Dementia Screening in a Primary Care Clinic: Quality Improvement Project to Identify A Proper Dementia Screening Tool

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DEMENTIA SCREENING IN A PRIMARY CARE CLINIC: QUALITY IMPROVEMENT PROJECT TO IDENTIFY A PROPER DEMENTIA SCREENING TOOL

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

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This Scholarly Project by: Erni Dewi Ruslie

Entitled: *Dementia Screening in a Primary Care Clinic: Quality Improvement Project to Identify a Proper Dementia Screening Tool*

has been approved as meeting the requirement for the Degree of Doctor of Nursing Practice in the College of Natural and Health Sciences in the School of Nursing, Program of Nursing Practice

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ABSTRACT

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Alzheimer’s dementia affects approximately 50 million people in the world and was the sixth leading cause of death in the United States in 2014 (Heron, 2016). The death rate due to Alzheimer’s increased by 55% from 1999 to 2014 (Centers for Disease Control and Prevention, 2017). Several studies have shown that in primary care, the majority of older adults with dementia are undiagnosed (Boustani et al., 2011; Connolly, Gaehl, Martin, Morris, & Purandare, 2011; Sternberg, Wolfson, & Baumgarten, 2000). Mild dementia is particularly under-diagnosed (Van den Dungen et al., 2011).

In 2014, the U.S. Preventive Services Task Force concluded current evidence was not sufficient to assess the benefits of screening for cognitive impairment. Routine dementia screening in primary care using cognitive screening tools appeared to improve dementia case detection rates (Eichler et al., 2015). Primary care providers were often not sure which cognitive screening tool to use and some had expressed reluctance to do the screening and use the screening tools due to lack of knowledge.

The first purpose of this Doctor of Nursing Practice (DNP) scholarly project was to educate nurse practitioners (NPs) on frequently used dementia screening tools (the Mini-Cog [2018] and Saint Louis University Mental Status Exam tool [SLUMS, Saint Louis University, 2006]) in the clinic. The clinic has five NPs and all NPs consented and
participated in the project. The education for NPs was done by having one-hour meeting using a PowerPoint presentation.

The second purpose was to determine one dementia screening tool that was easy to administer in practice with an administration time of less than 10 minutes by comparing the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006). Nurse practitioners filled out a survey that consisted of five questions with one section where NPs could write comments on which dementia screening tool they thought outperformed the other.

The DNP scholarly project itself was a quality improvement project. The method of analysis of the evaluation data was descriptive in nature. The goal of the DNP student was to assess which dementia screening tool was easy to administer, free of educational language or cultural bias, and practical to use with a time administration of less than 10 minutes for a busy primary care setting in a western family medicine clinic. The finding of the DNP scholarly project indicated the Mini-Cog (2018) was not sensitive enough to detect mild cognitive impairment while the SLUMS exam tool (Saint Louis University, 2006) was able to detect mild cognitive impairment in two patients in this clinic.

The DNP scholarly project further concluded primary care settings indeed need a dementia screening tool that is easy-to-use and practical but sensitive to detect mild cognitive impairment in elderly patients.

Keywords: dementia, Alzheimer’s dementia, cognitive screening tool
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CHAPTER I

INTRODUCTION

Background

Dementia is not a specific disease (Alzheimer’s Society, 2019); it is described as a group of clinical symptoms associated with difficulties in memory, language, and behavior that impair a person’s ability to perform activities of daily living. Alzheimer’s disease (AD) is the most common cause of dementia (Alzheimer’s Society, 2019). Age is the stronger risk factor for dementia. The risk of developing dementia after 65 years of age is approximately 17 to 20% with roughly 70% of patients with dementia having AD (Alzheimer’s Association, 2018). Early diagnosis of dementia could help minimize the impact of late intervention. Most patients with memory problems and dementia first seek care through their primary care providers. Early detection of dementia could also help families anticipate the patient and their own needs and also assist primary care providers (PCPs) in identifying those who require additional support. Therefore, a screening test for dementia is essential in the primary care setting (Borson et al., 2013). Although many primary care providers endorse screening for dementia, practicing providers typically do not perform the screening and often consider it to be time-consuming (Linz et al., 2017).

Even though the U.S. Preventive Services Task Force (USPSTF; cited in Moyer, 2014) concluded that routine dementia screening in primary care clinics was not recommended due to lack of empirical data on the benefits and harms of screening, the
USPSTF recognized that the use of some cognitive screening tools could be beneficial in identifying dementia. Dementia is quite different than other medical diagnoses because those with dementia cannot recognize the signs and symptoms due to the inherent disease process itself. Diagnosing dementia can be delayed due to time constraints and limited resources in the primary care clinic; sometimes, the patient requires an extensive workup. A very thorough and extensive clinical evaluation and diagnostic workup are needed for patients with a memory disorder or cognitive impairment to determine if they truly have dementia. Furthermore, additional evaluation and testing need to be done to specify the type of dementia (Alzheimer’s dementia, Lewy Body dementia, vascular dementia, or frontotemporal dementia) or sometimes the patient has to go through a neuropsychological evaluation to assess how the brain functions (Alzheimer’s Society, 2019). All of these extensive workups can cause delay in diagnosing dementia.

Primary care providers often miss recognizing the symptoms of dementia due to lack of awareness of current evidence-based dementia screening practice, compounded with the lack of understanding of current medical therapies available for dementia (Cordell et al., 2013). Regardless of symptoms or suspicion of disease from primary care providers or family, a patient with suspected dementia must be screened using a cognitive screening test. There is no gold standard for which cognitive screening tools are to be used. If the screening test is positive, the patient will be referred to a specialist such as a geriatrician, neurologist, neuropsychologist, or geriatric psychiatrist for further evaluation. Routine dementia screening can be done annually during wellness visits. Screenings can be offered to patients who are 65 years of age or older who might have some kind of memory disorder or mild cognitive impairment (MCI) since MCI can be a
precursor for the development of Alzheimer’s dementia (Albert et al., 2011). One should keep in mind all factors that can influence or affect the results of the dementia screening--level of education, literacy, native language, culture, and social factors such as stress, hunger, sleep deprivation, etc. Performing dementia screening in patients who are 65 years old and older might lead to significant healthcare cost within the state where the patient resides as well as nationally. However, routine dementia screening in primary care settings might allow patients with dementia and their families to have quality of life with more time spent in the community and less time spent in long-term care facilities.

**Statement of Problem**

As of 2018, the total cost for caring for persons with Alzheimer’s and dementia was estimated at $277 billion with an average cost of dementia care at $278,038 per person (Alzheimer’s Association, 2018). Costs are continuing to rise. Due to the age of the patients (65 years of age or older) and the risk of developing dementia at a certain age, most patients with dementia are covered under Medicare. It is projected that Medicare will spend at least $1 trillion to pay for dementia care by 2050 (Alzheimer’s Association, 2018). While substantial evidence indicates dementia is unrecognized in 40 to 75% of patients in primary care settings, it is important for PCPs to increase surveillance and screen for dementia. Primary care providers in primary care settings are often the first point of contact for patients and family when they are worried their loved one may have cognitive impairment or dementia. Suspicious conjectures from caregivers or family who bring the patient to see the primary care providers must not be dismissed. That is why it is so important that dementia screening be done in the primary care setting.
There is no cure for dementia. However, early intervention could reduce the overall cost of dementia care. It has been the optimal strategy so far, not only because the patient’s level of functioning would be preserved for a longer period but also because community-dwelling patients with AD would incur less societal cost than those who require long-term institutional placement (Leifer, 2003). Patients could indicate how they wanted to proceed with medical care by creating advance directives and living wills while they were still able. The benefit of early screening is for PCPs to address concerns either the patient or family have brought up such as forgetfulness, confusion, delirium, or dementia. If screening is negative, concerns could be alleviated at least for the current moment. If screening is positive, further evaluation is needed. The patient and PCPs could then take the next step in identifying the cause of impairment, which could be from medication side effects, infections, metabolic or endocrine imbalance, depression, delirium, or dementia.

Screening alone is not sufficient to diagnose dementia but it is an initial and important step to move forward including a referral to a specialist such as a geriatrician, neurologist, neuropsychologist, or geriatric psychiatrist. Primary care providers typically do not perform the screening because not only do they often consider the dementia screening to be too time-consuming (Linz et al., 2017) but they are not comfortable in performing screening for cognitive function. The tendency for PCPs to dismiss a patient’s or family’s complaints of memory issue or loss as part of normal aging must be replaced by awareness of the need to screen and possibly intervene sooner. Dementia screening could be done early, appropriately, and in a proper amount of time if PCPs were trained on how to use the screening tool and if the screening tool was easy to
administer and practical to use. These would not only reduce healthcare costs paid by healthcare insurances and governmental organizations but also reduce facility costs both in primary care settings and long-term care.

Purpose of the Project

Even though USPSTF (cited in Moyer, 2014) did not recommend routine dementia screening in the primary care setting, it is necessary for PCPs to recognize detection of mild cognitive impairment or dementia early so interventions can be implemented. Studies have shown early interventions tailored to patients with dementia can improve quality of care, increase access to community services for patients and their caregivers, and reduce unfavorable dementia-related behaviors—outcomes that all resulted in less stress and depression to caregivers (Olazaran et al., 2010). Primary care providers often miss the symptoms of dementia due to lack of awareness of current evidence-based screening practices and treatment options for dementia (Cordell et al., 2013). Screening individuals during an annual wellness visit (AWV) who are 65 years old or older could help identify at-risk patients and promote early interventions.

Milne, Culverwell, Guss, Tuppen, and Whelton (2008) indicated several studies had reviewed dementia screening tools. In total, there were about 34 cognitive screening instruments (Yokomizo, Simon, & Bottino, 2014) and half of those used for dementia screening could be performed in less than 10 minutes in primary care settings (Ebell, 2009). Lack of training or skills in using the dementia screening tools could cause PCPs to give a delayed diagnosis of dementia or miss the diagnosis altogether. Consistent and proper dementia screening in primary care settings could potentially at least double the number of patients who receive a diagnosis of dementia (Boustani et al., 2011). Once
patients are identified at risk, PCPs could present the information to patient and family/caregivers about further evaluation, treatment options, and individualized interventions to slow down the progression of the disease. Patients who are informed about their disease could prepare and make important decisions regarding their future care while they are still cognitively able and have the capacity to do so.

A local primary care clinic in Fort Collins, Colorado sees a range of patient populations from newborn to elderly patients. There are seven physicians and five nurse practitioners (NPs). Due to the physicians’ commitment to teach and precept residents who have just graduated from medical school to round on their patients who are admitted in the hospital and to dedicate their time into research, these physicians do not have many open appointment slots. Therefore, NPs see the majority of the patients in the clinic. At this clinic, NPs have admitted to not knowing how to use dementia screening tools properly and were not comfortable in screening dementia in the elderly population. Nurse practitioners tended to refer patients to see a geriatrician, who also works in this clinic, without performing an initial dementia screening. Also, when asked which dementia screening tool was being used if NPs suspect dementia, different NPs mentioned different dementia screening tools. However, these advanced providers expressed a lack of knowledge regarding use and scoring of the tools.

When speaking with the director of the clinic, only two available and approved dementia screening tools were used in this clinic--the Mini-Cog (2018) and the Saint Louis University Mental Status (SLUMS, Saint Louis University, 2006) exam. Use of these two tools was confirmed by the geriatrician who did not have a preference regarding which tool to use as long as NPs had the knowledge on how to use each tool.
properly so they could assess and screen dementia properly. Therefore, the purpose of this project was to educate NPs on how to use dementia screening tools, specifically the Mini-Cog and SLUMS, as these tools were readily available in this clinic. A second purpose was to compare both dementia screening tools with the hope that the clinic could only utilize one dementia screening tool that was easy to administer and practical to use (less than 10 minutes of administration time). The goal was for NPs who worked in the clinic to have the knowledge of the dementia screening tools so they could more appropriately screen dementia in their elderly patients.

Need for the Project

On January 1, 2011, the Patient Protection and Affordable Care Act (cited in Cordell et al., 2013) added a new Medicare benefit--the annual wellness visit (AWV). The AWV includes personalized prevention plan services (PPPS) for Medicare beneficiaries. Medicare providers must conduct the AWV as part of the annual physical/health assessment that might also review medical and family history, perform the assessment to detect cognitive impairment, help establish a list of current medical providers and medications, and schedule future preventive services (Cordell et al., 2013).

Due to lack of knowledge of NPs in using either of the two cognitive screening tools, patients had to wait at least a few months before they could be seen by a geriatrician in this clinic who did the majority of the AWVs. The AWVs were conducted only every Tuesday morning of the week; these visits are paid by Medicare where patients would see either a nurse practitioner or a geriatrician. The criterion for being evaluated was patients who were Medicare beneficiaries had to be at least 65 years old or older. Because NPs were not comfortable in conducting dementia screening during the
AWV, a geriatrician in this clinic was the only provider who saw the majority of the AWV visits. This caused delays in providing care to patients because of the long wait before patients could be seen by that provider.

**Study Question**

The PICOT acronym was used to guide this project: population (P)—family nurse practitioner (FNP) providers, intervention (I)—Mini-Cog (2018), comparison (C)—SLUMS (Saint Louis University, 2006), outcome (O)—dementia screening tool that is easy to administer and practical to use, and time (T)—10 minutes or less to administer.

The result was the following research question:

Q1 Among FNP providers in a family medicine clinic, which cognitive screening tool (the Mini-Cog or SLUMS) currently used to screen dementia in patients was rated as easy to administer, practical, and could be administered in 10 minutes or less?

**Purpose of the Project**

This Doctor of Nursing Practice (DNP) scholarly project was not research oriented. Rather, it was a quality improvement (QI) initiative based upon existing research evidence and literature reviews. Due to the limited number of NPs willing to perform the AWV because of lack of knowledge in properly using the dementia screening tools, the project’s first objective was to educate NPs on frequently used dementia screening tools in the clinic. The second objective was to determine one dementia screening tool that was easy to administer in practice with a administration time of less than 10 minutes by comparing the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006). Therefore, these objectives would promote regular dementia screening in elderly patients and encourage NPs to perform the AWV in Medicare patients instead of the geriatrician. With training, knowledge, and skills in detecting
dementia, NPs could be more comfortable and efficient in screening dementia and performing the AWV so early recognition of dementia could be identified for patients and their families to receive early interventions or support.

**Definition of Terms**

**Dementia.** A term for a clinical syndrome that describes progressive acquired global impairments of cognitive skills and the ability to function independently (Sheehan, 2012). Even though the incidence and prevalence of dementia is strongly age-dependent, dementia is not part of the normal aging process. Different types of dementia (Alzheimer’s dementia, vascular dementia, Lewy body dementia, frontotemporal disorders) depend on the types of brain changes that may be taking place (National Institute on Aging [NIA], 2012). Alzheimer’s dementia is the most common type of dementia. Nearly one in every three seniors who dies every year has Alzheimer’s dementia (Alzheimer’s Association, 2018).

**Cognitive screening.** A screening performed by PCPs to screen individuals who are at highest risk for progressive dementia or delirium (Segal-Gidan, 2013). There is no clear consensus on how often cognitive screening should be carried out or who should undergo cognitive testing (Segal-Gidan, 2013).

**Cognitive screening instruments.** Used to perform the screening test with the purpose of increasing the precision of a diagnosis by increasing objectivity and reducing subjectivity (Sheehan, 2012), i.e., to use the cognitive screening instrument to screen for underlying dementia or to distinguish impairment due to dementia from normal aging cognitive changes. While a few cognitive screening tools are available, the goal of the project is to find a dementia screening tool that is
practical to use that takes less than 10 minutes to administer in a busy primary care clinic setting.

**Mild cognitive impairment.** A memory problem condition (NIA, 2012) that causes a slight but noticeable decline in cognitive abilities including memory and thinking skills (Alzheimer’s Association, 2018). The type of MCI associated with memory loss is called amnestic MCI and about 8 of every 10 people who have amnestic MCI develop Alzheimer’s disease within seven years (NIA, 2012).

**Mini-Cog.** A screening tool for assessing cognitive impairment that can be effectively used with minimal training according to the American Academy of Family Physicians (AAFP, 2019). It consists of a three-item recall memory test and a scored clock-drawing test (Mini-Cog, 2018). The Mini-Cog (2018) is frequently implemented in primary care settings as it is relatively easy to administer (Ebell, 2009). Based on some studies, the sensitivity of the Mini-Cog ranges from 60% to 99% (Carnedo-Pardo et al., 2013; Cullen, O’Neill, Evans, Coen, & Lawlor, 2007).

**Primary care providers.** Medical doctors and nurse practitioners who work in the local family medicine clinic and see patients of all ages on a regular basis. Primary care providers are expected to be more assertive and attentive in their assessment on observation and reports from their patients and others who are close to, or are involved in the patients’ care, and have become concerned about changes in the patient’s behavior, function, or thinking processes.

**Saint Louis University Mental Status examination.** A test designed to measure a patient’s abilities in orientation, executive function, memory, and attention (Saint
Louis University, 2006). It is an 11-item screening tool that can be divided into three categories: three orientation items, nine reasoning items, and six memory items (Cao et al., 2012). The SLUMS is available in the public domain without any charges or fees. Based on a couple of studies, the SLUMS examination tool has very high sensitivity and specificity (Kansagara & Freeman, 2010).

**Summary**

According to the NIA (2018), a patient with dementia must show a deficit in at least two cognitive or behavioral functions including reasoning or task completion, learning and information recall, speech, reading, writing, visuospatial proficiency, and personality. Initial assessment is the first step to recognizing the deficits and should include a complete detailed history from both the patient and the family/caregiver with the focus on impairment of cognitive function and activities of daily living. Then, it should be followed by a physical examination to look for any focal neurological signs and exclude any visual or auditory issues (Robinson, Tang, & Taylor, 2015). It is important for PCPs to commence the initial assessment by performing a baseline investigation and a brief cognitive or evaluation of dementia by using one of the many tools available before referral to secondary care (Robinson et al., 2015).

Cognitive screening tools should be easy to administer. It is vital for NPs to easily read the instructions and ask questions listed in the cognitive screening tool. Primary care settings need to utilize cognitive screening tools that are easy to administer so NPs can properly ask the questions and score the results appropriately. Patients should also understand the questions the NP asks without having to repeat those questions. When patients who are not at risk for dementia understand the questions, they can answer
the questions asked so there will be no errors, thus preventing a false positive result.

Lack of knowledge of the cognitive screening tools is also a reason why PCPs do not feel comfortable in performing any screening of elderly patients (Yokomizo et al., 2014). In this DNP scholarly project, the words *easy to understand* are interchangeable with *easy to administer*.

A cognitive screening tool that is practical to use is defined as a tool that can be administered within 5 to 10 minutes. In a busy primary care setting, NPs see a lot of patients in the assigned appointment time. Nurse practitioners do not have extra time in their appointment slots so taking longer than 10 minutes to administer the cognitive screening tool may delay patient care. Time constraint in the appointment is another reason why PCPs are reluctant and unable to perform dementia screening. In addition, patients typically would like to be seen on time so having to make the patient wait longer than his/her scheduled appointment time could cause patient dissatisfaction.
CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Dementia has a significant financial impact in the United States. Patients with AD and other dementia incur 60% higher healthcare costs in the Medicare program than patients without AD and other dementia (Weimer & Sager, 2009). With a rising aging population in the United States, it is estimated that the annual incidence of AD will increase to nearly 14 million by 2050, a significant increase from 5.7 million Americans of all ages living with AD in 2018 (Alzheimer’s Association, 2018). Although there is no cure for dementia, early recognition of cognitive impairment would help patients and their families plan for the future. Early recognition of cognitive impairment could encourage patients and their families to seek further education and support so they understand what is happening and avoid potential safety issues. Early dementia recognition could provide many benefits such as medical, financial, social, emotional, as well as planning benefits for patients and their families/caregivers (Dubois, Padovani, Scheltens, Rossi, & Dell’Agnello, 2016).

Literature Review

Literature reviews were performed to determine the current state of knowledge on early dementia recognition, the use of a dementia screening tool, as well as current recommendations for which dementia screening tool would be the most efficient and
brief to be used in primary care settings. The review included literature on the clinical presentation of a quick, simple-to-use, universal dementia screening tool for primary care providers in outpatient settings. It also included literature on targeting dementia screening in primary care settings because there is no specific clinical guideline on how or when to screen older adults for dementia.

A literature search was performed using the following search keywords: dementia, dementia screening tool, cognitive impairment, brief dementia screening tool, and primary care settings. These search keywords were typed into several search engines including CINAHL, Cochrane Database of Systematic Reviews, PubMed, UpToDate, PsycNet, PsycInfo, PsycExtra, and Psychology & Behavioral Sciences. Since the USPSTF concluded in its first statement in 2003 that routine dementia screening is not recommended in primary care settings, the search was performed for articles published within the last 15 years. The search was limited to peer-reviewed journals and full-text articles in the English language. The search focused on brief, recommended dementia screening tools to be used exclusively in primary care settings. An evidence table is provided in Appendix A for the plan and record of the literature search. Eleven articles were chosen for the literature review.

**Dementia Screening**

According to Sheehan (2012), dementia screening tools should have face validity where experts such as clinicians, patients, and caregivers agree that the questions are relevant and important; construct validity that measures what it was designed to measure; and concurrent validity where the tool performs well when it was used alongside other assessments. Some dementia screening tools have also been shown to be reliable and
practical to use (Sheehan, 2012). Practical or easy to use are very important criteria if this tool is to be used in a busy primary care clinic. The hope is for the patient and caregivers not to feel overwhelmed by many questions in a long interview. Dementia screening tools should also be appropriate so their use does not embarrass or exhaust the patient or caregivers (Sheehan, 2012).

Due to changes in healthcare policies and priorities, including the establishment of the AWV for Medicare beneficiaries that incorporates screening for cognitive impairment, the Alzheimer’s Foundation of America and the Alzheimer’s Drug Discovery Foundation in 2011 assembled a workgroup of experts in dementia screening, care, and policy (Borson et al., 2013). The purpose of the workgroup was to review evidence for dementia screening implementation and to evaluate the impact of routine dementia screening for healthcare design (Borson et al., 2013). The group agreed and recommended that early detection of dementia was the first step in improving dementia care (Borson et al., 2013). Studies have shown that dementia is still underrecognized even among older patients who see and receive regular care from their primary care providers. Even though there is no cure for dementia, finding cases of dementia allows early involvement and considerations for both pharmacological and nonpharmacological interventions (Borson et al., 2013).

Cordell and colleagues (2013) agreed no single cognition assessment tool was considered the gold standard even though many tools were found in the literature. A PubMed search was conducted using the keywords screening or detection of dementia or cognitive impairment. Cordell and colleagues focused on and compared five systematic evidence reviews of brief dementia screening tools published since the year 2000 and a
2010 literature review of newer, brief assessments of cognition. This workgroup agreed many validated tools were available. The systematic evidence reviews also showed the Mini-Cog had good to excellent psychometric properties (Borson et al., 2013; Cordell et al., 2013; McCarten et al., 2012). The Mini-Cog had also been validated in population-based studies and in older adult, heterogeneous community-dwellings (Cordell et al., 2013). The Mini-Cog was shown to be most suited for routine use in primary care because it was brief; was easily administered by medical staff members who were not physicians; was relatively free from educational, language, or cultural bias; and could be used by healthcare providers in a primary care setting without paying any copyright fees (Cordell et al., 2013). However, screening for dementia should not be solely based on a tool but should be a stepwise process to include other assessments (Cordell et al., 2013).

Lorentz, Scanlan, and Borson (2012) agreed that brevity, effectiveness, freedom from biases, and simplicity were some key characteristics of dementia screening tests. Lorentz et al. conducted a systematic review study with the objective of comparing available screening tools that were brief and could be used routinely in primary care practice. Inclusion criteria for the screening tools were (a) administration time of 10 minutes or less and (b) had been evaluated in at least one community or clinical sample of older adults. Thirteen instruments were selected. Lorentz et al. compared face validity, sensitivity, and specificity of these 13 instruments. They concluded not all screening methods were equal and “no single dementia screening tool has been shown to pass all the relevant performance tests to be categorized in a guideline-level recommendation” (Lorentz et al., 2012, p. 723). However, this systematic review study revealed three screening tests that showed the most promise for broad application in
primary care settings: the Mini-Cog, the Memory Impairment Screen (MIS), and the General Practitioner Assessment of Cognition (GPCOG). The Mini-Cog (2018) was shown to be a very brief screening tool in primary care settings with 99% sensitivity and 96% specificity (Lorentz et al., 2012).

**Dementia Screening Tools**

Multiple reviews of cognitive screening tools in primary care settings and literature identified the Mini-Cog (2018) as an appropriate cognitive test for primary care settings (Ismail, Rajji, & Shulman, 2010; Milne et al., 2008; Tsoi, Chan, Hirai, Wong, & Kwok, 2015). In 2015, Tsoi and colleagues performed a systematic review and meta-analysis study to evaluate the diagnostic performance of all cognitive tests to detect dementia. Bivariate random-effects models were used. Tsoi et al. identified 11 screening tools during the review of 149 studies with more than 49,000 participants who were interviewed face-to-face. The Mini-Cog was found to have the best diagnostic performance with 91% sensitivity and 86% specificity. Therefore, Tsoi et al. agreed the Mini-Cog was the best alternative screening tool to test for dementia.

Milne et al. (2008) completed a systematic review study with a three-part study: a literature review, a small-scale survey, and a rating exercise of dementia screening instruments. The objective of this study was to determine which dementia screening tools were used most in the primary care setting. During the literature review, Milne et al. concluded the Mini-Cog (2018) was the most suitable dementia screening tool in general practice. The result of the survey was 79% of responding practices used at least the Mini-Cog (Milne et al., 2008). The result from the rating exercise of the dementia screening instrument identified the Mini-Cog as being of practical value, feasible to use
in primary care settings, and having wide applicability. The Mini-Cog was clinically and psychometrically robust and was more appropriate for routine use in primary care settings (Milne et al., 2008).

Ismail and colleagues (2010) surveyed 679 abstracts from articles that focused on attitudes toward cognitive screening, current screening practices, promising new screening instruments, and on established instruments. The Medline search engine was utilized to conduct a search with the following keywords: cognitive screening, cognitive assessment, and dementia screening with a limitation to articles published in English since 1998. Articles with current cognitive screening practices, articles focusing on providers’ attitudes toward cognitive assessment or screening, articles focusing on the promising new screening instruments, and more recent updates on established screening instruments were retrieved, surveyed, and incorporated in the systematic review study. The emphasis of the review was on cognitive instruments identified and recommended as most frequently used in primary care and geriatric settings. Ismail et al. (2010) found the Mini-Cog (2018) was an appropriate screening instrument for primary care settings as it correctly classified 96% of the subjects in the initial study of 249 subjects in a community sample of culturally, linguistically, and educationally heterogeneous older adults with a sensitivity of 99%.

In 2018, however, Seitz and colleagues concluded the existing evidence was not sufficient to support the routine use of the Mini-Cog as the gold standard for screening dementia in primary care settings. Seitz et al. reviewed all cross-sectional studies from primary care settings that used the Mini-Cog as its screening tool for initial dementia screening. Subsequently, statistical analyses were performed using the Cochrane
guidelines for diagnostic test accuracy reviews. Seitz et al. constructed two-by-two tables for the Mini-Cog results. Data from studies were entered and a comparison was made for rates of true positive (TP), true negative (TN), false positive (FP), and false negative (FN) between individuals with all-cause dementia and those without any form of dementia.

From the review of all the cross-sectional studies in primary care settings, Seitz and colleagues (2018) selected four study reports (Carnedo-Pardo et al., 2013; Fuchs, Wiese, Altiner, Wollny, & Pentzek, 2012; Holsinger et al., 2012; McCarten et al., 2012) for the final reviews. McCarten et al.’s (2012) study reported the sensitivity of the Mini-Cog as 84% with 27% specificity. The McCarten study recruited and included individuals from the Veteran Affairs Medical Center who had scheduled primary care appointments who either tested positive for possible dementia or those who requested evaluation for their cognition (Seitz et al., 2018). The Holsinger et al. (2012) study reported the sensitivity of the Mini-Cog as 76% with 73% specificity. Holsinger et al. also recruited Veteran Affairs Medical Centers participants using the electronic medical record without a documented history of dementia recorded at baseline (Seitz et al., 2018). Two studies (Carnedo-Pardo et al., 2013; Fuchs et al., 2012) reported the sensitivity of the Mini-Cog as 1%. Fuchs et al. (2012) reported 85% specificity of the Mini-Cog and was noted to have included female participants as the majority of the participants (Seitz et al., 2018). Carnedo-Pardo et al. (2013) reported 40% specificity of the Mini-Cog but included participants who had a pre-existing history of dementia or cognitive impairment (Seitz et al., 2018).

Due to the significant variation in the sensitivity and specificity of the Mini-Cog between studies, Seitz and colleagues (2018) concluded that the evidence was not
sufficient to support the Mini-Cog as the gold standard dementia screening tool. Primary care physicians could freely use any available dementia screening tool. Because no standard test is currently available for the diagnosis of dementia, individuals testing positive on the Mini-Cog would likely be evaluated with additional cognitive tests in primary care settings or referred to a dementia specialist such as a neurologist, geriatrician, or geriatric psychiatrist (Seitz et al., 2018).

The SLUMS (Saint Louis University, 2006) exam tool is an 11-item screening questionnaire with 30 points that assesses orientation, memory, attention, and executive functions in a short amount of time. Tariq, Tumosa, Chibnall, Perry, and Morley (2006) found SLUMS to have excellent sensitivity (92%) and specificity (81%) in older patients independent of their education level. As a brief dementia screening tool, the SLUMS does not require family or caregiver information (collateral informant). In the study by Tariq et al., the elderly population was divided into three groups: normal cognitive functioning, mild neurocognitive functioning, and dementia. These groups were assessed using the Mini-Mental Status Exam (MMSE) and SLUMS scales. The study was to compare the SLUMS and the MMSE for detecting dementia and neurocognitive disorder (Tariq et al., 2006). The study calculated the sensitivity and specificity and generated receiver operator curves. Tariq et al. found the MMSE and SLUMS were equally sensitive for identifying those with dementia while the receiver operator curves for SLUMS were superior at detecting individuals with mild neurocognitive disorder.

Voss, Malmstrom, and Morley (2014) conducted a randomized control trial to validate the Rapid Cognitive Screen (RCS) in detecting cognitive dysfunction. The RCS is an abbreviated version of the SLUMS exam that includes three items only: recall, clock
drawing, and insight. The scoring of RCS ranges from zero to 10 with dementia being categorized with a score between zero and five, mild cognitive impairment scoring between six and seven, and a score between 8 and 10 for normal individuals without detection of any MCI or dementia. The study showed the RCS predicted MCI with a confidence interval between 69% to 88% and dementia with a confidence interval between 94% and 99% (Voss et al., 2014).

In 2015, Malmstrom et al. conducted a randomized, controlled trial study to find a rapid screening test to detect MCI and dementia in primary care settings. The RCS was utilized in both studies. The participants in Study 1 were recruited from the Veteran Affairs Medical Center (VAMC) hospitals who were followed up to 7.5 years for nursing home placement and mortality. Study 1 only utilized the RCS while the participants in Study 2 were patients from Saint Louis University Geriatric Medicine and Psychiatry outpatient clinics who completed both the RCS and SLUMS exam. The results for Study I showed the RCS predicted dementia (89% sensitivity, 94% specificity) and MCI (87% sensitivity; 70% specificity). In Study 2, the results only showed the RCS predicted dementia and MCI but specificity and sensitivity for diagnosing dementia or MCI were not provided. No results were mentioned on the SLUMS exam. The RCS might be a useful screening instrument for the detection of cognitive dysfunction in the primary care setting (Malmstrom et al., 2015) but this conclusion needs to be further explored with more information from the result of Study 2. Please see Appendix B for the literature review tables.
Theoretical Framework

Theory guides research and practice (Butts & Rich, 2015). Theory also provides clinicians with guidelines, framework, and the goals for assessment, diagnosis, and intervention. Some common ground for communicating effectively and efficiently is also provided (Meleis, 2012). Even though a theory might be useful for understanding a specific situation, theory could obscure the ability of researchers to notice certain features of events and limit the thinking about the range of possibilities for interpreting or understanding a situation or experience (Chinn & Kramer, 2015). On the other hand, researchers must intend to develop, extend, examine, or validate theory for research to be theory-linked (Chinn & Kramer, 2015). In conducting research, specific theory and theoretical concepts should be used appropriately to prevent errors in making conclusions. Therefore, while performing research, it is essential for researchers to utilize a theory so they can analyze to what extent a theory is sound and if a theory could be used as a framework to reveal new possibilities. “A strong, viable link among theory, research, and practice is vital to quality care, as well as to the ongoing development of the knowledge of the discipline” (Chinn & Kramer, 2015, p. 230). Understanding a theory, having the knowledge to utilize and maximize a theory, including implementing a theory into clinical practice, are a few strategies clinicians could use to narrow the theory-practice gap. Sometimes, there is an issue in applying theory-based research findings to practice when clinicians and others (patients and their loved ones, administrators, staff in the other facilities, etc.) are not familiar with a particular theory and do not understand how to utilize a theory in their everyday living.
Two theoretical frameworks underpinned this project: (a) the Meleis (2012) transition model and (b) the Stetler (2001) model of research utilization. According to Meleis, “Transitions are consistently related to the concepts of change and development” (p. 138). The theory-practice gap also occurs when clinicians and others are not well prepared to go through transitions in life along with no understanding of how to utilize Meleis’s transition theory. Involvement of patients and their loved ones is critical for a patient to transition smoothly. It is beneficial for patients and their loved ones to understand what triggers the transition or what the reasons are for the change, e.g., illness, loss of a job, or loss of a loved one. Also, it is helpful to be aware of the properties of transition (such as time span, process, awareness), the conditions of transition (is it personal, is it the community that changes), and the outcome of transition (is it a successful transition).

The Stetler (2001) model helps clinicians create formal change within organizations by using evidence-based research. The Stetler model consists of five phases that outline steps of utilization of evidence to facilitate changes in the organization. The five phases of the Stetler model were used to guide this DNP scholarly project:

- **Phase I: Preparation.** This was where the DNP student presented the DNP scholarly project proposal to the committees and the Institutional Review Boards (IRB) of the healthcare organization and the university.
- **Phase II: Validation.** This phase was where the DNP student evaluated the literature on dementia screening and which specific dementia screening tools should be used in primary care settings. The DNP student compared
the protocol in the local family medicine clinic with the literature to identify the need.

- Phase III: Comparative Evaluation/Decision making. The DNP student evaluated which proper dementia screening tool was the best practice for this clinic. Potential benefits, risks, barriers, resources, and readiness of primary care providers to learn and to participate in this project were identified and evaluated. In this phase, an educational PowerPoint comparing the dementia screening tools was developed. This helped make the decision of which tool would be used.

- Phase IV: Translation/Application. Dementia screening in elderly patients was implemented by using an easy-to-administer and practical-to-use dementia screening tool that was decided in Phase III.

- Phase V: Evaluation. Primary care providers’ comfort level and knowledge in screening dementia in elderly patients were assessed by using a Likert scale survey.

Stetler (2001) stated those elements of the organization that supported an evidence-informed practice were (a) the involvement and support from the leaders; (b) the capacity to engage an evidence-informed practice, specifically an effective implementation framework; and (c) the infrastructure to support and maintain the culture of an evidence-informed practice. Involvement and support from the leaders play an important role in the implementation of any evidence-based project.

The DNP student obtained support from the Director of the clinic who agreed the DNP scholarly project would help increase awareness regarding routine dementia
screening. The Director gave broad support for the DNP student to fully engage the evidence-based project and offered consistent, continued support for the project.

Implementing effective change in an organization starts with the leader’s support, followed by support from the rest of the individuals in the organization. The goal was for all to work together to implement change. The clinic, where the DNP scholarly project was implemented, is a teaching facility that supports evidence-based practice (EBP).

Evidence-based practice is a problem-solving approach that integrates the best evidence from studies, clinician expertise, and patient care data including patient preferences and values, with the goal to deliver the highest quality of care and best patient outcomes (Melnyk, Fineout-Overholt, Stillwell, & Williamson, 2010). Figure 1 provides a visual representation of the phases of the Stetler (2001) model to show the relationship of concepts and phases of the project.
Figure 1. Model of evidence-based practice (Stetler, 2001, p. 276).

Synthesis of the Literature

A significant need exists for a brief, easy-to-use, quick-to-administer “dementia screening tool that can accurately diagnose dementia in primary care settings” (Seitz et al., 2018, p. 2). Even though the USPSTF (2014) did not recommend routine screening for dementia in primary care settings, the literature supported the benefits of routine dementia screening (Seitz et al., 2018). Therefore, it would be important for primary care providers to increase surveillance and to screen for dementia. The USPSTF recognized the use of some cognitive screening tools could be beneficial in identifying dementia (Moyer, 2014). Many dementia screening tools were available in the literature as well as
many assessment scales that had been developed over the decades for use in dementia research and care. However, to understand the characteristics of each available tool would give clinicians the confidence in selecting an appropriate, sensitive, and specific tool based on the clinician’s assessment and patient-derived information (Sheehan, 2012).

Clinical, cognitive evaluation and screening occur infrequently and at variable rates in different clinical settings (Kotagal et al., 2014). In addition to recognizing and identifying at-risk patients who might benefit from the pharmacotherapy, early detection of dementia helps patient and family anticipate the needs of the patient. It also helps PCPs identify those in need of additional evaluation or support. Boustani and colleagues (2011) agreed that routine dementia screening was recommended as evidenced by the benefits of earlier treatment for persons with an irreversible cause of dementia, primarily in Alzheimer’s disease and vascular dementia. A growing consensus favored cognitive screening as part of routine primary care for older patients (Lorentz et al., 2012) because routine dementia screening in primary care settings could improve dementia care and prevent serious harm. Routine dementia screening in primary care using cognitive screening tools appeared to improve dementia case detection rates (Eichler et al., 2015). An individual’s likelihood of receiving a routine dementia screening is typically driven by multiple factors: physician-specific factors, patient and family factors, accessibility factors, and system-based practices (Kotagal et al., 2014).

Dementia screening could be done early, appropriately, and in a proper amount of time if PCPs were trained on how to use the screening tool and if the screening tool was easy to administer and practical to use. Lack of knowledge from PCPs on how to use dementia screening tools is one of a few factors why dementia is often misdiagnosed
(Yokomizo et al., 2014). Primary care providers often complained that the dementia screening tools were too lengthy and time consuming (Linz et al., 2017). Some of them also did not feel the tools were practical. Additionally, lack of appointment time in the clinic caused PCPs to not have enough time to screen for dementia in elderly patients. Lack of acceptable and accurate dementia screening tools, as well as the lack of appointment time in the clinic, provided barriers to routine dementia screening (Martin et al., 2015). Primary care providers perceived themselves as lacking access to valid dementia screening tools that were feasible to administer in a short amount of time (Bradford, Kunik, Schulz, Williams, & Singh, 2009). Because there was no gold standard for a dementia screening tool, PCPs were unsure of which dementia screening tool should be used. Variability in sensitivity in dementia screening tools also made the recognition of dementia more challenging (Sheehan, 2012).

Clinical judgment was typically the reason why PCPs started digging deeper into evaluating a patient’s cognitive function. A patient’s caregivers or family reporting concern about the patient’s behaviors, thinking processes, and memory would lead PCPs to assess the patient more thoroughly. Unlike other common and disabling health conditions such as cardiovascular disease, pulmonary disease, or cancer, there is no widely adopted clinical algorithm for early recognition and evaluation of suspected dementia (Kotagal et al., 2014). Diagnosing dementia can be difficult, especially when the patient has some symptoms that resemble “normal aging” memory loss and a diversity of other presenting symptoms, i.e., difficulty in finding words, difficulty in communication, and personality or mood changes (Kostopoulou, Delaney, & Munro, 2008). Therefore, routine dementia screening has become increasingly important and a
brief, effective, and simple dementia screening test was needed for routine care in older patients in primary care settings. Moreover, it was important for PCPs to have some knowledge about dementia screening tools so they could be confident and comfortable in performing cognitive screening tests to screen dementia in their older patients.

**Summary of the Literature Review**

There were common findings from the results of the search. Although many dementia screening tools were available (Cordell et al., 2013; Lorentz et al., 2012), no single, consistent, and brief dementia screening tool was universal or the gold standard to detect cognitive impairment (Cordell et al., 2013; Malmstrom et al., 2015; Seitz et al., 2018; Tariq et al., 2006; Voss et al., 2014). There were also no specific criteria for screening dementia (Borson et al., 2013; Perkins, Fowler, Harrawood, & Boustani, 2016) and no guidelines on how or when to screen dementia in older adults in primary care settings (Larson, 2018). The literature review showed no single, universally accepted dementia screening tool satisfied all needs in the detection of cognitive impairment (Seitz et al., 2018).

Since the conclusions from the USPSTF in 2003 and also in 2014, new studies have been developed and healthcare priorities have been modified to aim for routine dementia screening in primary care settings. Most of the results suggested the “benefits of routine dementia screening outweigh its potential harms” (Borson et al., 2013, p. 153). This new research has also influenced how PCPs think about dementia screening and its role in taking care of their elderly patients who particularly show some signs of cognitive impairment not typical of the normal part of aging. People with dementia often exhibit aggression, resistance to care, and other disruptive behaviors (American Geriatrics
Society, 2012). If these patients do not receive or have a dementia diagnosis, the PCP or caregivers could mistakenly give antipsychotic medication as the first choice to treat behavioral issues. Antipsychotic medications have been shown to provide limited benefits and have an increased risk of mortality with use in dementia patients (Steinberg & Lyketson, 2012).

Some concerns caused PCPs to be reluctant in detecting dementia. One was the negative impact of a dementia diagnosis or the stigmatization effect the patient had to live with once the diagnosis was made. There was also the possibility of a misdiagnosis due to perceptions that specialists were more appropriate than PCPs to make that diagnosis. Even though people do want to know when they have dementia, a few studies showed PCPs were reluctant to speak openly and honestly with their patients and families about dementia and some providers refrained from using the “D” word (Robinson et al., 2015; Rossor, Fox, Mummery, Schott, & Warren, 2010). Most people preferred to know as early as possible if they had dementia (Dale, Hemmerich, Hill, Hougham, & Sachs, 2008; Robinson et al., 2015).

Lack of skills or training specific to dementia care, lack of routine implementation of dementia screening, concern about risk of misdiagnosis, concern about the possible burden of patients with a diagnosis of dementia, and an unwillingness to discuss cognitive issues with patients and family were a few contributing factors that caused PCPs to delay or miss the diagnosis of dementia (Bradford et al., 2009). Failure to diagnose was attributed to the lack of PCPs’ knowledge about dementia, the absence of cognitive screening, and the public perception that nothing could be done about the disease. Lack of awareness of dementia itself could cause PCPs to miss recognizing
dementia symptoms. Primary care providers admitted to having less knowledge of
dementia and dementia care (Bradford et al., 2009; Kotagal et al., 2014).

According to the NIA (2014), many people who were developing or already had
dementia did not have a diagnosis. More than half of patients with dementia did not
receive a clinical cognitive evaluation by a physician (Kotagal et al., 2014) and PCPs
were not aware of cognitive impairment in more than 40% of their cognitively impaired
patients (Chodosh et al., 2004). Although the USPSTF (cited in Moyer, 2014) did not
recommend routine screening for cognitive impairment in older adults, the USPSTF
recognized that the use of a cognitive assessment tool could increase the detection of
cognitive impairment. Many dementia screening tests are available and the majority of
these tests take over 10 minutes to administer (Voss et al., 2014). In a busy clinical
setting, PCPs are looking to use one screening tool that is easy to administer and practical
to use, takes less than 10 minutes of administration time, has higher sensitivity, and is
specific to detect cognitive impairment.

With this DNP scholarly project, the goal was to determine an easy to administer
and practical to use (less than 10 minutes) dementia screening tool so PCPs could
recognize patients who were experiencing cognitive impairment and could provide
referrals or further detail in the examination to rule out dementia, delirium, or other
dementia-related problems.
CHAPTER III

METHODOLOGY

Project Design and Objectives

This DNP scholarly project was a quality improvement project using the Stetler (2001) framework and was a pilot test study. The DNP scholarly project had two objectives. The first objective was to educate NPs on how to use the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006) to address the gap in practice through screening eligible individuals as well as to incorporate the importance of routine dementia screening in primary care settings.

The second objective was to compare the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006) to find one that was easy to administer and practical to use with an administration time of between 5 and 10 minutes. Both Mini-Cog and SLUMS have been tested and have sufficient clinical sensitivity and specificity (Sheehan, 2012). Because there was no gold standard on which cognitive screening tool should be used in dementia screening, PCPs could use any available cognitive screening tools of their choice. Apart from the psychometric properties of the screening tools, other characteristics such as administration time, reliability, and practicality are also important to take into account (Appels & Scherder, 2010).
**Phase 1: Educational Session**

Nurse practitioners were educated by the DNP student in administering the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006). A PowerPoint was made to explain both tools. Copies of the PowerPoints were supplied to all NPs. A one-hour meeting was scheduled for educational purposes wherein each tool was explained with some extra time for NPs to practice using both tools.

**Phase 2: Evaluation**

Individuals eligible for screening were those before age 65 who brought up cognitive issues to the family or PCP, the patient whose family or caregiver had some concerns toward a patient’s cognitive function, and those who were age 65 and older. Those patients verbally consented or had another designated person who had power of attorney to verbally consent for the screening. Participation was voluntary without extra cost to patients or patients’ healthcare insurances. Nurse practitioners needed to have knowledge about using these screening tools (Mini-Cog, 2018; SLUMS [Saint Louis University, 2006]). The cognitive screening tool needed to be easy to administer so NPs could understand and easily ask the questions listed on the cognitive screening tool. Questions on the cognitive screening tools could be easily misunderstood and misused (Sheehan, 2012). This could cause frustration with NPs as well as the patients while also wasting appointment time. Practical to use often depended on the tool being brief so it could be used in this busy clinic while not overwhelming the participants with long interviews (Sheehan, 2012). Having proper, easy to administer, and practical to use instruments would be valuable for screening dementia.
To evaluate the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006) for ease of use and duration of administration time (practicality), the DNP student created two instruments: the Data Intake Form (see Appendix C) and the Family Medical Center (FMC) Providers Rating Tool (see Appendix D). Details for both instruments are reviewed further in the Instrumentation section. Nurse practitioners used both the Mini-Cog and SLUMS for every dementia screening. The DNP student provided simple instructions on which dementia screening tool the NP would use first. Each time the dementia screening was done, NPs would write down the duration of administration time of the Mini-Cog and SLUMS on the Data Intake Form. At the end of each screening, NPs completed a survey by answering questions on the FMC Providers Rating Tool. Expert opinions from NPs on the ease of use and duration of administration time (practicality) were collected using a 5-point Likert scale that had been validated. Data collection using the Likert scale consisted of scoring each survey response separately. Scoring of each survey response was collected quantitatively and the DNP student reviewed those scores. Comments at the end of the survey were collected by the DNP student to find out why NPs preferred one tool over the other.

The goal was for the NPs to realize while performing the dementia screening which of the screening tools, the Mini-Cog (2018) or SLUMS (Saint Louis University, 2006), was easiest to administer without causing confusion to the patients/family or the NPs themselves while taking the least amount of time for administration.

**Project Setting**

The DNP scholarly project was implemented at a busy primary care setting located in western Colorado. The clinic sees a range of patient populations from
newborn to elderly patients. The clinic opens from 8:30 a.m. until 5:30 p.m. There are seven physicians who are attending for the residents and there are also five nurse practitioners. Nurse practitioners see the majority of the patients in the clinic. Three NPs work four days a week and two NPs work five days a week. Nurse practitioners are scheduled to see 16 to 20 patients daily. The clinic has a geriatrician who only sees patients at the clinic two days a week. In 2011, Medicare added detection of cognitive impairment as part of the AWV benefit for Medicare beneficiaries (USPSTF, 2014). These visits are paid by Medicare for patients who are 65 years or older; these patients can see either an NP or a geriatrician. Due to the lack of NPs’ knowledge in conducting cognitive screening, the geriatrician did the majority of the AWVs. The AWV is conducted Tuesday mornings only.

**Project Sample**

The sample of the DNP scholarly project was NPs who worked at the clinic. Nurse practitioners should be able to utilize the cognitive screening tools confidently if proper education was provided. Lack of knowledge in dementia care and in using cognitive screening tools properly are a few factors why dementia is underdiagnosed in primary care settings (Bradford et al., 2009; Yokomizo et al., 2014). To evaluate the use of the tools, the project also needed participation from elderly patients who were 65 years and older, from patients who were younger than 65 years old who expressed concern with their memory or cognitive function, or from family or caregivers who had concerns that their loved one had some cognitive impairment. Patients’ participation was needed so NPs could compare the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006). Participation was voluntary and anonymous without extra cost to the patient or a patient’s
healthcare plan. The patient or the designated person who was the power of attorney gave consent to participate. A patient’s personal information was not required or disclosed in this DNP scholarly project. Those known to have any confirmed diagnoses of any type of dementia or MCI were excluded as well as anyone with diagnosed psychiatric or cognitive issues because those could impair or skew results of the screening. Depression, anxiety disorder, post-traumatic stress disorder, or any mental health issues are examples of psychiatric exclusions. Examples of cognitive issues that were excluded for participation are traumatic brain injuries, autism, down-syndrome, any developmental disorder, or any type of neurocognitive disorder that prevented the patient from participating.

**Organization Mission and Vision**

“To improve lives” is the organization’s mission at the clinical site where the DNP scholarly project was conducted. Routine dementia screening in elderly patients in a primary care setting could help improve lives--not only patients who were at risk for MCI or had dementia but also the lives of patients’ family/caregivers. The burden of dementia on family/caregivers is overwhelming. It is estimated that 16 million family/caregivers in the United States provide unpaid care for their loved ones with dementia (Alzheimer’s Association, 2018). Early recognition could help the patient and family to anticipate and plan for the future. Expressing personal wishes for future care or assigning someone who should make decisions when the patient is no longer able are important topics to be discussed in the early stages of dementia. The Alzheimer’s Association (2018) estimated these family/caregivers provided an estimated 18.4 billion
hours to care for their loved ones with dementia. Evidence has shown family/caregivers of patients with dementia received less support and their resources were more limited.

“From health care to health” is the vision of the organization where the DNP scholarly project was conducted. Even though there is no cure for dementia, early recognition of cognitive impairment would allow PCPs to anticipate problems patients might have with adhering to recommended therapy (Moyer, 2014). Early recognition of dementia facilitated by routine screening might allow proactive and appropriate treatment or even comprehensive management to start at early stages of dementia. The health of family/caregivers of patients with dementia also needs to be considered. If patient and family/caregivers are aware of the diagnosis and have some kind of preparation for the future, there could be less stress and burden could be alleviated, which could improve health overall and reduce health care costs in this country.

**Project Plan**

**Preparation Plan**

The DNP student approached the Director of a busy local primary care clinic where the DNP scholarly project was going to be conducted. The DNP student initiated a conversation about dementia and its routine screening. During the conversation, the DNP student provided recent literature and statistical evidence on how dementia is a burden to the patient, family/caregiver, population, and healthcare system. The DNP student then explained the scholarly project she had in mind. The Director expressed how supportive she was toward this DNP scholarly project and with the aging population felt the project would help increase awareness for routine dementia screening. The Director provided
approval for this local primary care clinic to be the site where the DNP scholarly project was conducted.

Before starting the DNP scholarly project, the DNP student was required to defend the DNP scholarly project. After the defense, the DNP scholarly project was submitted to the University of Northern Colorado’s (UNC) Institutional Review Board (IRB) and approval was obtained before implementation began (see Appendix E).

**Implementation Plan**

An educational PowerPoint was created (see Appendices F and G). Key points in the PowerPoints were explained during the educational session along with instructions on how to use the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006). All NPs were educated by the DNP student. A time was assigned at the end of the PowerPoint education for questions and practice time so NPs could practice using these tools during the education session. A short written script was created (see Appendix H) by the DNP student so all NPs had consistency in approaching and describing the project to participants. The NPs described the DNP scholarly project in simple terms so potential participants with all levels of education could understand. It was distinctly stated in the script that participation was voluntary, anonymous, and free of charge. If participants were willing to voluntarily take part, participants were required to provide consent (see Appendix I).

During the implementation process, the DNP student also collected data to compare the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006). Comparison was based on the expert opinions of the end users— the NPs. The goal was to find a dementia screening tool that was easy to administer and practical to use. The plan was
for NPs to perform routine dementia screening in all qualifying elderly patients who had scheduled appointments. The NPs used the written script (see Appendix H) to describe the DNP scholarly project to qualifying patients. Either the Mini-Cog or SLUMS exam tool was used for each patient. The DNP student rotated on which dementia screening tool was used first. Simple instructions (see Appendix J) were provided inside the dementia screening folder on which tool the NP should use first to screen the patient. A small timer assigned to each NP was attached to the clipboard and the dementia screening folder. The folder consisted of the NP’s written script (see Appendix H), both screening tools (Appendices K and L), simple instructions on which dementia screening tool the NP should use first (see Appendix J), the Data Intake Form (see Appendix C), and the FMC Providers Rating Tool (see Appendix D). Once the NPs completed the screening, each NP placed the package, the clipboard, and the timer inside their individual office mailbox located at the nurse station. The DNP student collected the packages on Friday evening. The DNP student planned to be at the clinic during the first week of the implementation to answer any questions.

**Duration of the Project and Timeline**

The DNP scholarly project timeline was just over one year in length beginning with the development of the topic of interest and ending with the final project defense. The project started in October 2018, during which time the clinic site was assessed. It was also during that same period of time that the DNP student started an email conversation with the Director of the clinic. In December 2018, the DNP student had a meeting with the Director of the clinic. A couple of months later, approval from the Director of the clinic was obtained (see Appendix M).
Timeline of Project Phases

- October 2018--Clinical site informal visit
- December 2018--Started with the idea of the DNP scholarly project
- December 2018--Established the chair for the DNP scholarly project and the rest of the committee members
- December 2018--Started developing the proposal for the DNP scholarly project
- December 2018--Had a meeting with the Director of the clinical site for the DNP scholarly project
- January 2019--Worked with previous chair of the DNP scholarly project and continued working with the proposal
- January 2019--Started the IRB online certification
- February 2019--Continued working with previous chair of the DNP scholarly project while working with the rest of the IRB certifications
- Beginning April 2019--The new chair of the DNP scholarly project was established, started, and continued working with the current chair to complete the proposal for the DNP scholarly project
- Last week of April 2019--The DNP scholarly proposal defense
- First week of May 2019--Submitted the DNP scholarly project to UNC’s IRB
- Middle of May 2019—Implementation of the DNP scholarly project at the clinic site
- Beginning of June 2019—Completion of the last two chapters of the DNP scholarly project
• Middle of June 2019--Met with the DNP scholarly project committee members

• The last two weeks in June 2019--Requested final defense of the DNP scholarly project

• Late June of 2019--Final defense of the DNP scholarly project

**Instrumentation**

To measure the outcomes of the DNP scholarly project, the following instruments were used: Mini-Cog (2018; see Appendix K), SLUMS (Saint Louis University, 2006; see Appendix L), Data Intake Form (see Appendix C), and FMC Providers Rating Tool Instrument (see Appendix D).

**Mini-Cog**

The Mini-Cog was developed as a brief cognitive screen suitable for primary care settings (Ebell, 2009). The Mini-Cog (2018) incorporates the clock-drawing test and a three-item delayed word recall test. Recalling three unrelated words was part of the memory test. The memory test component was needed because memory loss is a core symptom of dementia and develops early on with AD (Sheehan, 2012). The clock drawing was included as a distractor for the memory task and also reflected cognitive competence of the patient. The Mini-Cog is a short three-minute test suitable for screening dementia in primary care settings (Sheehan, 2012). The Mini-Cog was developed to be used for all cultures and ethnicities. It is simple and relatively free of language, educational, and cultural biases (Ebell, 2009). Based on several studies, the sensitivity ranges from 60% to 99% (Carnedo-Pardo et al., 2013; Cullen et al., 2007;
Lorentz et al., 2012). While the Mini-Cog could identify some MCI, not enough data support its use in detecting MCI.

Saint Louis University Mental Status

The SLUMS (Saint Louis University, 2006) exam is a brief dementia screening tool that does not require family or caregiver information (collateral informant). It assesses orientation, memory, attention, and executive functions in a short amount of time. The SLUMS exam was found to have excellent sensitivity (92%) and specificity (81%) in older patients irrespective of their education level and was superior at detecting individuals with mild neurocognitive disorders (Tariq et al., 2006).

Data Intake Form

The DNP student created and used the FMC Dementia Quality Improvement Project--Data Intake Form as an instrument to record the duration of administration time for each of the dementia screening tools—the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006). The Data Intake Form consists of the date, age of the patient, the level of education of the patient, and a Yes/No section for the consent, which should be obtained prior to the dementia screening from the patient or another designated person who has power of attorney. The Data Intake Form also has sections for duration of administration time and a score for each of the Mini-Cog and SLUMS tools. During the dementia screening, NPs filled out each section on the Data Intake Form.

Family Medical Center Providers Rating Tool

The FMC Providers Rating Tool was used for evaluating the ease of use and practicality of the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006) in this DNP scholarly project. The FMC Providers Rating Tool is an investigator-developed
tool that gathered information about NPs’ ratings in using both the Mini-Cog and SLUMS. It consisted of five questions and a Likert scale for the responses with one section where NP could write comments on which dementia screening tool the NP thought outperformed the other. Each question had a range of answers to determine the ease of use and practicality for both tools (the Mini-Cog and SLUMS). Providers did not put their names or other personal identification on the instrument and selected only one response per question.

A 5-point Likert scale was used in the DNP scholarly project to collect feedback from the NPs regarding which one of the screening tools was easy to administer and practical to use. The responses to choose from were as follows in order: 1=Very Poor, 2=Poor, 3=Fair, 4=Good, and 5=Very Good.

The Likert scale is commonly used in public health evaluation (Centers for Disease Control and Prevention, 2012) and is a valuable part of research. A Likert scale is an ordinal scale from which respondents choose one best option that aligns with their view (McLeod, 2008).

**Method of Analysis**

The method of analysis of the evaluation data was descriptive in nature. Data were collected from routine dementia screenings. Data were organized with the focus of the DNP scholarly project based on the PICOT formula: easy-to-administer and practical-to-use that takes less than 10 minutes to administer. The DNP student created a survey that used a 5-point Likert scale (see Appendix D) to determine which dementia screening tool NPs considered easiest to administer and practical to use.
The Likert scale allowed for degrees of opinion by using quantitative data. Offering anonymity on self-administered questionnaires reduced social pressure and social desirability bias (McLeod, 2008). Analysis of NPs’ surveys was done by providing a descriptive report of the results obtained from the FMC Provider Rating Tool. Data from the administration of the screening tools were compiled from the Data Intake Form to determine the quantity of positive screenings; these patients were referred to see a geriatrician in the clinic if preferred by the patient and family/caregiver.

Both the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006) had been validated in a few studies and both had high sensitivity and specificity (Sheehan, 2012). Therefore, the sensitivity and specificity of the tools utilized in this DNP scholarly project were not analyzed further. The Data Intake Form and the FMC Providers Rating Tool were both investigator-developed tools to gather information about NPs’ ratings in using both the Mini-Cog and SLUMS dementia screening tools.

**Ethical Consideration**

Prior to implementing the DNP scholarly project, approval was obtained from the University of Northern Colorado’s (UNC’s) Institutional Review Board (IRB) and UCHealth’s IRB where the DNP scholarly project was implemented. Implementation started as soon as approvals were obtained (see Appendix E). The Director of the clinic provided an approval for the DNP scholarly project (see Appendix M). All NPs were on board. Participants who voluntarily participated provided verbal consent during the screening. Even though no patient identifier, personal, and/or health data were used during this DNP scholarly project, the DNP student and all personnel who implemented the DNP scholarly project followed the Health Insurance Portability and Accountability
Act of 1996 (HIPAA). All participants were protected by HIPAA, which protects the privacy of patient’s health information (Federal Register, 2013).
CHAPTER IV

DATA ANALYSIS AND RESULTS

The DNP scholarly project was a non-experimental study with two objectives. The first objective was to provide education for NPs on how to use the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006). The second objective of the DNP scholarly project was to compare the Mini-Cog and SLUMS to find one that was easy to administer and practical to use with an administration time of 10 minutes or less.

Outcomes of Objectives

Objective One

After the IRB approvals were obtained, the DNP student implemented the first objective of the DNP scholarly project by initiating an education meeting. The education meeting was implemented for one hour during lunch time. Prior to meeting all NPs, the DNP student emailed the educational PowerPoint along with all items that were part of the dementia screening folder. The education meeting was very well received. All five NPs attended the education meeting and participated by asking questions and practicing on utilizing both dementia screening tools (the Mini-Cog [2018] and the SLUMS exam tool [Saint Louis University, 2006]). The NPs also acknowledged having read the email with the educational PowerPoint attachment that was sent by the DNP student prior to the education meeting, which they found was very helpful. A majority of the education time was spent discussing how to use and score both dementia screening tools and doing some
hands-on practicing. Implementation of the DNP scholarly project was also discussed regarding how to make the workflow as smooth as possible.

The time used to practice both tools was very much appreciated by NPs. Afterward, NPs admitted to having more confidence in their skills and knowledge while being more comfortable in screening for dementia in elderly patients. Since the NPs were more comfortable in performing the dementia screening, two NPs in particular approached the Director of the clinic to discuss their willingness to see patients for their AWVs on their regular schedules. The clinic has five NPs--three NPs work four days a week and the rest work five days a week. The Director brought up the idea for each NP to pick one day of the week to perform AWVs.

**Key facilitators.** The NPs found the educational PowerPoint very helpful along with the one hour education meeting. Sending the educational PowerPoint out prior to the meeting was beneficial as it allowed the NPs to be able to read about the dementia screening tools while preserving precious “hands-on time” for the education meeting to be spent practicing and asking questions so they could become familiar with both screening tools. The NPs informally reported that they appreciated the education and information given during the meeting.

**Key barrier.** The barrier associated with this intervention was minor—finding time for the education meeting was quite challenging. All NPs had different schedules while three NPs worked only four days a week. Therefore, the decision was made to have an education meeting during lunch time where all would have time to meet at the same time.
Objective Two

All NPs informally agreed to participate and provided consent (see Appendix I). For every dementia screening that was done, NPs used the written script to describe the DNP scholarly project to qualifying patients (see Appendix H). The NPs admitted the written script was very useful and straightforward in explaining the DNP scholarly project to patients and family/caregivers. The DNP student was at the clinic on the first week of the implementation to assist and answer questions. She looked in advance at the NPs’ clinic schedules and prepared the dementia screening folders ahead of time. The DNP student reminded NPs about the possibility of having qualifying patients in the clinic, which was a very helpful reminder. She alternated the dementia screening tool each NP had to use first by providing a simple instruction inside the dementia screening folder. Two instruments were created by the DNP student to help facilitate the screening—the Data Intake Form and the FMC Providers Rating Tool.

Data intake form. The Data Intake Form was used to record the duration of administration time and the score of each screening. A total of 17 patients consented to participate for this project. Two participants tested positive for MCI--these two patients had consented and were referred to the geriatrician in the clinic.

Key facilitators. The Data Intake Form is self-explanatory and did not require any further education or additional instruction on how NPs should utilize the Data Intake Form. The NPs reported they appreciated the short and concise questions asked on the Data Intake Form.

Key barriers. The significant barrier associated with this intervention was the limited number of qualifying patients who participated. The NPs commented that they
saw fewer patients in general during the summer season due to the end of school as many patients and family were away for summer break. Also, with the Memorial holiday weekend along with graduation days in the month of May, a couple of NPs had taken paid time off.

Looking at five NPs’ clinic schedules, 101 elderly patients had been scheduled from May 21 to June 9 of 2019. However, only 72 patients were qualified to participate. Fourteen patients did not show up for their appointments at all. Only 17 patients (29%) who participated from 58 qualified patients came to their appointments. Altogether, the NPs reported that they asked all 58 qualified patients if they wanted to participate in dementia screening. Some of the patients were not interested in spending their appointment times doing the screening as they had more issues to be addressed during their appointments. Some patients stated they were under time constraints or they did not have extra time for the screening. A few patients commented about not having incentives to participate.

**Family Medical Center providers rating tool.** The FMC Providers Rating Tool was used to gather information about the NPs’ ratings of both screening tools (the Mini-Cog [2018] and SLUMS [Saint Louis University, 2006]). It consisted of five questions with one section where NPs could write comments on which dementia screening tool they thought outperformed the other. This survey was measured on a 5-point Likert scale from 1 = *Strongly disagree* to 5 = *Strongly agree*. Seventeen surveys were filled out; this number matched with the 17 patients who participated in this DNP scholarly project.

In terms of time of administration (practicality), 15 surveys rated the Mini-Cog as very good and two surveys rated the Mini-Cog (2018) as good. For the SLUMS exam
tool (Saint Louis University, 2006) in terms of time of administration, two surveys rated it as very good, 12 surveys rated the SLUMS exam tool as good, two surveys rated it as fair, and one survey gave the SLUMS exam tool a poor rating.

In terms of ease of administration, all 17 surveys considered the Mini-Cog (2018) as very good. In terms of ease of administration for the SLUMS (Saint Louis University, 2006) exam tool, two surveys considered the SLUMS exam tool as very good, 11 surveys considered the SLUMS as good, three surveys considered the SLUMS exam tool as fair, and one survey considered the SLUMS exam tool as poor.

From 17 surveys, only two NPs reported the SLUMS (Saint Louis University, 2006) exam tool outperformed the Mini-Cog (2018). The rest (15 surveys) reported the Mini-Cog outperformed the SLUMS because it was “short and easy.”

One NP indicated the SLUMS exam tool was “too time-consuming.” One NP commented: “There are too many questions in the SLUMS exam tool. Who has time to use this tool?” However, two other NPs provided further comments that the SLUMS exam tool “could give more information in detecting mild cognitive impairment due to the many questions” it asked.

Of note was the SLUMS (Saint Louis University, 2006) exam tool was able to identify mild neurocognitive impairment in two patients with scores of 24 and 26 who both had high school education while the Mini-Cog did not (scores of 4 and 5, respectively).

**Key facilitators.** There were no issues in using the FMC Providers Rating Tool. The NPs appreciated the shortness of the survey with one section where they could put comments. No further instruction was needed during the implementation. The NPs
informally reported they appreciated the early education meeting as it helped them utilize both tools in screening dementia for qualifying patients as they were more fluent in using both tools in a limited appointment time. The NPs also commented to the DNP student that the period of time for implementing the DNP scholarly project was appropriate and sufficient as they did not think their responses and comments on both dementia screening tools would have changed with more screening if the DNP scholarly project was extended.

**Key barriers.** One barrier for achievement of this objective was much the same as with the barrier in utilizing the Data Intake Form with regard to limited participation from qualifying patients. Another barrier reported by NPs was the challenge for even high school graduate qualifying patients to do the calculation on the question from the SLUMS (Saint Louis University, 2006) exam tool. One NP mentioned a barrier of drawing the clock during the screening. The NPs reported a few of the patients did not have their reading glasses with them and a couple patients had no idea how to put the hand of the hour and the minute on a certain time even though these patients were not having cognitive function deficits.

**Unintended Consequences**

This DNP scholarly project had the overall intention of educating NPs on how to use both dementia screening tools (the Mini-Cog [2018] and the SLUMS [Saint Louis University, 2006]) as well as to incorporate the importance of routine dementia screening in primary care settings. Seasonal timing of this quality improvement project and lack of incentive to participate contributed to the limited participation of qualified patients. Another unintended consequence of this DNP scholarly project was the increased work
for NPs at the practice and decreased patient’s appointment time as both dementia screening tools took at least 20 minutes to administer, which took half of NPs’ appointment times. Each NP had 40 minutes of appointment time to see one patient. The workload increased with this DNP scholarly project; for some NPs, this might have affected the amount of time needed to evaluate a patient’s main reason for the visit. There was no way of predicting the unintended consequences of the DNP scholarly project but it was assumed the NPs would receive the benefits of this quality improvement project for the DNP scholarly project.
CHAPTER V

DISCUSSION

Summary

This evidence-based, non-experimental DNP scholarly project sought to evaluate a screening process to recognize dementia early in primary care settings. The quality improvement aspect of the DNP scholarly project delved into the need for further education on dementia and how best to recognize dementia early by performing routine dementia screening in primary care settings. Due to the number of patients seen and their primary complaints, the primary care setting can be a fast-paced environment where PCPs could mis-diagnose or fail to diagnose dementia. Knowing how to recognize cognitive impairment and possible dementia during patients’ visits could help patients get further testing and increase their quality of life.

The NPs of the local primary care clinic were generous with their time by participating and providing feedback on the practitioner survey after each screening was completed. Survey feedback indicated the Mini-Cog (2018) was the screening tool thought to be the easiest to use and most practical. The NPs’ full participation showed they were eager to learn more about dementia and to have more knowledge on dementia screening tools. A few NPs had discussed with the Director of the clinic that they are willing to see patients for their AWV in the future. This was a great contribution to the clinic as Medicare not only paid the geriatrician but also paired the NPs to perform the
AWV. This meant the geriatrician in this clinic could utilize his clinic time for evaluating and performing further tests on patients who tested positive on dementia screening done by NPs. The survey also showed the providers in the primary care clinic indeed needed a dementia screening tool that was easy to use, practical, and sensitive in detecting cognitive impairment. The Mini-Cog was chosen as the tool that outperformed the SLUMS (Saint Louis University, 2006) exam tool due to its practicality and ease of use. However, the Mini-Cog was not sensitive enough to detect mild cognitive impairment in two patients in this clinic. The DNP scholarly project further concluded PCPs were looking for one dementia screening tool that was easy to use, was practical, but was sensitive to detect MCI or dementia in elderly patients.

**Limitations**

Barriers mentioned in Chapter IV were considered limitations to this DNP scholarly project. The first barrier was time. Finding education time for all NPs to meet was quite a challenge. In discussing with the Director of the clinic, lunch time was typically the only time when all providers could meet and discuss projects or issues. The NPs commented that screening dementia using both tools, as requested in this DNP scholarly project, took half of their patients’ appointment time. Therefore, patients were hesitant to participate as they then had less time to discuss the main reasons why they had made their appointments.

Second barrier was only 17 patients (29%) out of 58 qualifying patients were willing to participate. A few NPs mentioned patients did not want to participate because there were no incentives to participate in this DNP scholarly project. If this DNP scholarly project were to be reimplemented, the next step would be to modify the project
by asking the Director of the clinic to provide additional appointment times to qualifying patients. Also, a drawing for a gift card in order to get more patients to participate would be something to consider.

**Recommendations for Future Research**

Clearly, increasing the awareness of the primary care providers in recognizing dementia early would be helpful, especially to newer PCPs. Having knowledge of dementia itself and updated continuing education on dementia screening tools could help PCPs to quickly identify cognitive impairment in their patients. Although it did not recommend routine screening, the USPSTF (2014) recognized the use of cognitive screening tools that could increase the detection of cognitive impairment (Moyer, 2014). Even though many available cognitive screening tools are available, it is important for PCPs to familiarize themselves with one or two dementia screening tools that are easy to administer, practical to use, have higher sensitivity, and are specific to detecting cognitive impairment. Future research is needed to find one universal dementia screening tool that is easy to use, practical, and takes less than 10 minutes to administer.

**Attainment of Personal Leadership Goals**

This DNP scholarly project offered a great learning experience for the researcher and hopefully for the NPs at a local primary care clinic with constructive and useful information. This DNP scholarly project offered valuable insights on barriers to diagnosing dementia and barriers to using one dementia screening tool that was universal and consistent with current literature. Therefore, the DNP scholarly project had two objectives. The first objective was to educate NPs on how to use the Mini-Cog (2018) and SLUMS (Saint Louis University, 2006) exam tools to address the gap in practice
through screening eligible individuals as well as to incorporate the importance of routine
dementia screening in primary care settings. The second objective was to find the tool
between the Mini-Cog and SLUMS exam tools that was easy to use and practical. This
DNP scholarly project provided the researcher with a better understanding on how to
begin a project within a specific setting, assess the need, and apply a specific method to
analyze the data obtained. This DNP project also offered the researcher an understanding
on how to execute an extensive literature review, which was needed for the evidence-base
for the project in any scholarly setting, as well as use of the Stetler (2001) framework.
The experience of this DNP scholarly project was a professional growth opportunity that
resulted in an awareness of challenges in diagnosing and screening a specific health
problem in a specific population, e.g., dementia in an elderly population. This DNP
scholarly project helped the DNP student exhibit a skill set with breadth of knowledge,
leadership, and problem-solving ability needed as an advanced practice nurse in today’s
dynamic field of healthcare environment to make even the smallest changes that could
lead to a meaningful impact in the community and nation.

It was the goal of this DNP student to work toward shifting the focus to primary
screening in population health settings so the DNP student could have a substantial
impact on the community by making differences in the lives of affected individuals.

**Essentials of Doctoral Education for Advanced Nursing Practice**

According to the American Association of Colleges of Nursing (AACN, 2006),
the goal of the DNP degree is to cultivate nursing professionals as experts in their
practice. The AACN identified eight essential areas of content in the DNP degree. Many
of these essentials were integrated into this DNP scholarly project, demonstrating the
extensive knowledge obtained by the DNP student in the completion of the DNP scholarly project as the final requirement of the degree.

- Essential I: Scientifics underpinning for practice,
- Essential II: Organizational and systems leadership for quality improvement and system thinking,
- Essential III: Clinical scholarship and analytical methods for evidence-based practice,
- Essential IV: Information systems/technology and patient care technology for the improvement and transformation of health care,
- Essential V: Health care policy for advocacy in health care,
- Essential VI: Interprofessional collaboration for improving patient and population health outcomes,
- Essential VII: Clinical prevention and population health for improving the nations’ health,

The literature review met Essentials I, II, IV, and V. Essentials I and II were met by integrating nursing science with the research literature in this DNP scholarly project. The DNP scholarly project embodied the mission of the organization of the clinic and identified an area for quality improvement in dementia screening for elderly patients in the primary care setting. This was completed by partnering with the clinic to improve the quality of lives of patients and family/caregivers.
Essentials III and IV focused on utilizing the analytical methods for evidence-based practice, using technology for the improvement and transformation of health care, and translating evidence into practice to address an identified gap in practice.

Essential V defines healthcare policy as advocacy in health care within the DNP role (AACN, 2006). This DNP scholarly project did not impact healthcare policy; rather, it advocated to improve the overall health of people (patients and family/caregivers).

Essentials VI and VII focused on the goal of the DNP scholarly project to improve patient and population health outcomes by performing a dementia screening in elderly patients so early recognition could improve quality of lives of patients who were affected. Thus, the DNP scholarly project improved the health of the nation by helping affected patients and family/caregivers to plan for the future once the dementia diagnosis had been confirmed.

Finally, Essential VIII was met by the completion of the DNP scholarly project. Through the project design, implementation of surveys, and evaluation of the data, the DNP student exemplified scholarly work at the doctoral level through this DNP scholarly project. As a result, this DNP graduate was able to “demonstrate advanced levels of clinical judgment, systems thinking, and accountability in designing, delivering, and evaluating evidence-based care to improve patient outcomes” (AACN, 2006, p. 17).

Enhances, Culmination, Partnerships, Implements, and Evaluation Guideline

Waldrop, Caruso, Fuchs, and Hypes (2014) created EC as PIE to ensure high-quality rigor of the DNP scholarly project: Enhances, Culmination, Partnership, Implements, and Evaluation). To execute a successful DNP scholarly project, these five criteria must all be present to complete a pie (see Figure 2).
The first criterion was what the DNP student must do to enhance health outcomes, practice outcomes, or health care policy (Waldrop et al., 2014). This DNP scholarly project recognized the need for routine dementia screening for early recognition of cognitive impairment or dementia that could lead to earlier appropriate treatment and improving the quality of life of those affected. The gap of knowledge concerning dementia in primary care settings was found in literature review including the lack of knowledge from PCPs about dementia itself and available dementia screening tools. Recognizing the need for dementia screening would lead to enhanced health outcomes for the patients and family/caregivers.

The second criterion, which was the culmination of the DNP scholarly project, was performed by the DNP student. The inquiry into knowledge should be “pragmatic and practical, likely to be used in the real-world setting in a timely, reproducible, and
sustainable fashion” (Waldrop et al., 2014, p. 302). The DNP student became an expert in the subject matter of dementia screening via the literature review where she identified gaps in the literature and used a pragmatic method to determine the inquiry basis of this DNP scholarly project.

The third criterion required the DNP student to fully engage in partnerships. The partnerships among the DNP student, the NPs, and the Director of the clinic were evident by having a successful implementation of the DNP scholarly project. These inter-professional partnerships made this DNP scholarly project possible by sharing information on personal and professional knowledge that included challenges to recognize mild cognitive impairment in elderly patients and challenges to have the knowledge and time to take the extra step by performing the dementia screening. Future partnerships could also influence a clinic policy change and the standardization of NPs to perform routine dementia screening in the clinic.

The fourth criterion entailed translating evidence into practice by applying or implementing the data. The DNP student collected data and evidence from the literature review and then translated them into best practice in this DNP scholarly project by performing routine dementia screening in elderly patients in primary care settings. Future implementation of the DNP scholarly project could also happen by having future partnerships standardize NPs performing routine dementia screenings in this clinic.

Lastly, the fifth criterion was the evaluation of the DNP scholarly project, which was needed to measure the outcomes. As mentioned earlier, this DNP scholarly project was a non-experimental study with limitations of data collection. Further research and education are needed to find a highly sensitive universal dementia screening tool that is
easy to use, practical, and has an administration time of less than 10 minutes. Improvement could be made in primary care clinics by increasing PCPs’ awareness to screen for dementia. Improvement could also be made by PCPs having knowledge of dementia itself and being familiar with one or two dementia screening tools. In addition would be educating patients and family/caregivers on how to pay more attention to some changes in cognitive function and to bring those issues to their PCPs as having some mild cognitive impairment is not a normal process of aging.

**Conclusion**

Even though research has shown it can be challenging for PCPs to detect dementia early on, PCPs are typically the first contact patients see when health issues arise. Primary care providers might be better suited to performing routine dementia screening where they can quickly spot some cognitive changes in patients because of the continuity of care in primary care settings. In addition, patients are more likely to discuss healthcare issues, such as cognitive concerns, with a provider patients know and trust (Alzheimer’s Association, 2018). Early recognition of dementia could be achieved by performing routine dementia screening. In this busy clinic, however, NPs see the majority of patients and play a role in detecting changes in a patient’s cognitive functions. Thus, there is a need for one dementia screening tool that is practical and easy to use in a busy primary care setting.

No specific guidelines are available for screening dementia in older adults in primary care settings. However, Perkins et al. (2016) agreed that routine dementia screening is needed in primary care settings and dementia screening does not cause harm. Successful dementia screening in a primary care setting depends on the choice of a
dementia screening tool, PCPs’ knowledge in using the screening tool, the level of functioning of the targeted population, the level of education of the population, and the mode of administration. Routine dementia screening is the cornerstone of early recognition of cognitive impairment. Increasing PCPs’ awareness and knowledge on how to use dementia screening tools is an important step that should be taken to help them feel confident with screening dementia in elderly patients.

Obtaining history from the patient is the initial step in the evaluation of a patient with suspected dementia (Larson, 2018). Primary care providers should obtain a careful and detailed history from the patient and family/caregivers with particular emphasis on cognitive function and activities of daily living. The role of PCPs is also to exclude a potential treatable illness that might impair a patient’s cognitive function, i.e., depression, infection, vitamin B12 deficiency, or thyroid dysfunction. Cognitive impairment might be related to medical conditions; these conditions have to be explored further as they could be modified or reversed with treatment (American Psychiatric Association, 2000).

Once they have been diagnosed with dementia, patients and families can access appropriate support, treatment, and also plan for the future by making their wishes known while they still have the mental capacity to do so (Robinson et al., 2015). Advanced care planning that includes the completion of an advance directive or living will has been shown to reduce inappropriate hospital admissions toward the end of life in dementia patients (Robinson et al., 2015). Early interventions tailored to patients with dementia could improve quality of care, increase access to community services for patients and their caregivers, reduce unfavorable dementia-related behaviors-outcomes that all resulted in less stress and depression to caregivers (Olazaran et al., 2010). These will not
only reduce health care costs that must be paid by health care insurances and governmental organizations but also reduce costs in both primary care settings and long-term care.
REFERENCES


APPENDIX A

EVIDENCE TABLE
## Plan and Record for Literature Search

<table>
<thead>
<tr>
<th>Database searched</th>
<th>Date of search</th>
<th>Search Strategy and limiters</th>
<th>Number and Type of articles found</th>
<th>Estimate of relevant Articles</th>
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<td>1/10/10</td>
<td>Research within 15 years, English, full-text availability</td>
<td>2</td>
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<td>PsycExtra</td>
<td>1/10/19</td>
<td>Research within 15 years, English, full-text availability</td>
<td>14</td>
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<tr>
<td>Pub Med</td>
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<td>Research within 15 years, English, full-text availability</td>
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<td>UpToDate</td>
<td>1/19/19</td>
<td>Research within 15 years, English, full-text availability</td>
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</tr>
</tbody>
</table>
APPENDIX B

LITERATURE SUMMARY TABLE
# Literature Summary Table

<table>
<thead>
<tr>
<th>Citation/Article</th>
<th>Problem</th>
<th>Purpose</th>
<th>Sample</th>
<th>Data collection and methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheehan, B. (2012). Assessment scales in dementia. <em>Therapeutic Advances in Neurological Disorders</em>, 5(6), 349-358. doi:10.1177/1756285612455733</td>
<td>Many scales have been devised</td>
<td>To assess psychometric properties of each short dementia screening tools</td>
<td>Not applicable</td>
<td>Well established dementia screening tools that are brief (under 30 min)</td>
<td>The Mini-Cog is a very short test (3 min) and it is suitable for primary care setting. The Mini-Cog has 76% sensitivity &amp; 89% specificity</td>
</tr>
<tr>
<td>Cordell, C., Borson, S., Boustani, M., Chodos, J., Reuben, D., Verghese, J., …Fried, B, L. (2013). Alzheimer’s Association recommendations for operationalizing the detection of cognitive impairment during the Medicare Annual Wellness Visit in a primary care setting. <em>Alzheimer’s &amp; Dementia</em>, 9, 141-150. doi:10.1016/j.jalz.2012.09.011</td>
<td>The USPSTF recognizes the use of cognitive assessment tool that can increase the detection of cognitive impairment. However, CMS does not recommend a specific assessment tool</td>
<td>To find the most efficient and brief dementia screening tool to be used among the older adult population who are at risk for Alzheimer’s disease.</td>
<td>Primary care population aged ≥65 years (N=3340).</td>
<td>Not applicable (n/a).</td>
<td>Many validated tools are available. However, the screening for dementia should not be solely based on a tool but should be a stepwise process to include other assessment. Further validation of existing tools is needed, and emerging screening tools may result in newer tools being recognized.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Description</td>
<td></td>
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<tr>
<td>Lorentz, W.J., Scanlan, J.M., &amp; Borson, S. (2012). Brief screening tests for dementia. Canadian Journal Psychiatry, 47(8), 723-733</td>
<td>There are many dementia screening tools in the literature. To compare various brief dementia screening tools to find the one that is brief, effective, easy-to-use, and reliable to be used routinely in primary care setting. Thirteen instruments that met the inclusion criteria (admit time of 10 min or less and performance characteristic that the tool had been evaluated in at least one community or clinical sample of older adults. Community sample of 249 diverse elderly with one-half of whom had dementia, &amp; one-half of whom were cognitively intact.</td>
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<tr>
<td>Tsoi, K.K., Chan, J.Y., Hirai, H.W., Wong, S.Y., &amp; Kwok, C.Y. (2015). Cognitive tests to detect dementia: a systematic review and meta-analysis. JAMA Internal Medicine, 175(9), 1450-1458</td>
<td>There are too many screening tests available, but all these tools have not been systematically evaluated. To evaluate the diagnostic performance of all cognitive screening tools to detect dementia. Study participants who were interviewed face to face (N=49,000) To compare the sensitivity, specificity, positive, and negative likelihood ratio. The Mini-Cog test is the best alternative screening test for dementia; The Montreal Cognitive Assessment is the best alternative for MCI</td>
<td></td>
<td></td>
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<tr>
<td>Milne, A., Culverwell, A., Guss, R., Tuppen, J, &amp; Whelton, R. (2008). Screening for dementia in primary care: a review of the use, efficacy, and quality of measures. International Psychogeriatric, 20(5), p. 911-926</td>
<td>Limited work had been done to evaluate screening tools for dementia. To offer a clinically informed synthesis of research &amp; practice-based evidence. A small-scale survey of participants from three primary care clinics The systematic review study integrates data from research &amp; clinical sources. The Mini Cog was found to be brief, easy to administer, clinically acceptable, effective, &amp; minimally effected by education, gender, &amp; ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seitz, D., Calvin, C., Newton, H., Gill, S., Hermann, N., Smailagic, N., Nikolaou, V., &amp; Fage, B. (2018). Mini-Cog for the diagnosis of Alzheimer’s disease and other dementias within a primary care setting. Cochrane Database of Systematic Reviews, 2, 1-43. doi: 10.1002/14651858</td>
<td>The need for a brief dementia screening instrument</td>
<td>To determine the diagnostic accuracy of the Mini-Cog for diagnosing dementia in primary care setting</td>
<td>Study participants in primary care setting that may or may not have dementia at baseline (N=1517)</td>
<td>Using the Quality Assessment of Diagnosis Accuracy Studies (QUADAS-2)</td>
<td>The Mini-Cog sensitivity (76%) with 24% of individuals with false negative. The specificity (73%) with 27% of individuals with false positive. Individuals who are tested positive on the Mini-Cog would likely to be evaluated with additional cognitive tests in primary care or referred to specialists for further evaluation.</td>
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<tr>
<td>Tariq, S.H., Tumosa, N., Chibnall, J.T., Perry, M.H., &amp; Morley, J.E. (2006). Comparison of the Saint Louis University Mental Status Examination and the MMSE for Detecting Dementia and Mild Neurocognitive Disorder</td>
<td>To find the most efficient and brief dementia screening tool in primary care setting</td>
<td>To compare between SLUMS and MMSE</td>
<td>Patients at the Veterans Affairs Geriatric Research, Education, &amp; Clinical Center in St. Louis, MO (N=702)</td>
<td>Sensitivity and specificity was calculated</td>
<td>Both tools were equally sensitive for identifying dementia individuals. However, SLUMS was superior at detecting mild neurocognitive disorder</td>
</tr>
<tr>
<td>Voss, V., Malmstrom, T.K., &amp; Morley, J.E. (2014) Validation of the Rapid Cognitive Screen (RCS) in Detecting Cognitive Dysfunction. Alzheimer’s &amp; Dementia, 10(4), p379-p380</td>
<td>A number of cognitive screening tests that take over 10 min to administer</td>
<td>To find a shorter tool that is sensitive or specific to detect cognitive impairment</td>
<td>Patients in between age 60 and 90 who are the patients from the Saint Louis University Geriatric Medicine Geriatric Psychiatric (N = 168)</td>
<td>Sensitivity and specificity was calculated</td>
<td>The 3-item RCS which is part of SLUMS may be a useful and very brief screening instrument for the detection of cognitive impairment in a busy clinic setting</td>
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<tr>
<td>No brief dementia screening tool is available</td>
<td>To examine the sensitivity and specificity of the RCS in detecting MCI and dementia</td>
<td>A randomized controlled trial using two studies. Study 1 participants were pulled from VAMC hospitals (N = 702; ages: 65-92). Study 2 – patients from Saint Louis Univ Geriatric Medicine &amp; Psych outpatient clinics (N = 168; ages: 60-90)</td>
<td>Logistic regression and the receiver operator characteristic curves were computed &amp; calculated</td>
<td></td>
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<tr>
<td>In study 1, RCS predicted dementia (89% sensitivity; 94% specificity) and MCI (87% sensitivity; 70% specificity). In Study 2, there was not any data of specificity and sensitivity except the comment that the RCS predicted dementia and MCI.</td>
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</tbody>
</table>
APPENDIX C
DATA INTAKE FORM
Date:

Age:

Level of Education:

Verbal Consent:  Y / N

Mini-Cog score:  Time of administration:

SLUM score:  Time of administration:
APPENDIX D

FAMILY MEDICAL CENTER PROVIDERS RATING TOOL
Please complete the following survey with specific answer to the above enquiry by placing a circle on the appropriate response that best applies to you.

Select only one response per question.

These responses are on a 5-point Likert Scale with 1 = strongly disagree; 2 = disagree; 3 = neither or not applicable; 4 = agree; and 5 = strongly agree.

Please do not write your name or other personal information on this survey. All responses are anonymous and will be kept confidential.

1. In terms of time of administration, how practical do you think the Mini-Cog screening tool is?
   - Very Poor
   - Poor
   - Fair
   - Good
   - Very Good

2. In terms of time of administration, how practical do you think the SLUMS exam tool is?
   - Very Poor
   - Poor
   - Fair
   - Good
   - Very Good

3. What is your rating of the Mini-Cog in terms of ease of administration?
   - Very Poor
   - Poor
   - Fair
   - Good
   - Very Good

4. What is your rating of the SLUMS exam tool in terms of ease of administration?
   - Very Poor
   - Poor
   - Fair
   - Good
   - Very Good
APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL
DATE: May 16, 2019

TO: Jeanette McNell, DrPH
FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [1432774-1] Dementia Screening in Primary Care Clinic: Quality Improvement Project to Identify Proper Dementia Screening Tool
SUBMISSION TYPE: New Project

ACTION: NOT RESEARCH
DECISION DATE: May 16, 2019
REVIEW TYPE: Exempt Review

Thank you for your submission of New Project materials for this project. The University of Northern Colorado (UNCO) IRB has reviewed your submission and determined that your submission is NOT RESEARCH for the following reasons:

Per 45 CFR 46.102(l), the project does not meet the federal definition of research. Research means a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge.

The activities as explained in package 1432774-1 do not require IRB oversight. However, if your procedures change, please contact the Office of Research & Sponsored Programs to determine if IRB approval is needed.

This project has received Exempt Review based on the applicable federal regulation.

If you have any questions, please contact Nicole Morse at 970-351-1910 or nicole.morse@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.
APPENDIX F

EDUCATIONAL POWERPOINT FOR MINI-COG
Mini-Cog
A three item recall and clock-drawing test

How to administer Mini-Cog?

1. Ask patient to listen carefully and to remember three words: car, dog, apple
   - Ask patient to repeat those three words back
   - Patients can have three tries to repeat those 3 words
   - If patients unable to repeat those words back AFTER 3 tries, go directly to the clock drawing
   - Then say to patient “Remember those three words. Now, we are going to do something else. Ready?”
How to administer Mini-Cog?

2. Ask patient to draw a clock
   - Provide patient the page 2 of the Mini-Cog instrument
   - SAY: Please PUT ALL THE NUMBERS IN THE CIRCLE
   - NOW set the nad to show ten past eleven
   - IF patient unable to finish the clock drawing in 3 min, discontinue this task, move on to next by asking patient to recall 3 words

How to administer Mini-Cog?

3. Ask patient to recall 3 words
   - SAY: What were the three words I asked you to remember?
   - Administer this portion of the test even patient was unable to accurately repeat the 3 words earlier in the first instruction
APPENDIX G

EDUCATIONAL POWERPOINT FOR SAINT LOUIS UNIVERSITY MENTAL STATUS EXAMINATION TOOL
SLUMS

Three orientation items
Nine reasoning items
Six memory items

How to administer SLUMS?

- Fill out last completed grade level, if completed college, indicate the degree obtained
- 1, 2, 3 Ask patient what day of the week, year, and state we are in (score 1 for one correct)
- 4. Ask patients to repeat & remember five objects (apple, pen, cow, house, car)
- 5. Ask patient: “if you have $100 and you go to the store and buy a dozen apples for $3 and a tricycle for $20, a) how much did you spend? —score 1 for correct answer

  b) how much do you have left? —score 2 for correct answer
- 6. Ask patients to name as many animals as he/she can in one minute

  Score 0 (0-4 animals); Score 1 (5-9 animals); Score 2 (10-14 animals); Score 3 (15+ animals)
How to administer SLUMS?

7. Ask patients to repeat the 5 objects – 1 point for each one correct

8. SAY: “I am going to give you a series of numbers. I would like you to give them to me backwards. For example, if I say 42, you would say 24”.

Score 0 (87); Score 1 (649); Score 1 (8537)

Give patient a drawing of the clock.

9. Ask patient to put the hour markers (score 2 for 12 numbers or 12 ticks). If patient only put 4 ticks on the circle, ask them ONCE to put numbers next to those ticks – if able to do, patient receives full score (score 2).

Ask patient to draw ten minutes to eleven o’clock (score 2 for time correct)

10. Ask patient to place a X in the triangle on the SLUMS instrument (score 1)

Ask of those figures, which one is the largest figure? (score one)

11. Read a story about Jill – score 2 (for each correct answer)

Scoring SLUMS

<table>
<thead>
<tr>
<th>High School Education</th>
<th>Less than High School Edu</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-30</td>
<td>normal</td>
</tr>
<tr>
<td>21-26</td>
<td>mild neurocognitive disorder</td>
</tr>
<tr>
<td>1-2</td>
<td>dementia</td>
</tr>
<tr>
<td></td>
<td>25-30</td>
</tr>
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<td></td>
<td>20-24</td>
</tr>
<tr>
<td></td>
<td>1-19</td>
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</table>
APPENDIX H

NURSE PRACTITIONER’S WRITTEN SCRIPT
Written Script

As a clinic and a teaching facility, we are increasing public health awareness by doing routine dementia screening. Due to your age, you have been selected to participate. Participation is voluntary, anonymous, and free of charge. Your personal and health information will not be shared with anyone. The screening will help you and us, the providers to identify early changes in memory, language, or behavioral function. Depending on your result, we can make early intervention or referral when appropriate. Your participation will take only 10 minutes or less. Do you verbally give us the consent? Thank you.
APPENDIX I

CONSENT FORM FOR HUMAN PARTICIPANTS
IN RESEARCH
CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

NO SIGNATURE DOCUMENT

Project Title: Dementia Screening in Primary Care Clinic: Quality Improvement Project to Identify Proper Dementia Screening Tool

Researcher: Erni Ruslie, DNP Student -
E-mail: rusl3732@bears.unco.edu

Project Advisor: Jeanette McNeill - Phone Number: (970) 351-1704
E-mail: Jeanette.McNeill@unco.edu

The purpose of this doctoral scholarly project is to educate nurse practitioners (NPs) on how to use dementia screening tools, particularly the Mini-Cog and SLUMS (Saint Louis University Mental Status) Exam tool, and to compare both dementia tools to find one tool that is easy to administer and practical to use. NPs would be the sample of the following Doctor of Nursing Practice (DNP) Scholarly Project. After the completion of each dementia screening, NPs will fill out the survey question. Your expert opinion will be used to conclude which dementia screening tool that is easy to administer and practical to use with time of administration of 10 minutes or less. NPs’ participants will not be asked to provide any personal identifying information and shall select only one response per question. Patients’ participants are also needed. The participation from patients would also be voluntary and anonymous. Patients will not be asked to provide any personal identifying information.

Participation is voluntary and anonymous. All responses collected from the screening and surveys will be kept anonymous. Results of the dementia screening will be shared to patients only, and only with patient’s approval the data from dementia screening will be forwarded to a specialist, such as geriatrician. The data collected will be kept protected, and information collected will be available only to the researcher/ the DNP student and the Project Advisor. There are no anticipated risks to participate. This is a quality improvement project to educate NPs in properly using dementia screening tools (the Mini-Cog and SLUMS) and to evaluate which tool that is easy to administer and practical to use.

You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled.

Having read the above and having had an opportunity to ask any questions, please complete the survey if you would like to participate in this research. By completing the survey, you will give us permission for your participation. You may keep this form for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Nicole Morse, Office of Research &Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.
APPENDIX J

INSTRUCTIONS FOR USE OF SAINT LOUIS UNIVERSITY MENTAL STATUS EXAMINATION TOOL OR MINI-COG SCREENING TOOL
Dear NP,

Please use the SLUMS examination tool first in screening your patient, then use the Mini-Cog after.
Dear NP,

Please use the Mini-Cog screening tool first in screening your patient, then use the SLUMS after.
APPENDIX K

MINI-COG SCREENING TOOL
Instructions for Administration & Scoring

ID:_________ Date:_________

Step 1: Three Word Registration

Look directly at person and say, "Please listen carefully. I am going to say three words that I want you to repeat back to me now and try to remember. The words are [select a list of words from the versions below]. Please say them for me now." If the person is unable to repeat the words after three attempts, move on to Step 2 (clock drawing).

The following and other word lists have been used in one or more clinical studies. For repeated administrations, use of an alternative word list is recommended.

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Banana</td>
<td>Leader</td>
<td>Village</td>
<td>River</td>
<td>Captain</td>
<td>Daughter</td>
</tr>
<tr>
<td>Sunrise</td>
<td>Season</td>
<td>Kitchen</td>
<td>Nation</td>
<td>Garden</td>
<td>Heaven</td>
</tr>
<tr>
<td>Chair</td>
<td>Table</td>
<td>Baby</td>
<td>Finger</td>
<td>Picture</td>
<td>Mountain</td>
</tr>
</tbody>
</table>

Step 2: Clock Drawing

Say, "Next, I want you to draw a clock for me. First, put in all of the numbers where they go." When that is completed, say, "Now, set the hands to 10 past 11."

Use preprinted circle (see next page) for this exercise. Repeat instructions as needed as this is not a memory test. Move to Step 3 if the clock is not complete within three minutes.

Step 3: Three Word Recall

Ask the person to recall the three words you stated in Step 1. Say, "What were the three words I asked you to remember?" Record the word list version number and the person’s answers below.

Word List Version:_______ Person’s Answers:__________

Scoring

<table>
<thead>
<tr>
<th>Word Recall: (0-3 points)</th>
<th>Clock Draw: (0 or 2 points)</th>
<th>Total Score: (0-5 points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 point for each word spontaneously recalled without cueing.</td>
<td>Normal clock = 2 points. A normal clock has all numbers placed in the correct sequence and approximately correct position (e.g., 12, 3, 6 and 9 are in anchor positions) with no missing or duplicate numbers. Hands are pointing to the 11 and 2 (11:10). Hand length is not scored. Inability or refusal to draw a clock (abnormal) = 0 points.</td>
<td>Total score = Word Recall score + Clock Draw score. A cut point of ≤3 on the Mini-Cog™ has been validated for dementia screening, but many individuals with clinically meaningful cognitive impairment will score higher. When greater sensitivity is desired, a cut point of &lt;4 is recommended as it may indicate a need for further evaluation of cognitive status.</td>
</tr>
</tbody>
</table>

Mini-Cog © S. Benson. All rights reserved. Reprinted with permission of the author solely for clinical and educational purposes. May not be modified or used for commercial, marketing, or research purposes without permission of the author (sobenson.com). v. 01.19.16
FIGURE 11
MINI-COG SCORING ALGORITHM

Source: Mini-Cog (2018)
APPENDIX L

SAINT LOUIS UNIVERSITY MENTAL STATUS EXAMINATION TOOL
1. What day of the week is it?
2. What is the year?
3. What state are we in?
4. Please remember these five objects. I will ask you what they are later.
   - Apple
   - Pen
   - Tie
   - House
   - Car
5. You have $100 and you go to the store and buy a dozen apples for $3 and a tricycle for $20.
   - How much did you spend?
   - How much do you have left?
6. Please name as many animals as you can in one minute.
   - 0-4 animals
   - 5-9 animals
   - 10-14 animals
   - 15+ animals
7. What were the five objects I asked you to remember? I point for each one correct.
8. I am going to give you a series of numbers and I would like you to give them to me backwards.
   - For example, if I say 42, you would say 24.
   - 87
   - 649
   - 8537
9. This is a clock face. Please put in the hour markers and the time at ten minutes to eleven o’clock.
   - Hour markers okay
   - Time correct
10. Please place an X in the triangle.
    - Which of the above figures is largest?
11. I am going to tell you a story. Please listen carefully because afterwards, I’m going to ask you some questions about it.
    - Jill was a very successful stockbroker. She made a lot of money on the stock market. She then met Jack, a devastatingly handsome man. She married him and had three children. They lived in Chicago. She then stopped work and stayed at home to bring up her children. When they were teenagers, she went back to work. She and Jack lived happily ever after.
    - What was the female’s name?
    - When did she go back to work?
    - What work did she do?
    - What state did she live in?

TOTAL SCORE

<table>
<thead>
<tr>
<th>HIGH SCHOOL EDUCATION</th>
<th>LESS THAN HIGH SCHOOL EDUCATION</th>
</tr>
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<tbody>
<tr>
<td>27-30</td>
<td>Normal</td>
</tr>
<tr>
<td>21-26</td>
<td>MNCDA</td>
</tr>
<tr>
<td>1-20</td>
<td>Dementia</td>
</tr>
</tbody>
</table>

* Mild Neurocognitive Disorder

SU Tanzi, NJ Tambor, JF Chisholm, HM Perry, III, and JE Mooney. The Saint Louis University Mental Status (SLUMS) Examination for Detecting Mild Cognitive Impairment and Dementia is more sensitive than the Mini-Mental Status Examination (MMSE) - A pilot study. J. Am. Geriatr. Psych. (in press)
APPENDIX M

CLINIC INSTITUTIONAL REVIEW BOARD APPROVAL
May 7, 2019

Erni Rusie BSN, RN DNP Candidate
Medical Center of Rockies - Surgical ICU
2500 Rocky Mountain Avenue
Loveland, CO 80538

Dear Primary Investigator:

On May 7, 2019, your protocol UCHealth IRB #19-6311: Dementia Screening in Primary Care Clinic: Quality Improvement Project to Identify Proper Dementia Screening Tool was determined not to be human subjects' research. It therefore does not require IRB approval. If your project changes its methodology, please contact the IRB department for a new determination decision.

The following documents were reviewed in making the determination: Emails Dated March 5-6, 2019; Abstract with screening tools

☑ There is no research hypothesis, intervention or testing methodologies indicated in your project.

The project's intent is to:
☑ Improve the quality of patient care on your unit(s)
☐ Evaluate the effectiveness of your program
☐ EBP or UXCEL program
☑ Other: knowledge of screening tools

Methods include:
☑ Data Collection
☑ Anonymous survey
☐ Process Improvement
☐ Other:

Your use of EPIC for data includes:
☐ Use of PHI
☐ Disclosure of PHI, if checked a data secured plan was provided

Generalizability:
☐ There is no intent to publish
☐ There is no intent to present results at this time
☑ There is intent to share local results. If yes, explain: local department and school project

Although Quality Improvement activities are considered "health care operations" I would highly encourage you to:
1. Obtain permission from the leadership of your involved unit(s). **provided**
2. Utilize only those parts of the records that have the information for quality improvement (minimal necessary rule.
3. Document the date and time that you are utilizing EPIC for this project. This will become your proof, if you are required to disclose what records you entered. **n/a**
4. Retain data in a UCHealth networked folder with limited access (ie. not available to others who are not involved in your project).
5. Keep copies of all correspondence like this letter and associated emails.

Thank you for your submission to the IRB; we will keep a copy of your work on file. If I can be of further assistance, please do not hesitate to contact me via email at Kim.Woods-McCormick@uchealth.org or phone (970) 237-7972.

Sincerely,

Kim Woods-McCormick, MS, RN
Director of IRB Administration