

2020

Clinical Practice Guideline: Early Screening for Dementia in Diabetes Mellitus

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Walden University

College of Nursing

This is to certify that the doctoral study by

Angelyn Levell-Smith

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Walden University
2020

Abstract

Clinical Practice Guideline: Early Screening for Dementia in Diabetes Mellitus

by

Angelyn Levell-Smith

MSN, Walden University, 2016

BSN, Brenau University, 1995

Project Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

Walden University

November 2020

Abstract

Diabetes mellitus (DM) is a recognized cognitive impairment risk factor. Even with hyperglycemia being a modifiable risk factor in dementia, primary care is without an evidence-based screening tool to screen patients with diabetes for cognitive abilities. Current literature supports developing an evidence-based standardized guideline for early screening for cognitive impairment in elderly patients with DM. The purpose of this doctor of nursing practice (DNP) clinical practice guideline (CPG) project was to develop an evidence-based CPG for early screening of dementia in patients with DM, providing a means for early recognition of cognitive decline in these patients, making early intervention more likely to occur. The model informing this DNP CPG project was the Leavell and Clark levels of prevention; the AGREE II tool was used to develop and evaluate the CPG. Five content experts were asked to evaluate the newly developed CPG. The newly developed CPG satisfied all 23 items of the AGREE II tool with the expert panel concluding that the guidelines would enhance patient outcomes. The CPG is an innovative approach that combines recommendations and emerging guidelines to provide early dementia screening in DM. This guideline can improve practice and create a culture that embraces improvement in quality care. This newly developed CPG contributes to social change by addressing a severe problem in a vulnerable population, improving patient outcomes and quality of life. The CPG is appropriate for use in similar settings caring for patients with DM as hyperglycemia is common in this population and a risk factor for dementia.

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Dedication

This project is dedicated to my grandparents Elsie Thomas Wheelous, Cosby Wheelous, Gertrude Person-Leavell, Tommie Hugh Leavell, II, my mother, Esther Wheelous-Levell, my father, Lois Levell, my daughter, Chrystal Nicole Smith, my son, Dr. Christopher Marcus Smith, and all the patients and caregivers suffering from diabetes mellitus and dementia. Although, the surname Levell changed to Leavell in later years. I have spelled the names as you preferred.

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Section 1: Nature of the Project

Introduction

Diabetes mellitus (DM) is a chronic illness affecting approximately 26 million people in the United States (Gatlin, 2014). Adults with DM are at an increased risk for brain atrophy and cerebrovascular disease, leading to cognitive deficits, cognitive impairment, and dementia (Espeland et al., 2016). Diabetes is a recognized cognitive impairment risk factor, with evidence showing that it affects performance in many cognitive domains and puts people at increased risk of dementia (Rawlings et al., 2017).

With no guideline in place at the primary care site where this Doctor of Nursing Practice (DNP) project was carried out, patients with DM were not being screened for cognitive impairment, creating a gap in nursing practice that was the focus of this project. In carrying out this clinical practice guideline (CPG) DNP project, I developed evidence-based interventions to provide healthcare consumers and the profession with interventions to minimize memory loss and to optimize self-care management in adult patients with DM. The current primary care practice focus is on hyperglycemia and the immediate patient problems such as symptomatic fever and hypertension. Nursing staff does not routinely ask patients questions to identify potential cognitive decline, only asking questions if the patient shows a significant mental status decline. This lack of regular screening for cognitive impairment at the primary care site creates a nursing practice gap.

Problem Statement

The problem of cognitive decline in DM is a difficult one to address. Patients and families may not even be aware that cognitive decline is a consequence of hyperglycemia. Salinas et al. (2016) found that study subjects with DM had almost double the risk of developing cognitive decline as patients without DM. The authors' findings highlight the importance of the cognition evaluation and improved control in subjects with diabetes to avoid cognition impairment in these patients. Mild cognitive impairment may be preceded by 5 years of the clinical onset of dementia; however, a large proportion of dementia cases will never be diagnosed or will be diagnosed in a late stage because the diagnosis in primary health care is based on clinical suspicion.

The prevalence of dementia is often underestimated, believed to range from 1.3% at ages 60-64 to over 35% in people older than 85 years of age (Katsaouni et al., 2017). The general practitioner must promptly identify the symptoms of dementia, that can be challenging to recognize. It is estimated that the earliest recognition of dementia is between 1 to 5 years from onset. The primary care clinic where this DNP CPG project was carried out has seen over 2,000 patients, and of these, over 50% are older than 65 years and have DM with dementia. For a dementia diagnosis to happen, a person or someone close to them, must first identify a problem, associate that problem with dementia, and decide to seek medical help.

Although a general public population study indicated that people would seek advice if they noticed memory problems in themselves or someone else, other studies based on reality instead of hypothetical situations have suggested a markedly different

picture (Perry-Young et al., 2018). For example, studies of actual dementia trajectories reported averages of between 8 and 52 months from first signs of dementia to first medical consultation. Several possible explanations have been offered for the delay in seeking treatment to include stigma and embarrassment, the most common reasons for the delay in help-seeking (Perry-Young et al., 2018).

At the local level, a CPG would provide a readily available tool for routine screening for dementia in patients with DM. This screening tool could assist nurse practitioners in providing early intervention services to these patients to proactively address anticipated cognitive impairment to increase self-care management empowerment. At the organizational level, nursing leaders could share the newly developed CPG for inclusion in educational training programs nationally and globally for higher quality of care and better outcomes measures. Practice guidelines inside a community healthcare organization offer a framework for turning evidence into practice and improving outcomes (White et al, 2016). The intended improved standard of care could lead to actions that promote the worth and dignity of individuals with DM, resulting in an improved quality of life.

Purpose Statement

The purpose of this DNP project was to develop an evidence-based CPG for early screening of dementia in patients with DM that would provide a means for early recognition of cognitive decline in these patients, making early intervention more likely to occur. At the DNP project site, a large private primary care practice, the care of the patient with DM is guided by past practice, habit, and the presenting of chief complaints

by the patient. Patients with DM were not screened routinely or adequately for cognitive abilities nor are screenings conducted at properly spaced intervals with a recognized, validated tool. Rather, a cognitive evaluation may take place if the patient is overtly displaying evidence of cognitive decline, not as a routine practice.

Because cognitive impairment often remains unrecognized, routine screening for cognitive impairment in elderly patients with DM is increasingly advocated. Janssen et al. (2019) provided the argument that routine screening may help clinicians in identifying patients with cognitive impairment who might then benefit from a personalized intervention (Janssen et al., 2019). A CPG could be a method to enhance early recognition making it less difficult to decrease or prevent cognitive decline in patients with DM and address the gap in practice at the DNP project setting. Thus, I answered the following practice-focused questions in this DNP project: Does the literature support the development of a CPG for early recognition of cognitive impairment in patients with DM? and Can an evidence-based CPG be developed and validated regarding early recognition and prevention of dementia in DM?

Nature of the Doctoral Project

I used the following databases to conduct a comprehensive literature search of peer-reviewed journals: Medline, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Cochrane Library, Joanna Briggs Institute, Health Source, PubMed, Google Scholar, and National Guidelines Clearinghouse. The literature search criteria included peer-reviewed articles, in English, and written between 2014 and present. *Diabetes AND dementia AND prevention* were the primary search terms used for

the search. Websites of professional nursing associations, such as the American Nurses Association and the American Diabetes Association, were searched for available resources on DM and early dementia screening.

Using Walden University's *Manual for Clinical Practice Guideline Development*, I developed evidence-based criteria for the extensive literature search. The criteria for including sources were that they must be peer-reviewed, in English, and written between 2014. My search for literature continued until references were redundantly identified, leading to 606 articles that I reviewed for topical relevance, leaving 150. These were further reduced to only one with significance to the CPG development based on usability at the project site that I reviewed for inclusion in the CPG. Using the step-by-step appraisal tool of Fineout-Overholt et al. (2010), I critically appraised the literature and organized the relevant articles into a literature matrix (see Appendix A). After approval from Walden University Institutional Review Board and the facility, I developed the CPG from the evidence-based literature and obtained feedback on the newly developed CPG from five content experts, using the Appraisal of Guidelines, Research, and Evaluation (AGREE II) instrument's guidelines. No revisions were recommended based on feedback from the expert panel. The gap in practice was successfully addressed by developing a CPG for early screening of dementia in patients with diabetes.

Significance

Health-related quality of life measures the effect of a disease or treatment on one's physical, psychosocial, and social functioning (Abualula et al., 2016). According to Abualula et al. (2016), diabetes has been shown to reduce a person's quality of life.

Patients and their families will be positively impacted by the implementation of early screening for dementia as it will improve the patients' health outcomes and quality of lives and delay the development of dementia (Salinas et al., 2016). Evidence-based interventions could provide healthcare consumers and the profession with options to minimize memory loss and optimize self-care management in adult patients with DM, thus improving the quality of care.

Identified stakeholders for the CPG included the organization, patients, and staff. It is anticipated that the CPG implementation will provide ways to postpone or even avoid dementia in patients with DM and help improve the quality of life for these patients (Salinas et al., 2016). At the local level, such knowledge could assist nurse practitioners who provide early intervention services to patients diagnosed with DM to proactively address anticipated cognitive impairment that will provide self-care management empowerment to patients. The organization and the patient will benefit from implementing the CPG because unrecognized cognitive impairment can impact adherence to treatment and diabetes self-management, resulting in poor glycemic control, an increased frequency of severe hypoglycemic episodes, and hospital admissions. The early diagnosis of cognitive impairment is not only recommended for all these reasons but may also permit us to offer more personalized treatment for DM patients (Simo et al., 2017).

Beyond the local level, the newly developed CPG could be shared with regional and national providers and included in professional training programs, thus providing the resources needed for interventions and treatment for improved outcomes. With this

change of practice, screening and evaluation should improve the quality of treatment and patient outcomes for patients with DM with potential cognitive decline.

Implementation of the CPG may also improve the quality of care and quality of life of individuals by raising the awareness of Americans with a family history of diabetes and dementia of the positive changes and preventive health behaviors they can undertake to postpone the development of dementia. Health care providers and key stakeholders could devise a framework for policymakers on diabetes and dementia prevention using the information provided from the analysis. A desirable social change will be prevention of dementia, considering the resulting impairment, morbidity, mortality, and financial cost of this disease to members of society. Through this project, I provided an action plan to promote the worth and dignity of individuals with DM that is anticipated to improve health outcomes and quality of life. The newly developed CPG can be transferred to any clinical setting caring for patients with DM as the pathology and progression for dementia are the same. The CPG will help establish a proper treatment plan for any provider by providing protocols for dementia prevention/treatment intervention in patients with DM.

There are an estimated 35.6 million people with dementia worldwide; by 2050, the number will increase to more than 115 million (Bunn et al., 2016). Dementia and DM are common long-term disorders that can coexist for many older people. In the absence of a cure, people with dementia require prompt diagnosis and evidence-based treatment to delay disease progression and enhance health-related quality of life (Michalowsky et al., 2019). Globally, a remarkable increase in life expectancy and population aging continues

that could lead to an increase in DM and dementia; according to the Centers for Disease Control and Prevention (2011), a 4.5-fold increase is expected in the incidence of diabetes in the elderly population over 65 years of age, compared with a 3-fold rise in the overall population, between 2005 and 2050 (Kim et al., 2019). DM is one of the world's leading chronic illnesses that cause impairment and mortality and is a major contributing factor to dementia.

Summary

Cognitive impairment caused by dementia is a deleterious effect of hyperglycemia that affects the individual's ability to plan a diet, monitor and treat blood glucose levels, and regulate physical activity (Gatlin, 2014). Diabetes is a recognized risk factor for cognitive impairment, with evidence showing that it affects performance in numerous cognitive domains and puts persons at increased risk of dementia (Rawlings et al., 2017). Because cognitive impairment often remains unrecognized, routine screening for cognitive impairment in elderly patients with DM is increasingly advocated (Janseen et al., 2019). The practice-focused questions that guided the DNP project were: Does the literature support the development of a CPG for early recognition of cognitive impairment in patients with DM? and Can an evidence-based CPG be developed and validated regarding early recognition and prevention of dementia in DM? The overall goal was to close the gap in practice that is the lack of screening to address the potential cognitive decline in DM patients. A CPG is a way to decrease or prevent dementia in DM (Espeland et al., 2016). In Section 2, I discuss the model, relevance to nursing practice, local background and context, and the role of the DNP student.

Section 2: Background and Context

Introduction

Screening patients diagnosed with DM for early signs of cognitive impairment during routine office visits may enable practitioners to develop plans of care to decrease or retard the progression of cognitive decline. Nurses in this private internal medicine practice did not screen patients for early signs of dementia. Personal communication with the physicians and nurses at this facility revealed that they were not knowledgeable about the most current evidence-based practice related to early screening for signs of dementia. The purpose of the DNP project was to develop an evidence-based CPG for early screening of dementia in patients with DM. The practice-focused questions that guided the DNP project were: Does the literature support the development of a CPG for early recognition of cognitive impairment in patients with DM? and Can an evidence-based CPG be developed and validated regarding early recognition and prevention of dementia in DM? A practice CPG is the most appropriate way to decrease or prevent dementia in DM (Espeland et al., 2016). In Section 2, I describe the model, relevance to nursing practice, local background and context, and the role of the DNP student.

Concepts, Models, and Theories

Leavell and Clark Levels of Prevention Model

The model informing this DNP CPG project was the Leavell and Clark (1958) levels of prevention. Leavell and Clark first documented prevention in 1953, outlining three levels of prevention—primary, secondary, and tertiary—in their classic model that correlate with the disease's progression. Each of the three stages of prevention is

implemented at the appropriate phase of pathogenesis to delay development (Leavell & Clark, 1958). Thus, initiatives at the primary prevention level focus on general health promotion and specific protection, such as promoting a healthy diet and encouraging regular exercise. Secondary prevention is concerned with early detection by screening examinations and prompt treatment, including any screening measures and subsequent efforts to limit dementia and diabetes progression. Next, tertiary prevention covers disability limitation and rehabilitation (Leavell & Clark, 1958).

There are many examples of applying primary prevention strategies in nursing practice, including efforts to prevent poly-pharmacy among community-dwelling older adults (Harvath et al., 2016); maternal morbidity and mortality (Logsdon, 2016); multidrug-resistant, gram-negative infection in surgical patients (Murphy, 2012); falls among older adults (Morgan et al., 2017); and cardiovascular disease through the use of statins (Sherrod et al., 2015). Some excellent examples targeted at secondary-prevention nursing strategies include a program guideline for screening depression in adolescents with diabetes (Denver, 2016); a campaign to encourage perinatal depression screening among beneficiaries of the Special Supplementary Nutrition Plan for Mothers, Infants, and Children (Fritz, 2015); discussion of the value of screening for oral cancer linked to human papillomavirus (Katz, 2017); screening for elder abuse (Stark, 2012); and community-based screening for colorectal cancer (Weyl et al., 2015). Tertiary prevention initiatives provide information to help nurses work to allow colorectal cancer survivors to follow up on colorectal guideline recommendations (Hawkins et al., 2015), prevent

hemodialysis complications by encouraging exercise (Hannan, 2016), and avoid tumor lysis syndrome among cancer patients (Kaplou & Iyere, 2016).

Leavell and Clark's prevention levels is an ideal structure within which to develop a treatment plan; nursing interventions at each level of prevention may be proposed using this classic framework (Bissett, 1986). The prevention model was essential to this project because an evidence-based CPG for early dementia screening in patients with DM will provide information that clinicians can use to develop individualized plans of care that incorporate all prevention levels for patients with DM.

AGREE II

I used the AGREE II instrument (AGREE Next Steps Consortium, 2017) as a guideline to develop the CPG, and the expert panel used this same instrument to evaluate the newly developed CPG. The AGREE II tool was developed to address the inconsistency in guideline quality with the purpose of the AGREE II tool being to guide the development and evaluation of the quality of practical guidelines that are candidates for use in clinical practice across the health continuum, to formulate policy-related decisions, or to adapt recommendations from one context to another (Brouwers et al. 2010). As further defined, quality means addressing possible biases and that the recommendations are valid and feasible for practice. As described in AGREE II, this process also includes considering the benefits, harms, and costs of the proposals, and the practical issues attached to them (AGREE Next Steps Consortium, 2017).

The AGREE II instrument has 23 items grouped into six domains: (a) scope and purpose, (b) the participation of key stakeholders, (c) implementation rigor, (d) clarity of

presentation, (e) applicability, and (f) editorial independence. The evaluators use a 7-point response scale with a score of 1 to indicate that there is no information or that the concept is very poorly informed and a score of 7 to indicate that the quality of the reporting is exceptional and that all the criteria and considerations set out in the user manual have been met. Scores between 2 and 6 indicate that the reporting of AGREE II does not fully meet the criteria or considerations (Brouwers et al., 2010). The AGREE II tool was appropriate for the DNP project as it addressed the quality variability of the newly developed guideline. It was also used to assess the methodological rigor and clarity with which the guideline was developed.

The AGREE II instrument is well recognized as an appropriate tool for evaluating CPGs. The nursing faculty at the Lienhard School of Nursing at Pace University, a family nurse practitioner program, used the AGREE instrument to critically teach family nurse practitioner students how to appraise CPGs. In this program, students practiced critiquing single studies, systematic reviews, and CPGs (Singleton & Levin, 2008). In another application of the AGREE instrument, a group of nurses used it to appraise the National Kidney Foundation Kidney Disease Outcomes Quality Initiative CPG for chronic kidney disease to establish best practice for renal function screening before cardiac angiography to prevent contrast-induced nephropathy. Based on their assessment, the expert panel decided that a practice change was needed to include their previous order set to reflect a shift in care (White et al., 2016). According to White et al. (2016), the AGREE II instrument uses theoretically derived criteria to evaluate CPG consistency and usefulness.

The AGREE instrument is designed for CPG developers to consider and recommend implementing a CPG, making it appropriate for this DNP CPG project.

Definition of Terms

Clinical practice guidelines: Guidelines for clinical practice are official recommendations that can include screening, diagnosis, treatment, and management of conditions (Singleton & Levin, 2008).

Relevance to Nursing Practice

There is evidence that DM is associated with cognitive decline and dementia (Simo et al., 2017). Due to the diabetes pandemic and the concomitant increase in aging populations worldwide, the number of patients with cognitive impairment or dementia is expected to grow. In this context, extreme cognitive impairment can be a potential long-term complication of diabetes with dramatic consequences for affected subjects and their families and a significant impact on healthcare systems. There is, therefore, an urgent need for strategies to identify patients at risk for DM dementia (Simo et al., 2017). According to Biessels and Whitmer (2019), although both individuals with DM and their physicians are increasingly aware of cognitive impairment related to diabetes, this awareness still lags behind that of other complications of diabetes.

Current State of Nursing Practice

Over the last decade, there has been active discussion among scholars about cognitive impairment being an emerging DM complication often undiagnosed. Simo et al. (2017) argued that the diagnosis is critical because patients with DM and cognitive impairment are more likely to show impaired diabetes self-management, poor glycemic

control, and increased diabetes complications. Expanding on this idea, Lerner (2018) contended that recent studies of new therapeutic interventions for dementia have been universally negative, prompting the view that prevention will be a more effective approach to lowering the projected increase in the number of dementia patients in the future and that it is not known whether patients with subjective memory complaints are at increased risk of subsequent cognitive impairment development and may, therefore, also be a suitably selected population for screening purposes. Likewise, Biessels and Whitmer (2019) found that patients reported that their healthcare providers often have difficulty communicating with diabetes-related cognitive dysfunctions. There are currently no phenotypic markers or unique tests recorded in clinical practice to identify patients with DM at risk of developing dementia. Given the rise in the global prevalence of DM with cognitive impairment and anticipation of improved early-stage dementia treatments, this gap should be closed (Simo et al., 2017).

Previously Used Standard Practices and Strategies

In January 2017, a new Medicare Cognitive Assessment and Care Planning billing code came into effect (Molony et al., 2018). It provides practitioners with reimbursement for a clinical visit resulting in a comprehensive care plan for persons with a documented cognitive impairment. The rules within the code include a multidimensional evaluation including comprehension, function, health, neuropsychiatric and behavioral symptoms, drug reconciliation, and caregiver needs assessment. Person-centered assessment and care planning, according to Molony et al. (2018), focuses on the unique needs and characteristics of the individual. Currently, many people living with dementia do not

receive person-centered assessment and care planning due to programmatic, organizational, and regulatory requirements and professional and provider practices that reflect the needs of staff and settings more than the needs of the patient with dementia. Screening for cognitive impairment is generally not recommended in the general population based on the argument that there is currently no disease-modifying therapy available to stop or slow down the processes leading to dementia; therefore, early identification in people without evident complaints has been suggested to be unethical, as early diagnosis could be stressful while there is little to be offered to those who screen positive (Biessels & Whitmer, 2019). According to Biessels and Whitmer (2019), the recommendations for diabetes management are taking a different stance, suggesting that early diagnosis will help avoid the risks associated with diabetes treatment and improve diabetes management.

Local Background and Context

The intended setting for this project is an independent internal medicine, primary care clinic in a metropolitan area of a southern state, with a mixture of racial, ethnic, socioeconomic, and cultural backgrounds served by two providers. In this primary care outpatient setting, approximately 2,000 patients have been seen. Of these, over 50% are older than 65 years and have DM with dementia. The care of these patients with DM is guided by past practice, habit, and the presenting chief complaint. Patients were not routinely screened for cognitive decline at the primary care site creating a gap in nursing practice.

Without the development of a disease-modifying biomedical therapy, the number of people aged 65 and older with dementia may triple from 5.5 million to a projected 13.8 million by 2050 (Thornhill & Conant, 2018). In December 2010, Congress unanimously passed the National Dementia Project Act that raised dementia awareness to a national political priority. This law led to the creation of a strategic plan, the National Dementia Plan, to improve care, support, and treatment (Thornhill & Conant, 2018). The annual wellness visit is a new benefit to Medicare under the Patient Protection and Affordable Care Act, creating an incentive for physicians to require an examination to diagnose cognitive impairment. The provision came into force in January 2011, and the Association produced guidelines on how to perform cognitive tests to promote the use of benefits by primary care providers.

To provide cognitive evaluation guidance to primary care providers at the annual wellness visit, and where referral or additional examination is needed, the Alzheimer's Association assembled a panel of experts to develop recommendations (Cordell et al., 2013). According to Cordell et al. (2013), the resulting Alzheimer's Association Medicare Annual Wellness Visit Algorithm for Assessment of Cognition includes a review of patient Health Risk Assessment information, patient observation, unstructured questions during the annual wellness visit, and the use of standardized cognitive assessment tools for patients and informants alike. Widespread use of this model may be the first step towards decreasing the incidence of missing or postponed dementia diagnosis, thereby allowing improved clinical management and more favorable outcomes for affected patients and their families and caregivers (Cordell et al., 2013).

The Alzheimer's Association has long advocated legislation to improve the detection, diagnosis, and awareness of Alzheimer's disease and, in collaboration with the Centers for Disease Control and Prevention, is introducing a new federal-state awareness-raising approach to dementia brain health, Healthy Brain Initiative: The Public Health Road Map for State and National Partnerships (Thornhill & Conant, 2018). The Road Map identifies strategies to encourage healthy cognitive functioning for state and local public health departments and their stakeholders, to address cognitive impairment, and to meet care partners' needs. The Road Map contains guidance on developing effective policies at the state and local level. Implementing the Public Health Road Map is a policy priority for the state chapters of the Alzheimer's Associations (Thornhill & Conant, 2018). In 2014, the Georgia Division of Aging Services, the Rosalynn Carter Institute for Caregiving, the Alzheimer's Association, and Georgia Public Broadcasting created and aired "Alzheimer's Hope for Tomorrow, Help for Today," that provided information to people with dementia and caregivers (Thornhill & Conant, 2018). In 2018, the Alzheimer's Act infrastructure (S. 2076) was signed into law. The Public Law 115-406 was signed into law in December 2019. The bipartisan support and leadership resulted in an increase of \$350 million for research into Alzheimer's and dementia. Additionally, the \$10 million inclusion was provided to implement the Building Our Largest Dementia (BOLD) infrastructure.

Role of the DNP Student

My present job is in a primary care setting as a family nurse practitioner (FNP). One motivation for this doctoral project is a diagnosis of DM and early signs and

symptoms of dementia in many relatives. My observation of the clinical practice gap was another motivation for this DNP CPG project. The clinic has no plan in place to assist with an early dementia screening of the DM population. I had the primary role of a DNP student in developing the CPG. The absence of a clinic strategy was not due to the lack of desire to help patients but was due to the lack of a CPG.

It is essential to ascertain the correlation between dementia and DM. The purpose of further exploring this issue was to develop a CPG that would help DM patients reduce dementia symptoms. As a DNP student, I searched for current evidence and used the Fineout-Overholt (2010) model to grade the evidence used in the development of the CPG. The CPG was based on the best evidence, using the Leavell and Clark's levels of prevention model, the Walden University *Manual for Clinical Practice Guideline Development*, and the second edition of the AGREE II tool (AGREE Next Steps Consortium, 2017). Once the CPG was in draft form, I asked a panel made up of five content experts including two primary care physicians (who own the practice), one staff Licensed Practical Nurse, one staff FNP, and one Adult-Gerontology Nurse Practitioner with clinical DM expertise to review the CPG using the 23 items Agree II instrument. Revisions were not required after the expert panel agreed to the CPG's appropriateness. No potential biases were identified in the DNP project.

Summary

Diabetes is a recognized risk factor for cognitive impairment, with evidence showing that it affects performance in numerous cognitive domains and puts persons at increased risk of dementia. Patients were not routinely screened for cognitive decline at

the primary care site creating a gap in nursing practice. The purpose of the DNP project was to develop an evidence-based CPG for early screening of dementia in patients with DM to close the gap in practice by developing a CPG for early screening of dementia in patients with diabetes. The newly developed CPG will provide a means for early recognition of cognitive decline in patients with DM. The model informing this DNP CPG project was the Leavell and Clark (1958) levels of prevention model. The levels of prevention model was essential to this project because the evidence-based CPG for early dementia screening in patients with DM will provide information that clinicians can use to develop individualized plans of care that incorporate all levels of prevention for patients with DM.

Due to the diabetes pandemic and the concomitant increase in aging populations worldwide, the number of patients with cognitive impairment or dementia is expected to grow. In this context, extreme cognitive impairment can be a potential long-term complication of diabetes with dramatic consequences for affected subjects and their families and a significant impact on healthcare systems. As a DNP student, I had a central role in developing the CPG and received support from the staff during this process. My motivation for this DNP CPG project was based on my observation of the clinical practice gap. The clinic does not have a strategy in place to help the DM population with an early screening of dementia.

Section 2 introduced the AGREE II model to frame the development and scoring of the evidence-based CPG for early dementia screening in DM patients that will provide health-care professionals with information on the importance of the CPG. I have also

examined the background of the problem and defined my role and the role of the participants in developing a CPG for early dementia screening in DM patients. The gap has been identified in practice as not having a CPG at the local practice site; in comparison, the literature evidence has indicated early dementia screening in DM patients could close this gap (Janseen et al., 2019). In Section 3, I recount the purpose of this DNP project. I will present the practice-focused questions, describe sources of evidence, analyze, synthesize the evidence, and conclude with a summary.

Section 3: Collection and Analysis of Evidence

Introduction

Diabetes is a recognized risk factor for cognitive impairment, with evidence showing that it affects performance in numerous cognitive domains and puts persons at increased risk of dementia. Through this DNP project, I developed an evidence-based CPG for early screening of dementia in patients with DM at an independent, internal medicine, primary care clinic where patient care for patients with DM has been guided by past practice, habit, and presentation of a substantial complaint. These patients have not been routinely or adequately screened for cognitive abilities, nor have screenings been carried out at appropriately spaced intervals with a recognized, validated tool. By developing a CPG for early screening of dementia in patients with diabetes, I addressed the gap in practice. A desirable social change is dementia prevention, considering the resulting impairment, morbidity, mortality, and financial cost of dementia to members of society; through the development of a CPG, I provided an action to decrease these impairments and promote the worth and dignity of individuals with DM that can improve their quality of life. The practice problem is discussed in the following section of the paper, along with the local problem, sources of evidence, and the analysis and synthesis methods.

Practice-Focused Questions

At the DNP project site, a large private primary care practice, the care of the patient with DM has been guided by past practice, habit, and the presenting chief complaint of the patient. These patients with DM were not adequately screened for

cognitive abilities; early detection screening for cognitive impairment is not performed consistently nor with a recognized and validated tool at regularly spaced intervals, rather a cognitive test may take place only if the patient demonstrates signs of cognitive impairment. A CPG is anticipated to enhance early recognition in cognitive decline in patients with DM and address the gap in practice at the DNP project setting, the argument being that routine screening may identify patients with cognitive impairment who might then benefit from a personalized intervention (Janssen et al., 2019). Thus, the practice-focused questions that guided the DNP project were: Does the literature support the development of a CPG for early recognition of cognitive impairment in patients with DM? and Can an evidence-based CPG be developed and validated regarding early recognition and prevention of dementia in DM?

Sources of Evidence

CPGs direct practitioners to deliver quality treatment and provide clinicians with a standard of care aimed at positive patient outcomes and may include screening, diagnosis, treatment, and management of specific conditions. CPGs provide the foundation for clinical protocols that practitioners use (Singleton & Levin, 2008). Sources of evidence for this CPG project were gathered from an in-depth literature search of peer-review journals. From the 66 research studies and articles that were found pertinent, these were further reduced to only one with significance to the CPG development because it met usability criteria at the project site. Collecting data and evidence from the Alzheimer's Association recommendations for operationalizing the detection of cognitive impairment during the Medicare Annual Wellness Visit in a

primary care setting added to the information considered in the development of the CPG to fit the needs of the target facility. The AGREE II results from the expert panel evaluations were a second source of evidence.

Participants

The practice guideline was presented to the expert panel consisting of five key stakeholders: two physician co-owners of the practice, one staff LPN, one staff FNP, and one offsite AGNP with clinical DM expertise. These members were in positions of authority at the practice site and are decision-makers in adopting new policies. They were also the end users of this project.

Procedures

After an exhaustive review of the literature and development of the literature matrix (see Appendix A), following the AGREE II instrument guidelines, I developed an evidence-based CPG for early recognition of cognitive impairment in patients with DM. After I developed the CPG, I distributed copies to the expert panel, who then evaluated the CPG using the AGREE II tool. The validity and reliability of the AGREE II are well-known to be reproducible in DNP projects (Brouwers et al., 2010). After reviewing the AGREE II scores, no revisions were required because the expert panel reached a consensus that the CPG was appropriate. The CPG will be submitted to administration by the practice owners.

Protections

This CPG DNP project was aligned with the Walden University *Manual for Clinical Practice Guideline Development* and approval was obtained from Walden

University's Institutional Review Board (Approval no. 09-08-20-0501311) and the facility signed the CPG doctoral project approval form. Each expert panelist received the preapproved Disclosure to Expert Panelist form (see Appendix B). The reviewers remained anonymous with all paperwork identified with numbers rather than names. The facility was only referred to in general terms to prevent recognition.

Analysis and Synthesis

The literature review matrix was used to summarize the available evidence-based literature that I used to develop the CPG. I used the AGREE II scores and a summative and formative evaluation to collect data that were analyzed and synthesized for the DNP project. The AGREE II is a tool developed to address the variability in guideline quality and assess the methodological rigor and transparency with which guidelines are developed, including what information will be presented in guidelines and how (AGREE Next Steps Consortium, 2017). The AGREE II instrument comprises 23 items and six quality domains: (a) scope and purpose, (b) stakeholder involvement, (c) rigor of development, (d) clarity of presentation, (e) applicability, and (f) and editorial independence. The AGREE II scores were averaged manually assuring integrity and accuracy.

Summary

At the internal medicine practicum site, the patients with DM were not routinely or adequately screened for cognitive abilities, nor were screenings carried out at appropriately spaced intervals with a recognized, validated tool. The purpose of this DNP project was to develop an evidence-based CPG for early screening of dementia in patients

with DM. The gap in practice was addressed by my developing a CPG for early screening of dementia in patients with diabetes. The adoption of the proposed practice guideline with accompanying support materials will potentially change how providers treat patients with an anticipated decrease in dementia in the patient with DM

Section 3 of this DNP project outlined the approach used to develop the CPG for early screening of dementia in DM patients. Articles supporting this topic were organized into a literature matrix. An expert panel evaluated the CPG using the AGREE II tool. I used the AGREE II scores and a summative and formative evaluation to analyze and synthesize the DNP project data. In Section 4, I discuss the DNP project results and recommendations that should result in positive social change.

Section 4: Findings and Recommendations

Introduction

DM places patients at an increased risk of brain atrophy and cerebrovascular disease, leading to cognitive deficits, cognitive impairment, and dementia (Espeland et al., 2016). DM is a chronic disease affecting approximately 26 million people in the United States (Gatlin, 2014). With no guidelines in place at the DNP project's primary care site, patients with DM were not being screened for cognitive impairment. This lack of regular screening for cognitive impairment created a nursing practice gap. The practice-focused questions this DNP CPG project addressed were: Does the literature support the development of a CPG for early recognition of cognitive impairment in patients with DM? and Can an evidence-based CPG be developed and validated regarding early recognition and prevention of dementia in DM? The purpose of the DNP project was to develop an evidence-based CPG for early screening of dementia in patients with DM that will provide a means for early recognition of cognitive decline in these patients, making early intervention more likely to occur.

After an exhaustive review of the literature, I developed the literature matrix (see Appendix A) to organize the evidence and rate the studies' strength for the development of a CPG (see Appendix C). Following the AGREE II (AGREE Next Steps Consortium, 2017) instrument guidelines, I developed an evidence-based CPG for early screening of cognitive impairment in patients with DM from the selected literature. The AGREE II tool was used by an expert panel to evaluate the newly developed CPG, and the scores

were averaged by hand. In Section 4, I address, along with recommendations, the findings and the strengths and limitations of the project.

Findings and Implications

Through my literature review, I found one article (Cordell et al., 2013) that provided guidelines that were appropriate for the target setting. Based on this evidence-based literature, I developed a CPG to be considered for implementation at the facility. The expert panel then evaluated the CPG for consistency and quality using the AGREE II tool (Brouwer et al., 2017). Each item of the six domains was graded using a 7-point scale. A score of 7 represented *strongly agree*, whereas a score of 1 represented *strongly disagree*. The panel was given 7 days to complete and return the AGREE II tool, and they all met the deadline. The 23 criteria of the AGREE II tool were grouped in six domains, with each domain representing a different guideline area (see Table 1).

Table 1

AGREE II Clinical Guideline Evaluation Tool Scores

Evaluator	Domain 1: Scope and purpose	Domain 2: Stakeholder involvement	Domain 3: Rigour of development	Domain 4: Clarity of presentation	Domain 5: Applicability	Domain 6: Editorial independence	Overall guideline assessment
	102/105	101/105	251/280	100/105	134/140	68/70	34/35
1	19	21	55	20	28	14	7
2	20	19	33	20	25	14	7
3	21	19	51	19	25	12	6
4	21	21	56	21	28	14	7
5	21	21	56	20	28	14	7
Percentage	97	96	90	95	96	97	97

Note. Threshold for guideline quality is 70% or greater.

Domain 1 addressed the guideline's scope and overall purpose, to include the health issue that was scored as clearly defined. The population that the guideline was to refer to was listed explicitly. The total score of this domain was 97%. Evaluator 1 suggested that dementia with diabetes should exclude the younger population with DM. However, there was no explanation for this suggestion.

Domain 2 focused on the guideline development with relevant professional group's inclusion, views, and preferences of the target population. The content panel scored Domain 2 at 96%, concurring that the guideline development group included individuals from all relevant professional groups, that all professional groups were important, and that the guideline was clearly defined and the criteria were met. An evaluator commented that "nurse practitioners and physician assistants can play more of a primary role along with the doctors."

Domain 3 addressed the rigor of development. It focused on what methods were used to search for evidence, criteria for selecting evidence, strengths, limitations of the evidence, and procedures for updating the guideline. The expert panel scored Domain 3 at 90%, agreeing that experts have externally reviewed the guideline before publication, a complete reference list was provided for primary care providers, a procedure for updating the guideline was provided, and a 3-year guideline review is adequate for monitoring. The expert panel agreed that there is an explicit link between the recommendations and the supporting evidence. A question posed by Evaluator 5 was, "Does cognitive impairment relate to noncompliance and poor diabetic control?" This question was answered based on my previous discussion in the literature review.

Domain 4 addressed the clarity and presentation, including recommendations, options for management of the health issue, and key recommendations. The expert panel scored Domain 4 at 95% offering no comments.

Domain 5 addressed the applicability of the CPG that focused on facilitators and barriers to its application, tools on how the recommendations can be put into practice, potential resource implications, and monitoring criteria in the future. The total score for this domain was 96%. The expert panel commented that the guideline provides advice and tools on how the recommendations can be put into practice and that “the tools are very simple and easy to do in primary care and monitoring and auditing criteria is well defined.” There were no other comments in Domain 5.

Domain 6 addressed editorial independence that focused on the funding body's views not influencing the guideline's content and competing interests of guideline development. There was no funding required for this project. The domain received a score of 97 %. The expert panel commented that the "funding bodies should not influence study and guideline."

In the Overall Guideline Assessment, the expert panel scored CPG at 100%, with all evaluators stating that they would recommend the CPG for use as presented. Evaluator 2 noted that the overall quality of this guideline was "excellent quality", and the expert panel stated the CPG was nicely written, well organized, and much needed inside the practice environment. The expert panel concluded that the guidelines would enhance patient outcomes and, considering the resulting impairment of dementia, morbidity, mortality, and financial cost to society members, dementia prevention is a desirable social

change. Also, the expert panel agreed that the organization and the patients would benefit from implementing a CPG because unrecognized cognitive impairment can impact adherence to treatment and diabetes self-management, resulting in poor glycemic control, an increased frequency of severe hypoglycemic episodes, and hospital admissions.

There is a need to find methods that improve cognitive impairment in DM patients continually. This project contributed to nursing practice by adding new information on the development and use of an evidence-based CPG to guide nursing care. The project synthesized evidence-based details to develop a process for DM patients to postpone or avoid cognitive impairment. Through the CPG implementation, it is anticipated that cognitive impairment in the DM patients will decrease, quality of life for the patients will improve, and financial burden on society will be decreased, thus creating a positive social change. The project results can be used as baseline information for future projects and or research.

The project may contribute to the development of additional guidelines in nursing practice. The worldwide prevalence of diabetes and dementia in people older than 65 is estimated to double over the next three decades (Biessels & Whitmer, 2019). According to Biessels and Whitmer (2019), data from a large veteran's registry in the US showed that among people with diabetes, the prevalence of dementia and cognitive impairment combined was 13.1% for individuals aged 65-74 years and 24.2 % for those aged 75 years and older. The use of the developed EBP guideline can positively impact health outcomes and improve and standardize the nursing practice approach. The guideline has the potential for nationwide use to improve nursing healthcare.

Recommendations

The gap in practice was addressed by providing a CPG for primary care providers to use for early screening for cognitive impairment in DM. CPGs direct practitioners to deliver quality treatment and provide clinicians with a standard of care aimed at positive patient outcomes. They provide the foundation for clinical protocols that practitioners use (Singleton & Levin, 2008). The expert panel recommended the CPG be implemented for use by adding it to the assessment packet for all patients with DM. Implementing the CPG in primary care is an innovative approach that will improve practice and create a culture that embraces improved quality care for social change. The CPG adoption could help nurse practitioners provide DM patients with early intervention resources to treat anticipated cognitive impairment to improve self-care empowerment proactively. The project plan is for the proposed recommendation to be introduced to the facility administration for potential implementation.

Strengths and Limitations of the Project

This CPG project's positive aspects included the chance to find an expert panel of qualified and devoted professionals to participate and a platform to carry out the project. An additional strength was the opportunity to identify appropriate, peer-reviewed literature to use in the process of developing a CPG that is ideal for the target population. Another value of the project is that, since the pathology and progression are the same, the study outcomes can be applied to any clinical environment that cares for patients with DM. By providing an assessment for early dementia screening in patients with DM, the CPG can provide a course of an appropriate treatment plan for any provider. The main

limitation I faced during the project was that there was not a CPG for early screening for cognitive impairment in DM, although it is supported throughout the literature.

For future CPG projects, I would add an information technology (IT) participant to assist with incorporating the newly developed guidelines into the electronic health record. With IT's involvement, hard stops could trigger the nurse to complete the assessment and the information would become a part of the permanent record. Other future projects to be considered include validating different current and evolving screening tools such as iPad applications and gait tracking, resulting in new instruments being recognized as more suitable and realistic for primary care evaluation of cognitive impairment.

Summary

The CPG development for early screening for dementia in DM was addressed in this section. The strength of the project was the ability to define relevant, peer-reviewed literature to be used to develop a CPG that is appropriate for the study population. The main limitations I faced were that, although there were recommendations and screening was endorsed in the literature, there was no CPG for early screening of DM for cognitive impairment. The expert panel's AGREE II evaluations recognized the quality of the newly developed CPG; the expert panel suggested introducing it to the facility administrators for potential implementation. I address the plan for dissemination as well as an analysis of myself in Section 5.

Section 5: Dissemination Plan

The plan is for the newly developed CPG for early screening for dementia in DM be introduced to the facility administration for implementation. My plan for disseminating beyond the target setting is to have the CPG published in a peer-reviewed journal such as the Walden University *Journal of Excellence in Nursing Healthcare Practice* or the *American Association of Nurse Practitioners*. Also, I plan to publish dementia and DM articles in the Case Management Society of America's official journal, *Professional Case Management: The Leader in Evidence-Based Practice*. These journals have robust platforms with a diverse population of professional nurses, some of whom work in primary care settings where DM and cognitive impairment is common.

Analysis of Self

My upbringing nurtured my core beliefs of family, community, loyalty, compassion, and trustworthiness. I was taught that anything worthwhile requires hard work. I began my nursing career as a nurse aide at the age of 16. I fell in love with nursing and taking care of patients. I particularly liked seeing patients get better. I decided at an early age to pursue a career as a nurse. This desire led to my ADN, then BSN, then an MSN, and now a DNP. Nursing is a passion of mine. I love this profession; it is an enriching career that allows me to serve my community.

Practitioner

As an FNP and working at the bedside, I was able to identify the practice problem for this project. I have had the opportunity to see firsthand the day-to-day activities of an FNP. I have performed detailed patient assessments and used critical thinking to form an

evidence-based diagnosis and treatment plan. As a bedside FNP, I have worked with a diverse patient population with diabetes and dementia. Early detection of cognitive impairment by screening will ideally enable patients and their families to receive care at an earlier stage in the disease process, potentially facilitating health, financial, and legal decision-making discussions while the patient still retains the capacity to make decisions.

Scholar

The DNP project has provided me with a platform to demonstrate specialized knowledge in a particular field. This follows the American Association of Colleges of Nursing (2006) that proposes that the final DNP project should demonstrate the integration of the student's work and establish the foundations for future scholarships (Moran et al., 2017). The DNP project plays a significant role in doctoral education and encourages DNP students to engage in academic practice; it has provided a way for me to accomplish my professional ambitions. I intend to make further scholarly contributions to improve healthcare services and add to nursing knowledge.

Project Manager

As the project manager, while developing the CPG for Early Screening for Dementia in DM I was privileged to collaborate with a committed and encouraging group of experts who offered valuable input. Their recommendations on the CPG helped me establish a more comprehensive and detailed dementia and DM guideline. I found that the expert panel was eager to assist and, within the allotted time, completed the AGREE II appraisal. I was responsible for providing the expert panel packet, including the Literature Review Matrix, Disclosure for Anonymous Questionnaires Form, AGREE II

instrument, and the CPG, as the project manager. I summarized the AGREE II data once the AGREE II had been completed and returned to me.

Challenges, Solutions, and Insights Gained

Locating research on dementia prevention in the DM population at the beginning of the project posed several challenges. The most important obstacle of this project was finding literature for an early screening CPG in DM. No CPGs existed on the subject. Still, I was hopeful that the solution was evidence-based literature. I consulted the Walden Librarian, who provided invaluable assistance and supporting literature on dementia and DM. I was able to pull comprehensive data together to construct the guidelines I developed. This initiative has been one of the most important challenges in my educational career. I tried tirelessly to overcome the obstacles to finding practical guidelines that could be adapted to meet the practice settings' needs. I spent long hours researching the levels of evidence and how they pertain to research. As a result, I have grown professionally and academically through this pursuit.

Project Experience and Long-Term Goals

The ever-changing healthcare system and my burning desire to acquire knowledge inspired me to seek a career as a DNP. The project development process has helped me develop my competency and confidence in translating theory and research into EBP. The project development experience opened my interest in projects to integrate practice with EBP. This experience also helped me to develop competencies to discuss conceptual models and theories. Through being mentored, I have also learned that I can mentor

others through the evidence-to-practice journey. With my education advancement, I can continue to be an agent of social change in the nursing profession.

Summary

The central concept of this DNP project was to bring awareness to the importance of early screening for dementia for patients with DM. Searching through the literature was a tedious task, especially since there are no published guideline for practitioners to use for early screening for dementia in DM. In carrying out this CPG DNP project, I developed evidence-based interventions to provide healthcare consumers and the profession with interventions to minimize memory loss and optimize self-care management in adult patients with DM. The CPG development for the facility should improve quality healthcare and decrease or prevent cognitive impairment in DM.

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Appendix A: Literature Review Matrix

Melnyk, Bernadette Mazurek, and Ellen Fineout-Overholt's tool

DNP Project Title: Clinical Practice Guideline: Early Screening for Dementia in Diabetes Mellitus

Student: Angelyn Levell-Smith

Fineout-Overholt, E., Melnyk, B., Stillwell, S., & Williamson, K. (2010).

Reference	Theoretical/ Conceptual Framework	Research Question(s)/ Hypotheses or Purpose	Research Methodology	Analysis & Results	Conclusions	Grading the Evidence
Abualula, N. A., Jacobsen, K. H., Milligan, R. A., Rodan, M. F., & Conn, V. S. (2016). Evaluating Diabetes Educational interventions with a skill development component in adolescents with type 1 diabetes. <i>The Diabetes Educator</i> , 42(5), 515–528. doi:10.1177/0145721716658356	N/A	Purpose: evaluated the effectiveness of diabetes self-management education (DSME) interventions on QOL of adolescents with T1DM	Six databases systematically searched for QOL outcomes of DSME interventions for adolescents with T1DM	Of the 14 studies, only 4 had significant QOL outcomes for the intervention participants. Successful DSME interventions had direct and direct behavioral skills foci and duration ≤ 2 months.	Provides evidence that DSME interventions may improve QOL among adolescents with T1DM.	Level I Evidence obtained from a systematic review
Biessels, G. J., & Whitmer, R. A. (2019). Cognitive dysfunction in diabetes: how to implement emerging guidelines. <i>Diabetology</i> , 63(1), 3–9. doi:10.1007/s00125-019-04977-9	N/A	Purpose: address steps to implement guidelines	A review	An overview of cognitive impairment in people with diabetes	Suggested steps for optimal implementation of guidelines	Level IV Evidence from well-designed case-control study
Blissitt, P. A. (1986). Nursing management of diabetic peripheral neuropathies. <i>Journal of Neuroscience Nursing</i> , 18(2), 81–85. doi:10.1097/01376517-198604000-00007	Leavell and Clark's Levels of Prevention	Purpose: Brief description of diabetic peripheral neuropathies and nursing intervention	A review	Nursing intervention includes health promotion and specific protection, early diagnosis, and prompt treatment.	By applying Leavell and Clark's Levels of Prevention, the nurse can provide comprehensive care in each phase of the disease process	Level IV Evidence from well-designed case-control study

(continued)

<p>Bunn, F., Goodman, C., Malone, J. R., Jones, P. R., Burton, C., Rait, G., Trivedi, D., Bayer, A., & Sinclair, A. (2016). Managing diabetes in people with dementia: protocol for a realist review. <i>Systematic Reviews</i>, 5, 5. https://doi- /10.1186/s13643- 015-0182-4</p>	<p>Realist Approach/Synthesis.</p>	<p>Purpose: To develop a program theory about what works in the management of diabetes and people with dementia and in what context and identify interventions for further evaluation.</p>	<p>A systematic review based on the stages of Pawson et al and follows the RAMESES publication standards</p>	<p>A realist synthesis of the evidence will provide a theoretical framework for practice and future research.</p>	<p>By providing possible explanations for the way in which interventions are through to work it will demonstrate how to tailor an intervention to the setting and patient group and inform the design of future intervention studies.</p>	<p>Level V Systematic reviews of descriptive review</p>
<p>Chew, B.-H. (2014). Psychological aspects of diabetes care: Effecting behavioral change in patients. <i>World Journal of Diabetes</i>, 5(6), 796. doi:10.4239/wjd.v5.i6.796</p>	<p>N/A</p>	<p>Purpose: examination of patients psychosocial aspects about emotion effects on health, cognition, self-regulation, self-efficacy, and behavior.</p>	<p>A review</p>	<p>The ultimate goal would be to help individual patient to develop strategies for the long-term management of their diabetes, leading a productive life resulting from a quality of life that is resilient to adversities and challenges</p>	<p>Positive emotional health may sustain long-term coping efforts and protect patient from the negative consequences of prolonged emotional disorders.</p>	<p>Level IV Evidence from well-designed case-control study</p>
<p>Cordell, C.B., Borson, S., Boustani, M., Chodosh, J., Reuben, D., Verghese, J., Thies, W., Fried, L.B. & who?(2013), Alzheimer's Association recommendations for operationalizing the detection of cognitive impairment during the Medicare annual wellness visit in a primary care setting. <i>Alzheimer's & Dementia</i>, 9: 141-150. doi:10.1016/j.jalz.2012.09.011</p>	<p>N/A</p>	<p>Purpose-To review Alzheimer's Association recommendations for operationalizing the detection of cognitive impairment during the Medicare Annual Wellness Visit in a primary care setting.</p>	<p>A Review</p>	<p>Recommendations developed to provide primary care physicians with guidance on cognitive assessment during Medicare Annual Wellness Visits, and when referral or further testing is needed.</p>	<p>Widespread implementation of this algorithm could be the first step in reducing the prevalence of missed or delayed dementia diagnosis.</p>	<p>Level IV Evidence from well-designed case-control study</p>

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<p>Espeland, M. A., Erickson, K., Neiberg, R. H., Jakicic, J. M., Wadden, T. A., Wing, R. R., ... Bryan, R. N. (2016). Brain and white matter hyperintensity volumes after 10 years of random assignment to lifestyle intervention. <i>Diabetes Care</i>, 39(5), 764-771. doi:10.2337/dc15-2230</p>	N/A	<p>Purpose: Behavioral interventions to promote weight loss through dietary changes and physical activity may delay adverse consequences of diabetes and dementia</p>	RCT	<p>Assignment to lifestyle intervention was not associated with consistent differences in cognitive function compared with diabetes support and education.</p>	<p>Long-term weight loss intervention may reduce the adverse impact of diabetes on brain structure. Determining whether this eventually delays cognitive decline and impairment requires further research.</p>	Level II Randomized Controlled Trials RCT
<p>Gatlin, P. K. (2014). The role of executive function between severity of Type 2 Diabetes and selfcare. <i>Self-Care & Dependent Care Nursing</i>, 21(1), 4-11</p>	Orem's Self-Care Deficit Theory	<p>Hypotheses: A relationship between health state (severity of T2DM), and foundational capabilities (executive function).</p>	Cross-sectional, non-experimental study	<p>The findings from the study regarding the proposed relationships of the major concepts are consistent with other research studies.</p>	<p>This study provides evidence that the severity of T2DM is associated with Executive function in turn Executive function is associated with overall self-care.</p>	Level III Evidence Obtained From a well-designed controlled trial without randomizations.
<p>Janssen, J., Koekkoek, P. S., Biessels, G. J., Kappelle, L. J., & Rutten, G. E. H. M. (2019). People with type 2 diabetes and screen-detected cognitive impairment use acute health care services more often: observations from the COG-ID study. <i>Diabetology & Metabolic Syndrome</i>, 11(1), 21. doi:10.1186/s13098-019-0416-z</p>	N/A	<p>Purpose: To investigate whether people with T2DM and screen-detected cognitive impairment use acute health care services more often than patients not suspected of cognitive impairment.</p>	COG-ID study	<p>A higher percentage of participants with cognitive impairment compared to screen negative patients used acute health care services; this difference was significant for general practitioner's out of hours services</p>	<p>People with T2DM and screen-detected cognitive impairment use acute health care services more often.</p>	Level IV Evidence from well-designed case-control study

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Katsaouni, P., Papamichail, E., & Maillis, A. (2017). Exploring dementia in primary health care: Comorbidities and diagnostic tools. <i>International Journal of Caring Sciences</i> , 10(1), 110-116.	N/A	Purpose: To explore the perspectives and the possible causal relationships between medical, environmental, and socio-demographic factors and cognitive decline in Greek island population.	A population Study	The MMSE score was positively associated with educational level and physical activity	Confirmed the coexistence of cognitive disorders with depression and that both of them can be investigated early at primary health care level. The frequency of the dementia is underestimated at primary health care.	Level IV Evidence from well-designed case-control study
Kim, J. Y., Ku, Y. S., Kim, H. J., Trinh, N. T., Kim, W., Jeong, B., Heo, T. Y., Lee, M.K., & Lee, K., E. (2019). Oral diabetes medication and risk of dementia in elderly patients with type 2 diabetes. <i>Diabetes Research and Clinical Practice</i> , 154, 116–123. doi:10.1016/j.diabetes.2019.07.004	N/A	To examine the effect of oral diabetes medication on the risk of dementia in an elderly cohort with T2DM	Population-based cohort study	Among 278, 290 patients with R2DM, 56,587 developed dementia over 11 years of follow-up. The risk of dementia was lower with DM oral medication.	Overall, the use of oral diabetes medication in T2DM patients significantly decreased the risk of dementia	Level IV Evidence from well-designed case-control study
Larner, A. (2018). Dementia screening: A different proposal. <i>Future Neurology</i> , 13(4), 177–179. doi:10.2217/fnl-2018-0018	N/A	Purpose: Conceptualizing cognitive disorders dissociation for screening strategy	A Review	Screening should not be a homogenous, monolithic, monochromatic event but a context-specific and flexible process	Seek dissociation impairment to identify functional cognitive disorders	Level IV Evidence from well-designed case-control study
Michalowsky, B., Xie, F., Eichler, T., Hertel, J., Kaczynski, A., Kilimann, I., & Hoffmann, W. (2019). Cost-effectiveness of a collaborative dementia care management-Results of a cluster-randomized controlled trial. <i>Alzheimer's & Dementia</i> , 15(10), 1296–1308. doi:10.1016/j.jalz.2019.05.008	N/A	Purpose: To determine the cost-effectiveness of collaborative dementia care	A cluster-randomized controlled trial RCT	Dementia care management increased quality-adjusted life years and decreased costs due to a lower hospitalization.	Dementia Care Management is likely to be a cost-effective strategy in treating dementia.	Level II Randomized Controlled Trails RCT

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<p>Molony, S. L., Kolanowski, A., Van Haitsma, K., & Rooney, K. E. (2018). Person-centered assessment and care planning. <i>The Gerontologist</i>, <i>58</i>(suppl_1), S32–S47. doi:10.1093/geront/gnx173</p>	N/A	<p>Purpose: To provide recommendations for assessment and care planning derived from a review of the research literature</p>	A Review	<p>The guidelines build upon previous recommendations by the Alzheimer's Association, and apply to all settings, types, and stages of dementia</p>	<p>The goal audience for the guidelines includes professionals, paraprofessionals, and direct care workers depending on their scope of practice and training.</p>	Level IV Evidence from well-designed case-control study
<p>Rawlings, A. M., Sharrett, A. R., Mosley, T. H., Ballew, S. H., Deal, J. A., & Selvin, E. (2017). Glucose peaks and the risk of dementia and 20-year cognitive decline. <i>Diabetes Care</i>, <i>40</i>(7), 879–886. doi:10.2337/dc16-2203</p>	N/A	<p>Purpose: An examination of the association of glucose peaks in midlife.</p>	<p>A review study. The Cox and Linear mixed-effects models were used.</p>	<p>Over a median time of 21 years, dementia developed in 1,105 participants. Among persons with diabetes showed an increased in the estimated risk of dementia.</p>	<p>Among participants with diabetes, glucose peaks are a risk factor for cognitive decline and dementia.</p>	Level IV Evidence from well-designed case-control study
<p>Salinas, R. M., Hiriart, M., Acosta, I., Sosa, A. L., & Prince, M. J. (2016). Type 2 diabetes mellitus as a risk factor for dementia in a Mexican population. <i>Journal of Diabetes and Its Complications</i>, <i>30</i>(7), 1234–1239. doi:10.1016/j.jdiacomp.2016.06.005</p>	N/A	<p>Purpose: To explore factors that could modify the association between diabetes and dementia.</p>	A review of a dementia study	<p>T2DM patients have nearly twice the risk of developing dementia after three years of follow-up. The incidence of dementia is higher in subjects with undiagnosed diabetes. Higher serum glucose levels have a stronger association with dementia</p>	<p>It is important to implement early evaluation and monitoring cognitive performance in elders with diabetes to identify minor cognitive impairment and undertake timely interventions to prevent or delay the onset of dementia.</p>	Level IV Evidence from well-designed case-control study
<p>Simó, R., Ciudin, A., Simó-Servat, O., & Hernández, C. (2017). Cognitive impairment and dementia: a new emerging complication of type 2 diabetes—<i>The diabetologist's perspective</i>. <i>Acta Diabetologica</i>, <i>54</i>(5), 417–424. doi:10.1007/s00592-017-0970-5</p>	N/A	<p>Purpose: To identify strategies to identify T2DM patients at risk of dementia.</p>	A review	<p>Cognitive impairment is a new complication of T2DM with significant applications in clinical practice and economic repercussions for healthcare systems.</p>	<p>Multidisciplinary effort with collaboration between neurologists and diabetologists seems essential for designing an efficient plan for identifying subjects at risk and implementing cost-benefit approach for management of complications of T2DM</p>	Level IV Evidence from well-designed case-control study

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Singleton, J., & Levin, R. (2008). Strategies for learning evidence-based practice: Critically appraising clinical practice guidelines. <i>Journal of Nursing Education</i> , 47(8), 380-383.	N/A	Purpose: To describe a strategy to help students learn how to critically appraise CPG using the AGREE instrument	Descriptive	The critical assessment of CPG's is an active learning strategy.	To help students learn to engage in EBP, faculty need to give students a strategy they know works, and facilitate the process	Level IV Evidence from well-designed case-control study
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Note. Melnyk, B., Overholt, E., Stillwell, S., & Williamson, K. (2010). The seven steps of evidence-based practice. *American Journal of Nursing*, 110(1), 51-53.

Appendix B: Disclosure to Expert Panelist Form for Anonymous Questionnaires

To be given to expert panelist prior to collecting questionnaire responses—note that obtaining a “consent signature” is not appropriate for this type of questionnaire and providing respondents with anonymity is required.

Disclosure to Expert Panelist:

You are invited to take part in an expert panelist questionnaire for the doctoral project that I am conducting.

Questionnaire Procedures:

If you agree to take part, I will be asking you to provide your responses anonymously, to help reduce bias and any sort of pressure to respond a certain way. Panelists' questionnaire responses will be analyzed as part of my doctoral project, along with any archival data, reports, and documents that the organization's leadership deems fit to share. If the revisions from the panelists' feedback are extensive, I might repeat the anonymous questionnaire process with the panel of experts again.

Voluntary Nature of the Project:

This project is voluntary. If you decide to join the project now, you can still change your mind later.

Risks and Benefits of Being in the Project:

Being in this project would not pose any risks beyond those of typical daily professional activities. This project's aim is to provide data and insights to support the organization's success.

Privacy:

I might know that you completed a questionnaire, but I will not know who provided which responses. Any reports, presentations, or publications related to this study will share general patterns from the data, without sharing the identities of individual respondents or partner organization(s). The questionnaire data will be kept for a period of at least 5 years, as required by my university.

Contacts and Questions:

If you want to talk privately about your rights in relation to this project, you can call my university's Advocate via the phone number 612-312-1210. Walden University's ethics approval number for this study is 09-08-20-0501311.

Before you start the questionnaire, please share any questions, or concerns you might have.

Appendix C: AGREE II Tool for Evaluation of Clinical Practice Guideline

Rating Scale: (1) Strongly Disagree (2) Disagree (3) Partially Disagree (4) Neutral (5) Partially Agree (6) Agree (7) Strongly Agree

Domain 1: Scope and Purpose

1. The overall objective of the guideline is specifically described.

	1	2	3	4	5	6	7
Strongly Disagree							Strongly Agree

2. The health question covered by the guideline is specifically described.

	1	2	3	4	5	6	7
Strongly Disagree							Strongly Agree

3. The population to whom the guideline is meant to apply is specifically described.

	1	2	3	4	5	6	7
Strongly Disagree							Strongly Agree

Domain 2: Stakeholder Involvement

4. The guideline evaluators include individuals that are considered experts.

	1	2	3	4	5	6	7
Strongly Disagree							Strongly Agree

5. The views and preferences of the target population have been sought.

	1	2	3	4	5	6	7
Strongly Disagree							Strongly Agree

6. The target users are clearly defined.

	1	2	3	4	5	6	7
Strongly Disagree							Strongly Agree

Domain 3: Rigour and Development

7. Systematic methods were used to search for evidence.

	1	2	3	4	5	6	7
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Strongly Disagree

Strongly Agree

8. The criteria for selecting the evidence are clearly described.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

9. The strengths and limitations of the body of evidence are clearly described.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

10. The methods for formulating the recommendations are clearly described.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

11. The health benefits, side effects, and risks have been considered in formulating the recommendations.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

12. There is an explicit link between the recommendations and the supporting evidence.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

13. The guideline has been externally reviewed by experts prior to its publication.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

14. A procedure for updating the guideline is provided.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Domain 4: Clarity of Presentation

15. The recommendations are specific and unambiguous.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

23. Competing interests of guideline development group members have been recorded and addressed.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Overall Assessment of Guideline

1. Rate the overall quality of this guideline.

1	2	3	4	5	6	7
Lowest possible quality						Highest possible quality

2. I would recommend this guideline for use.

Yes

Yes, with modifications

No

Notes

Appendix D: Clinical Practice Guideline

Procedure

- The early screening for dementia assessment will be performed at the primary care setting upon each admission and annually.
- If the patient answers yes to any of the risk assessment questions to the early screening assessment the provider will be informed, the provider will decide on the best next step which may include
 - a cognitive assessment using a brief structured tool such as the Mini-Cog (Cordel et al., 2013),
 - laboratory tests, CT, and/or MRI imaging or
 - be referred to a memory clinic for a multidisciplinary evaluation and treatment between neurologists and diabetologists for early dementia.
 - (Cordel et al., 2013).

Question

- What early screening can be performed by the facility to identify early cognitive impairment in diabetes mellitus populations?

Population

The early screening for cognitive impairment in diabetes mellitus protocol will be performed on all patients who have diabetes at the primary care clinic.

Recommendations

There is a lack of knowledge and available resources for early screening for cognitive impairment in diabetes mellitus populations.

- Dementia and DM are common long-term disorders that can coexist for many older people. In the absence of a cure, people with dementia require prompt diagnosis and evidence-based treatment to delay disease progression leading to adverse outcomes (Biessels & Whitmer, 2019) and enhance health-related quality of life (Michalowsky et al., 2019).
- Cognitive impairment screening is usually not recommended for the general population based on no current treatment that changes the impairment. The recommendations for people with diabetes suggest that early diagnosis can

help reduce risks associated with diabetes care and improve the management of diabetes (Biessels & Whitmer 2019).

- Because cognitive impairment often remains unrecognized, routine screening for cognitive impairment in elderly patients with DM is increasingly advocated (Janseen et al., 2019).
- The U.S. Preventive Services Task Force recognized that the use of cognitive impairment assessment tools can increase the detection of cognitive impairment (Cordell et al., 2013).

Key Evidence

- DM is one of the world's leading chronic illnesses that cause impairment and mortality and is a major contributing factor to dementia (Kim et al., 2019).
- Diabetes is a recognized risk factor for cognitive impairment, with evidence showing that it affects performance in numerous cognitive domains and puts persons at increased risk of dementia (Rawlings et al., 2017).
- Detection of cognitive impairment can be improved by communicating directly about memory changes, language, and the ability to perform routine tasks. The healthcare staff can recognize significant cognitive and physical changes in patients witnessed over time. Informants, family members, and caregivers may provide useful knowledge about cognitive changes (Cordell et al., 2013).

Guideline Monitoring

- The Guideline should be revised every three years or when new guidelines are developed.
- Barriers to the application of this Guideline should be discussed by the practitioner when they emerge

Screening for Cognitive Impairment

YES NO

During the past 12 months, have you experienced confusion or memory loss that is happening more often or is getting worse?		
During the past 7 days, did you need help with eating?		
During the past 7 days, did you need help with getting dressed?		
During the past 7 days, did you need help with bathing?		
During the past 7 days, did you need help with walking?		
During the past 7 days, did you need help using the toilet?		
During the past 7 days, did you need help to do laundry?		
During the past 7 days did you need help to do housekeeping?		
During the past 7 days, did you need help to do banking?		
During the past 7 days, did you need help to go shopping?		
During the past 7 days, did you need help using the telephone?		
During the past 7 days, did you need help to prepare a meal?		
During the past 7 days, did you need help with transportation?		
During the past 7 days, did you need help from others to prepare and take your medications?		

Cordell, C. B., Borson, S., Boustani, M., Chodosh, J., Reuben, D., Verghese, J., Thies, W., & Fried, L.B.(2013), Alzheimer's Association recommendations for operationalizing the detection of cognitive impairment during the Medicare annual wellness visit. in a primary care setting. *Alzheimer's & Dementia*, 9(2), 141-150. doi:10.1016/j.jalz.2012.09.011

See following page for next actions

If the patient answers **YES TO ANY** of the above questions

Full dementia evaluation

- Notify provider who will determine further treatment:
 - Standard laboratory tests include TSH, CBC serum B12, folate, CMP. Structural brain imaging including CTMRI (Cordell et al., 2013).
 - Refer the patient to a memory clinic for a multidisciplinary evaluation and treatment between neurologists and diabetologists for early dementia.

If the patient answers **NO TO ALL** of the above questions, follow-up cognitive impairment screening during subsequent annual wellness visits (Cordell et al., 2013).

Sources

Biessels, G. J., & Whitmer, R. A. (2019). Cognitive dysfunction in diabetes: How to implement emerging guidelines. *Diabetology*, *63*(1), 3–9.

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(2017). Glucose peaks and the risk of dementia and 20-year cognitive decline.

Diabetes Care, 40(7), 879–886. <https://doi.org/10.2337/dc16-2203>