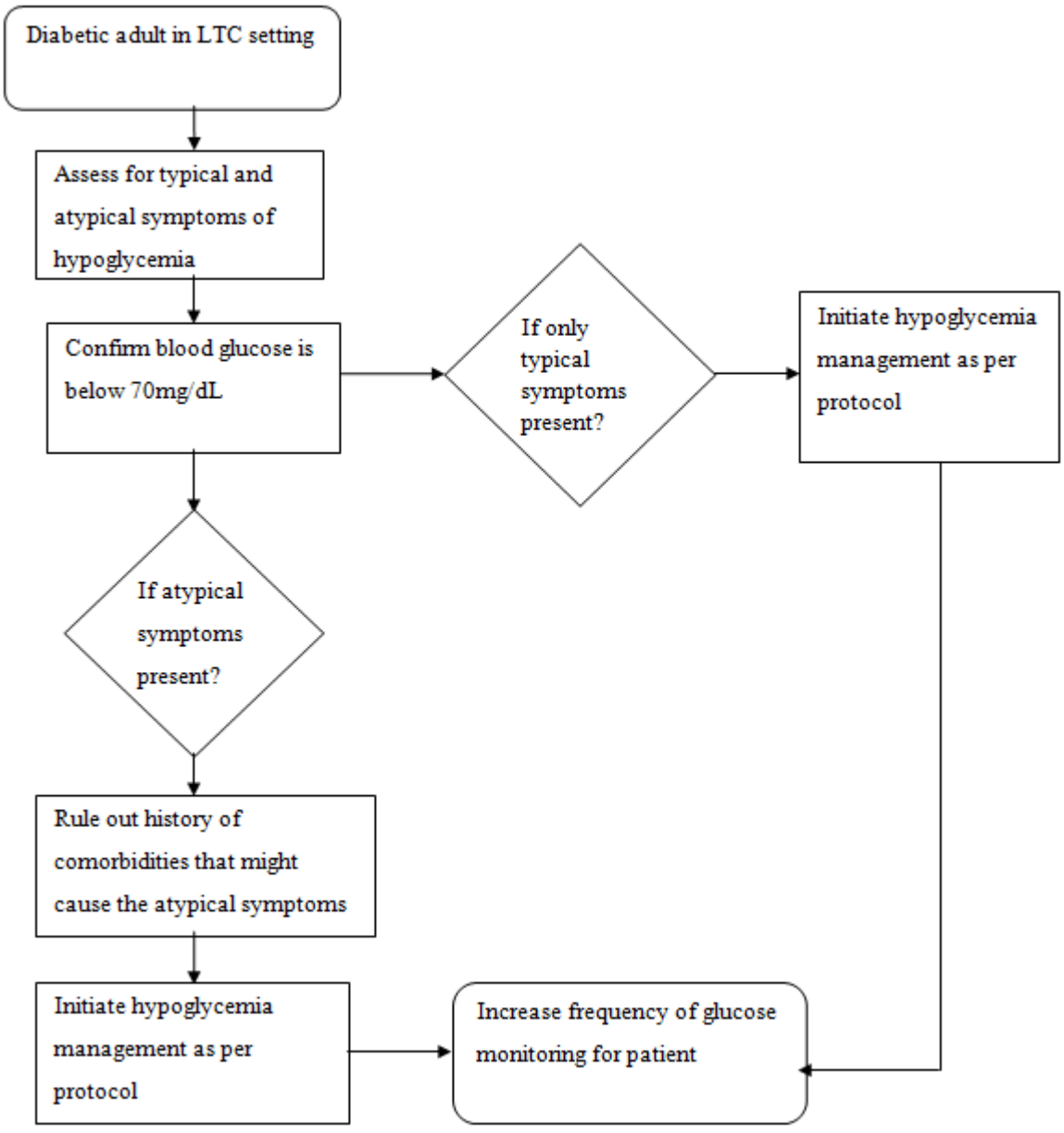
Appendix A: Clinical Guideline Flow Chart



Appendix B: AGREE Scores

AGREE II Items	Expert 1 scores	Expert 2 scores	Expert 3 scores	Expert 4 scores	Composite Score (Percentage)
Scope and Purpose					
The overall objective(s) of the guideline is (are) specifically described	7	7	7	7	94.0
The health question(s) covered by the guideline is (are) specifically described	7	7	5	7	
The population (patients, public, etc.) to whom the guidance is meant to apply is specifically described	5	6	7	7	
Stakeholder Involvement					
The guideline development group includes individuals from	4	7	5	6	

all relevant professional group					81.0
The views and preferences of the target population (patients, public, etc.) have been sought	6	5	6	4	
The target users of the guideline are clearly defined	7	5	7	6	
Rigor of Development					
Systematic methods were used to search for evidence	7	7	6	7	91.5
The criteria for selecting the evidence are clearly described	7	6	6	7	
The strengths and limitations of the body of evidence are clearly described	6	5	7	5	
The methods for formulating the recommendations	5	6	6	7	

are clearly described					
The health benefits, side effects, and risks have been considered in formulating the recommendations	7	7	7	7	
There is an explicit link between the recommendations and the supporting evidence	7	7	7	6	
The guideline has been externally reviewed by experts prior to its publication	7	7	7	7	
A procedure for updating the guideline is provided	6	4	7	5	
Clarity of Presentation					
The recommendations are specific and unambiguous	7	6	5	7	

The different options for management of the conditions or health issue are clearly presented	7	7	7	7	92.9
Key recommendations are easily identifiable	5	7	6	7	
Applicability					
The guideline describes facilitators and barriers to its application	5	5	7	6	80.4
The guideline provides advice and/or tools on how the recommendations can be put into practice	6	7	5	6	
The potential resource implications of applying the recommendations	4	6	5	6	

have been considered					
The guideline presents monitoring and/or auditing criteria	6	6	5	5	
Editorial Independence					
The views of the funding body have not influenced the content of the guideline	7	7	6	7	91.1
Competing interests of guideline development group members have been recorded and addressed	6	6	5	7	
Overall Guideline Assessment					
Rate the overall quality of this guideline	6	5	7	6	
I would recommend this guideline for use					

	Yes	Yes with Modifications	Yes	Yes with Modifications	

Appendix C: Clinical Practice Guideline Addendum

Clinical Guideline for Recognition and Management of Hypoglycemia in LTC setting

Problem Statement

Diabetes has a significantly high prevalence in long-term care (LTC) settings in comparison to other patient care settings. Hypoglycemia is the most catastrophic diabetic complication for this population due to the high frequency of comorbidities that mimic the typical presentation of this complication (Abdelhafiz et al., 2015). Furthermore, hypoglycemia symptoms tend to become unspecific in elderly patients. Consequently, the

LTC staff has difficulties recognizing and managing hypoglycemic episodes promptly. Recurring and untreated hypoglycemic episodes have adverse long-term implications for patients involving physical and cognitive decline and financial burden.

The current gap in practice involves the lack of standard evidence-based recommendations to help LTC nurses and nursing assistants to recognize and address atypical hypoglycemia presentations. Currently, most LTC facilities utilize diabetes assessment and management procedures based mainly on the typical presentation of diabetes complications. However, these procedures are largely ineffective for managing hypoglycemia in the LTC population due to their unique characteristics.

Practice-Focused Question

Does a clinical guideline regarding recognition and management inform nursing practice regarding the diabetes-related complication, hypoglycemia, in a long-term care setting?

Purpose

The purpose of this clinical guideline is to help the LTC staff nurses understand hypoglycemia presentation among their patients and implement prompt and effective interventions that ensure optimal functioning and quality of life for the patients.

Objectives

1. Equip the LTC staff nurses and nursing assistants with knowledge of atypical hypoglycemia presentation and the relevant interventions.
2. Support prompt, safe, consistent, and quality care for diabetics in the LTC setting.
3. Reduce LTC nurses' anxiety regarding hypoglycemia management and enhance their confidence in providing diabetes care

4. Improve clinical outcomes and quality of life for diabetics in the LTC setting.

Guideline Utilization and Implications

LTC staff nurses and nursing assistants often provide care to diabetic patients for long periods without the input of a nurse practitioner or physician. This guideline will be a crucial resource for LTC nurses to utilize in delivering every day hypoglycemia care. It will eliminate delays in critical interventions for diabetics by providing current evidence on hypoglycemia management. Furthermore, the guideline will enhance the independence of LTC nurses in managing hypoglycemia. The implementation of this clinical guideline does not need additional funding. Therefore, any LTC facility, notwithstanding its financial capacity, can implement the guideline and reap its benefits as long as the staff members are willing to adopt the recommendations.

Sources of Evidence and Search Criteria

PubMed, Cochrane Library, Science Direct, and CINAHL were searched for the current randomized controlled trials and meta-analyses of controlled trials on hypoglycemia management. Recommendations from the American Diabetes Association were also considered. The key search terms included hypoglycemia management, hypoglycemia in long-term care, atypical hypoglycemia management, hypoglycemia in long-term care population, and hypoglycemia and LTC staff.

Strength and Limitations of Body of Evidence

Strength: There is sufficient evidence on the management of typical hypoglycemia presentation (Mccoy et al., 2018). Multiple studies have investigated and documented the efficacy of different interventions for typical hypoglycemia.

Limitations: There is limited evidence on the management of atypical hypoglycemia in the LTC setting.

Link between Recommendations and Supporting Evidence

The American Diabetes Association recommends the development and implementation of facility-specific and individualized procedures for hypoglycemia management (Munshi et al., 2016). These procedures should recognize the unique needs of LTC patients with atypical hypoglycemia symptoms.

Advice and or Tools on How to put the Recommendations into Practice

The nursing leadership and administration of the LTC facility should implement systems and procedures to facilitate the implementation of the clinical guideline and coordination of efforts among the relevant diabetes care teams. The Standards of Medical Care in Diabetes, updated annually by the American Diabetes Association provide key recommendations for the management of diabetes and the related complications by health practitioners, patients, and other concerned parties. The Standards also include treatment goals and tools for assessing diabetes care outcomes.

External Reviews

A panel of experts skilled in clinical guideline development and hypoglycemia management will evaluate the guideline. These experts will include an expert from the hypoglycemia support foundation and LTC staff nurses.