

Implementing the '6<sup>th</sup> Vital Sign' Into Primary Care

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## Abstract

**Background:** Around the world, someone develops dementia every three seconds ("Dementia statistics | Alzheimer's disease international," 2015). Current evidence shows that in clinically healthy people, pathophysiological changes begin 10 to 15 years before symptoms of cognitive impairment (CI) are seen (Kirsebom et al., 2017, p.1622). Studies note, that in the United States the rate of undiagnosed dementia cases exceeds 50% (Eichler et al., 2015, p. 87; Grober et al., 2016, p. 1038; Wang, Xiao, Ullah, He and Bellis, 2017, p. 1). The economic impact of reacting to Alzheimer's disease and related neurocognitive disorders (ADRD) has created a statistic that indicates, "if global dementia care were a country, it would be the 18<sup>th</sup> largest economy in the world" ("Dementia statistics | Alzheimer's disease international," 2015). Economic stability and cost-effective measures like "increasing quality of life" and "delaying institutionalization" can be realized with timely recognition and early diagnosis (Ranson, Kuźma, Hamilton, Lang, and Llewellyn, 2018, p. 288).

**Method:** This quantitative pilot study consists of one sample that is continuous and descriptive. The tool used is the Brief Interview of Mental Status (BIMS). This is a five-question screening tool with a total score of 15.

**Results:** A sample size of 47, with no previous neurocognitive disorder diagnosis, recorded the following scores: 66% scored 15, 13% scored 14, 19% scored 13, and 2% scored 11. Nine participants scored the minimum needed to be considered cognitively intact with a mean age of 54-years old, and one participant scored an 11 (severe impairment).

**Implications for Practice:** The BIMS tool has given the healthcare provider the ability to identify patients younger than 65-years old who are at risk for the symptomatic materialization of CI, thus allowing for timely recognition. The primary care practice has seen improved satisfaction and enthusiasm about the proactive approach towards CI.

**Keywords:** Evidence-Based, Clinical Practice, Brief Interview for Mental Status, Early cognitive screening, Cognitive Impairment, Alzheimer's disease and related neurocognitive disorders.

## CHAPTER ONE

In the United States, a person develops Alzheimer's disease (AD) every 66 seconds (Alzheimers.net, 2017). Alzheimer's disease ambitiously disseminates throughout the brain, creating irreversible damage that leads to a distinct cognitive deterioration. Dr. Alois Alzheimer first recorded evidence of AD over 100 years ago (Office of the Assistant Secretary for Planning and Evaluation, 2017, p. 3). Dr. Alois Alzheimer found a female's brain tissue to have a combination of abnormal clumps known as amyloid plaques and tangled bundles of fibers known as neurofibrillary tangles. The combination of these plaques and tangles act like thieves in the night – stealing our loved ones from us leaving behind a shell of a human with impaired executive function, sleep and visual disturbances, inattentiveness, and behaviors that cause all but anarchy. The impending statistical ascent of AD and the rising cost to provide care for patients with AD is demanding the world to recognize that there is a significant public health issue taking place. The pilot study, “Implementing the ‘6<sup>th</sup> Vital Sign’ Into Primary Care,” was created in recognition of this travesty. The goal is to promote early recognition and detect treatable causes that predispose a brain to an abundance of amyloid plaques and neurofibrillary tangles.

It is essential to note the challenges that society is faced with when dealing with ADRD. Related neurocognitive disorders include Lewy body dementia (LBD), vascular cognitive impairment, frontotemporal dementia (FTD), chronic traumatic encephalopathy (CTE), and mixed dementias. Pharmacological interventions are still in an ostensible state when it comes to prevention, treatment, and cures for ADRD. Data collection and the tracking of logistics for ADRD are limited – creating

insufficient evidence that narrates the actual cost, prevalence, and trends. Lack of evidence verifying current and future trends, prevalence, and cost of ADRD creates a widening gap that stifles improvements for family members and unpaid or paid caregivers. Repudiation of ADRD spawns' significant implications for population health, family members, and caregivers. Significant implications can include emotional exhaustion, depersonalization, and reduced personal accomplishment (Yildizhan, Ören, and Erdoğan, 2017; Yıldızhan, Ören, Erdoğan, and Bal, 2018). The pilot study aims to confirm that standardized, routine cognitive screening can facilitate enhanced data collection and tracking of ADRD.

### **Problem Identification**

At a local family practice, patients are screened for CI only if the family has concerns or patient symptoms indicate further investigation. The provider screens patients that are 65-years and older who are in the office for an Annual Wellness Visit (AWV) through observation.

Evidence shows that "pathophysiological underpinnings of AD may begin 10 to 15 years before the emergence of clinical symptoms" for clinically healthy people and people with co-morbidities that put them at increased risk for AD (Kirsebom et al., 2017, p.1622). The 2019 Alzheimer's disease facts and figures note that it could be 20 years or more before brain changes take place and show symptoms of AD (Alzheimer's Association, 2019, p.5). Wang, Xiao, Wang, Li, and Yang (2017) discovered that healthcare providers struggled to execute cognitive screening and to identify CI in people with reports of CI (p. 51). Optimizing existing screening

measures and advocating for routine, standardized screening can help alleviate this divergence in care.

Even though there are well-documented economic benefits of early recognition along with identifying reversible causes and initiating early pharmacological and non-pharmacological interventions, the United States Preventive Services Task Force (USPSTF) does not recommend cognitive screening in asymptomatic patients ("Final update summary: Cognitive impairment in older adults: Screening - US preventive services task force," 2014). The reasoning behind this recommendation is that the balance between the collective costs and risks has not been established (Fowler et al., 2014, p. 2; Grober, Wakefield, Ehrlich, Mabie, and Lipton, 2017, p.188). Ranson, Kuźma, Hamilton, Lang, and Llewellyn (2018) argue that earlier diagnosis endorses economic stability through cost-effective measures like "increasing quality of life" and "delaying institutionalization" (p. 288).

In 2013, at least one potentially avoidable hospitalization (PAH) affected one in ten patients with ADRD, which cost Medicare roughly \$2.6 billion (Desai et al., 2019, p.126). Patients with ADRD that are hospitalized and have co-existing conditions such as heart failure have a higher probability of being readmitted or succumb to death once discharged from the facility (Patel et al., 2015, p. 11). Desai et al. (2019) found that timely recognition and earlier management decrease the burdens (i.e., Emergency Department (ED) visits, hospitalizations, and falls) associated with ADRD (p.131-133). Routine, standardized screening boosts the potential for earlier recognition of ADRD, and decreases hospitalizations, PAHs, ED visits, falls and use of long-term care services.

Cognitive screening creates an understanding of one's cognitive status that permits for a timely diagnosis so that early intervention can be provided. Early interventions relieve caregiver burden, and simplify environments for people living with ADRD; thus, enabling day-to-day functioning at the highest level of capacity that can be sustained for as long as possible.

According to the Health State of Florida, deaths from AD have more than doubled (Counts for Alzheimer's disease deaths, Palm Beach County, zip code 33470, 2017). The Florida Community Health Needs Assessment indicates that in 2015, there were just over 390,000 residents 60-years and older diagnosed with AD in Palm Beach County, and an estimated 47,000 residents with "probable Alzheimer's cases" ("Community health needs assessment," 2016, p. 91). In 2017, the Health State of Florida also showed that Palm Beach County has a statistically significant percentage of 15.5% of the population with "probable Alzheimer's cases" far-reaching over the state of Florida, which is at 13.3% (Probable Alzheimer's cases (65+), 2017). The total count for people living with AD in Florida is estimated to be 540,000, and in 2015, AD was the sixth leading cause of death in Florida (Alzheimer's .org, 2018).

In high-income countries, such as the United States, it is well-documented that undiagnosed dementia rates exceed 50% (Eichler et al., 2015, p. 87; Grober et al., 2016, p. 1038; Wang, Xiao, Ullah, He and Bellis, 2017, p. 1). By 2050, the United States will have nearly 88 million people 65 years or older with a cognitive deficit, and for every five-year interval beyond 65, the prevalence of people with neurocognitive disorders doubles (Alzheimers.net, 2017). According to Alzheimer's

Disease International (ADI), "someone in the world develops dementia every 3 seconds" ("Dementia statistics | Alzheimer's disease international," 2015). The battle cry has been sounded – it is time for people to become vigilant in the quest to understand one's cognitive health better. Cognitive awareness through routine, standardized screening creates a willingness to do whatever it takes in the pursuit of better cognitive health and the reduction of the growing burden of ADRD.

### **Stakeholder Identification**

Establishing a routine, standardized cognitive screening assessment involves vital stakeholders. These key stakeholders include patients, family members, healthcare providers, researchers, the pharmaceutical industry, Centers for Medicare and Medicaid Services (CMS), and USPSTF.

Patients, family members, and healthcare providers are crucial in this pilot study because, without their involvement, there is no study. As a researcher, it is essential to close the gap by analyzing all information obtained, synthesizing the knowledge and translating the results so that research can apply to clinical decision-making. The results from this pilot study have the potential to convince CMS, USPSTF, and the pharmaceutical industry that further studies are needed to evaluate earlier routine, standardized cognitive screening, and the impact that early recognition can have on their prospective investments.

### **Objectives of the Project**

This pilot study investigates the value of routine cognitive screening in adults 45-years and older. After screening takes place, appraisal of the data being collected will be performed to evaluate the need for earlier routine cognitive screening in the



primary care setting. Analysis of the BIMS score is used to draw a connection between the significance of earlier routine cognitive screening and identifying the reversible causes of CI promptly. The objective is to bridge the gap with knowledge synthesis and implement yearly BIMS screening for all patients 45-years and older into practice. The pilot study aims to connect research and clinical decision making for healthcare providers when it comes to an understanding of the importance of early, standardized, routine cognitive screening.

- Prevent and proactively care for ADRD.
- Improve the quality of care for patients and proficiency in healthcare providers.
- Document progress and campaign for improvements to support patients with ADRD, family members, and caregivers.

## **CHAPTER TWO**

### **Literature Review**

The Palm Beach Atlantic University Warren Library allowed for access to peer-reviewed articles. Databases accessed: CINAHL Complete, MEDLINE Complete (EBSCO), MEDLINE (Ovid), Nursing and Allied Health, ScienceDirect Health and Life Sciences College Edition, and Evidence-Based Medicine (EBM) Reviews. Published dates were set from 2013 to 2018. Boolean phrases included: cognitive screening tools, routine cognitive screening in primary care, BIMS, Alzheimer's disease in primary care, screening for Alzheimer's disease, early detection of dementia, dementia screening, dementia prevention, cognition related to falls, and effects of cognitive screening.

The first identified theme for this review of literature is the necessity for standardized, routine cognitive screening in adults 45-years and older. Eichler et al. (2015); Grober, Wakefield, Ehrlich, Mabie, and Lipton (2017); Wang, Xiao, Wang, Li, and Yang (2017) encourage the incorporation of routine screenings and case-findings into clinical practices. Identifying the susceptible population that has the potential to disguise mild cognitive impairments (MCI) are also common themes in these studies. The potential for identifying early CI with standardized screening establishes a case for a new standard of care within the primary care setting. Draper et al. (2016) argue that the younger populations with early onset have a delay in diagnosis for MCI and dementias other than AD. The research supports screening in younger individuals for timely consultation and referral.

The second point to establish from the review of literature is the importance of educating healthcare providers, regarding the validity of routine cognitive screening and how standardized screening improves clinical practices. Anstey et al. (2015); Wang, Xiao, Ullah, He, and Bellis (2017) assert that educating healthcare providers and the population about cognitive screening permits for better recognition and timely referrals. Eichler et al. (2015) and Wang, Xiao, Wang, Li, and Yang (2017) confirm that once healthcare providers adopt standardized, routine cognitive screening measures, they improve their identification of CI, and as a result, these healthcare providers increase public awareness.

The last identified theme for the review of literature is to examine different types of cognitive screening tools. Mansbach, Mace, and Clark (2014); Mansbach, Mace, and Clark (2014); Bell et al. (2016); Mace, Mansbach, and Clark (2016); Ozer

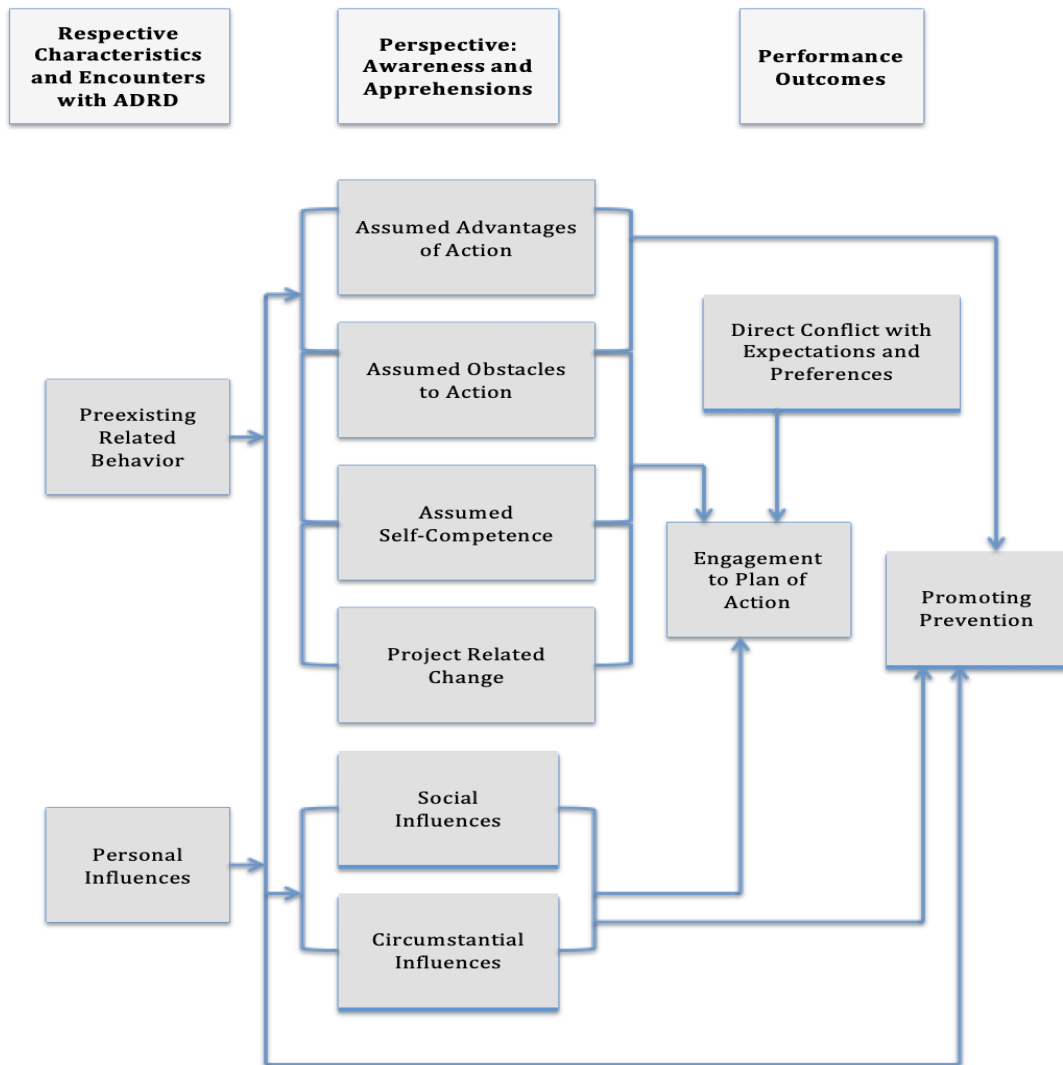
et al. (2016); Cohn et al. (2017); Dubé, Mack, Hunnicutt, and Laplane (2018); Orozco et al. (2018) all confirm that the BIMS is a reliable, validated screening tool, and one that does not have bias towards the patient's education level. Mansbach, MacDougall, and Rosenzweig (2012) and Mace and Mansbach (2018) report that unlike the BIMS, the Brief Cognitive Assessment Tool (BCAT) and the Mini-Mental State Examination (MMSE) do not account for a population with lower education levels, and do not consider patients with visual and/or motor impairment. The research performed by Mansbach, MacDougall, and Rosenzweig (2012) and Bachinskaya (2016) reviewed the Montreal Cognitive Assessment (MoCA); the findings suggest that there is no assessment of everyday functioning, which is characteristic of complex reasoning, and when comparing the MoCA to the MMSE the specificity is lower. According to Sharifi et al. (2016), the MMSE is not a suitable screening tool for different cultures. The BIMS screening tool will be the tool used for this pilot study.

This literature review highlights the importance of standardized screening and educating healthcare providers about early identification of cognitive changes. Standardized cognitive screening sets the stage for routine cognitive assessment, recognition of the reversible symptoms associated with cognitive decline, and incorporating causes of cognitive deficits into the differential diagnosis.

### **Theoretical Framework**

According to Pender's Health Promotion Model (HPM), this pilot study will assist healthcare providers in identifying factors that foster avoidance of cognitive screening (Nursing Theory, 2016). The HPM increases healthcare provider's

knowledge of evidence-based screening for ADRD in the primary care outpatient setting. Pender’s HPM stimulates self-actualization that allows for an understanding of current cognitive status in primary care outpatient settings. Lastly, the pilot study will assist healthcare providers to disseminate knowledge that strategically promotes cognitive monitoring and cognitive health. The HPM framework created for this pilot study is shown in Figure 1.



*Figure 1.* Theoretical Framework used for “Implementing the ‘6<sup>th</sup> Vital Sign’ Into Primary Care”

### **Transitional Framework**

The Knowledge-To-Action (KTA) framework creates a harmonious cycle between applied knowledge and action. Knowledge creation and application are the primary conduits while generating conceivable actions to put into practice is secondary to the applied knowledge. KTA is comprised of knowledge synthesis and knowledge distribution, thus creating awareness of the best current practice. In the clinical setting, the KTA framework will create a seamless transition when the aim is to apply the most current evidence-based practice (EBP).

The KTA framework is based on the implementation of knowledge, and there are various steps. This stepwise process is cyclical, and as information becomes more refined, it is funneled through for a final evaluation of the knowledge translation. The steps for the pilot study are as follows: the study coordinator identifies the problem and ascertains the healthcare provider’s knowledge of standardized cognitive screening. Usefulness and validity of standardized cognitive screening were discussed with all staff that assisted in the pilot study. The knowledge was adapted for a local community office by assessing the worth and usefulness of standardized cognitive screening in the outpatient setting. Before the study, an assessment of barriers related to screening for ADRD, potential staff members that would be screening, and the context in which the BIMS tool would be used took place. Educational pamphlets were provided to the staff to promote awareness (Appendix C). This awareness has allowed for staff development and

allows for the execution of knowledge translation into the clinical setting. Monitoring knowledge use and reflection on actualized barriers are done weekly. Weekly assessments of gathered information take place to validate if the plan is continuing to be effective. If the observation indicates that changes are needed, it can be done at this time. Lastly, a final review of the knowledge translation occurred in order to evaluate the impact on the staff at the primary care office, and the determination of whether or not the study realized the needed outcomes necessary for sustainability.

## **CHAPTER THREE**

### **Methodology**

This pilot study was created to analyze the non-existence of standardized, routine cognitive screening in the primary care setting. Data collection was accomplished by using the BIMS screening tool. The BIMS is a tool that is required by CMS and built into the Minimum Data Set (MDS) 3.0. The BIMS is provided free of charge. No prior permission is needed to use the BIMS tool, as there is no author associated with this tool. Nor is there a trademark, copyright, patent, or intellectual property associated with the BIMS.

### **Setting**

This pilot study occurred in 2019 in an outpatient office that is located in Loxahatchee, Florida, within Palm Beach County. During a previous three-month collaboration with this local community outpatient office, the study coordinator encountered a total of 141 patients. Ninety-eight patients were 45-years and older,

suggesting that around 70% of the patients encountered at this office would meet the age requirement needed for this pilot study.

An educational presentation and a one-hour training session took place at the office before the start of the pilot study. The training and education session included one Advanced Practice Registered Nurse (APRN) and two medical assistance (MA). The study coordinator examined the acquired knowledge through a post-education interview. The newly trained staff was able to perform screening using the BIMS tool once approved by the study coordinator.

### **Consent Procedure**

The study coordinator prepared a written consent that was applicable to the pilot study and approved by Palm Beach Atlantic University's Institutional Review Board (IRB). The legally valid informed consent was obtained through participants agreeing to participate in the pilot study by signing the consent form. Once the participants signed the informed consent, the screening took place.

### **Sample Population**

In order to participate in this pilot study, participants had to be at least 45-years and older and not have any existing neurocognitive disorder. In total, 47 participants (N=47) ranging in age from 45-82 years old took part in the study. Due to the nature of the study, minors and vulnerable participants were excluded. Recruitment took place on the day of the participant's office visit. No advertisements were used for this pilot study. The study used a convenience sample, as the participants already had made previous arrangements to come into the office for a scheduled appointment.

Age classification by ethnicity and gender illustrated in Table 1 and mean age analysis in Table 2.

Table 1

*Age Range, Ethnicity, and Gender of 47 participants*

<b>Age Range</b>	<b>Total Participants</b>	<b>Female</b>	<b>Male</b>	<b>Caucasian</b>	<b>African American</b>	<b>Hispanic / Latino</b>
45 – 55	30	19	11	23	1	6
56 – 65	13	10	3	12	1	0
66 – 75	3	3	0	3	0	0
76 – 85	1	0	1	1	0	0

Table 2

*One-Sample Means Statistics (Age)*

<b>Mean</b>	<b>N</b>	<b>Standard Deviation</b>
54.26	47	7.71

### **Activities of the Project**

After the participants reviewed and signed the informed consent, a chart audit was performed. Participants were asked to provide personal information that included age, gender, ethnicity, dominant hand, and whether or not they exercised more than 150-minutes per week. The chart audit assessed for modifiable risk factors that included: current body mass index (BMI), current mood evaluated by using the patient health questionnaire-2 (PHQ-2), laboratory values [fasting blood glucose (FBG), serum sodium, blood urea nitrogen (BUN), creatinine, thyroid-stimulating hormone (TSH), vitamin B-12, vitamin D, serum estradiol, and follicle-stimulating hormone (FSH)] (Alzheimer's Association, 2019; Anstey, Cherbuin, & Herath, 2013; Winblad et al., 2016). Medication reconciliation was performed to



monitor for polypharmacy and to identify these specific drug classes associated with CI: antihistamine, anticholinergic, antidepressant, anxiolytic, psychostimulant, antipsychotic, anti-seizure, and prescribed analgesics (Falk, Cole, & Meredith, 2018; Fowler et al., 2014; Panegyres, Berry, & Burchell, 2016; Winblad et al., 2016). After this short interview and chart audit, participants were screened using the BIMS tool. Once the screening was completed, the BIMS score was scanned into the participant's electronic chart, and the participant received a copy of their informed consent along with an educational pamphlet that addressed modifiable risk factors for CI. After the interview and screening took place, the healthcare provider entered and discussed any abnormal findings associated with the chart audit and/or BIMS screening.

## **CHAPTER FOUR**

### **Outcomes**

The BIMS tool was used for this pilot study (see appendix). The BIMS consist of five questions that are asked in an interview style. Temporal orientation and recall are assessed. According to Mansbach, Mace, and Clark (2014), BIMS is a tool that can be administered rapidly and is an efficient screening tool that is valid with excellent reliability. A significant study found that when it comes to identifying any impairment such as a BIMS score of 12, the sensitivity = 0.83 and specificity = 0.91; a BIMS score of seven (severe impairment) had a sensitivity = 0.83 and specificity = 0.92 (Saliba et al., 2012). The BIMS screening tool establishes confidence in identifying CI and can be administered by professionals and paraprofessionals.

## **Data Management**

Throughout the pilot study, all data collected was coded for anonymity and stored securely via a locked drawer until all data could be relocated into an Excel spreadsheet. All variables that pertained to the study were coded via SPSS Statistics Data Editor. The study coordinator had unlimited access to all materials, and the APRN had access to the participant's BIMS scores. Participants were assigned a unique identifier that was associated with a unique number on the BIMS tool and another unique identifier on the signed informed consent. The healthcare provider scanned the BIMS form into the participant's electronic medical record, which is password protected. Once the form was successfully scanned into the participant's medical record, it was shredded per office protocol and disposed of securely. In accordance with Palm Beach Atlantic University's IRB, the signed informed consents will be kept in a secure, password protected database until 2022. At that time, the consents will be shredded and disposed of securely.

## **Data Analysis**

This is a quantitative study that consists of one sample that is continuous and descriptive. G\*Power was used to determine a statistical effective study size, and 45- participants were recommended for this pilot study. Laerd statistics assisted in the selection of the statistical test that best relates to the study's findings. Per Laerd statistics, a one-sample study was designed and focused on one variable (BIMS score) and one group (participants 45-years and older), with an aim to describe a continuous variable (BIMS score). SPSS Statistics was used to analyze the data. A

mean comparative analysis and one-sample T-test were executed for this pilot study.

The final BIMS scores for this quantitative study are illustrated in Table 3.

Table 3

*Final BIMS Score*

<b>Number of Participants</b>	<b>BIMS Screening Score</b>	<b>Classification of Result</b>
1	11	Moderate Impairment
9	13	<i>Minimum result needed to be considered Cognitively Intact</i>
6	14	Cognitively Intact
31	15	Cognitively Intact

The one participant that was identified to have moderate CI potentially was referred to a neuropsychiatrist for further follow-up. This participant was a 49-year old African American, Male who had no known history of CI and no prior neurocognitive deficits diagnosed.

An analysis of the BIMS score for participants that scored the minimum result needed to be considered cognitively intact is illustrated in Table 4.

Table 4

*BIMS Score of 13*

<b>Age</b>	<b>Gender</b>	<b>Ethnicity</b>
45	M	Caucasian
45	F	Caucasian
46	F	Caucasian
51	F	Caucasian
55	F	Caucasian
56	F	Caucasian
57	F	Caucasian
60	F	Caucasian
67	F	Caucasian

## Results

The sample size for the pilot study was  $N=47$ . Of the samples, 68.09% were female, and 31.91% were male. The age range of participants was 45–82 years old, with a mean of 54.26 (standard deviation of 7.71). Mean BIMS score ( $M = 14.40$ ,  $SD = 0.95$ ) was within the normal BIMS score of 13-15, a statistically significant mean difference of 0.60, 95% CI [0.32, 0.87],  $t(46) = 4.309$ ,  $p < 0.001$ ,  $d = 0.63$ .

The one-sample Mean statistics and t-test are illustrated in Tables 5 and 6.

Table 5

### *One-Sample Mean Statistics (BIMS)*

Mean	N	Standard Deviation	Standard Error Mean
14.40	47	0.95	0.14

Table 6

### *One-Sample T-Test (BIMS)*

BIMS Score	t	df	p-value	Mean Difference	95% Confidence Interval of the Difference	
					Lower:	Upper:
	4.31	46	< 0.001	0.60	0.32	0.87

To assess correlation, a Pearson's product-moment was run to consider the relationship between BIMS scores and age, gender, and ethnicity. Forty-seven participants were screened. There was no statistically significant correlations between BIMS scores and age [ $r(45) = .08$ ,  $p = .589$ ], gender [ $r(45) = -.09$ ,  $p = .53$ ], and ethnicity [ $r(45) = .04$ ,  $p = .77$ ].

The relationship between BIMS scores and age, gender, and ethnicity were not statistically significant. Therefore, one cannot reject the null hypothesis and cannot accept the alternative hypothesis.

The Pearson correlations are illustrated in Table 7.

Table 7

*Correlations*

		<b>Age</b>	<b>Gender</b>	<b>BIMS Score</b>	<b>Ethnicity</b>
<b>Age</b>	<b>Pearson Correlation:</b>	1	.09	.08	-.18
	<b>p-value:</b>		.55	.59	.22
	<b>N:</b>	47	47	47	47
<b>Gender</b>	<b>Pearson Correlation:</b>	.09	1	-.09	-.07
	<b>p-value:</b>	.55		.53	.62
	<b>N:</b>	47	47	47	47
<b>BIMS Score</b>	<b>Pearson Correlation:</b>	.08	-.09	1	.04
	<b>p-value:</b>	.59	.53		.77
	<b>N:</b>	47	47	47	47
<b>Ethnicity</b>	<b>Pearson Correlation:</b>	-.18	-.07	.04	1
	<b>p-value:</b>	.22	.62	.77	
	<b>N:</b>	47	47	47	47

## CHAPTER FIVE

### Discussion

This pilot study was created to demonstrate the importance of early, standardized, routine cognitive screening in the primary care setting. The continued goal is to promote earlier detection of CI, address modifiable risk factors that promote CI, and create a primary care practice that endorses cognitive empowerment.

From a clinical practice standpoint, this study had significant findings. Nine participants out of 47 (19.15%) had a BIMS score of 13, with the mean age being

53.56. While a BIMS score of 13 is considered “cognitively intact,” this minimum score needed leaves room for one to consider that if these participants are not monitored yearly, then by the time they are 65-years old and Medicare mandates a cognitive assessment to be performed, the patient will have already progressed to MCI or severe CI. Another significant finding was the 49-year old African American, Male who had a BIMS score of 11 with no previous neurocognitive deficits diagnosed.

As it stands, only Medicare recommends yearly cognitive screening. Cognitive screening is to take place during the beneficiary’s AWW. The majority of Medicare beneficiaries are 65-years and older, and a few beneficiaries are Medicare-eligible by being on Social Security Disability Insurance (SSDI) or being diagnosed with End-Stage Renal Disease (ESRD). Delayed screening until patients are 65-years old is an alarming identified gap in the primary care setting, because of the nine that scored 13 on the BIMS, only one of the participants was older than 65-years old. The healthcare provider had cause for concern when participants under the age of 65-years old were unable to score 15 out of 15 on the BIMS. This finding verified the significance of early screening.

The goal of this pilot study was satisfied. Participants now have a baseline screening, and understand the need for yearly re-evaluation so that healthcare providers can monitor for ambiguous signs and symptoms of CI. It should be noted that no participant turned down the opportunity to participate in this study. Participants were enthusiastic about their healthcare provider taking a proactive approach towards their cognitive health.

**Impact on Practice**

Due to participants' enthusiasm and reports of increased satisfaction, sustainability has been effortless for this primary care practice. This pilot study has also highlighted a gap in care that was not originally recognized by the healthcare provider: the inability to identify patients younger than 65-years old who are at risk for the symptomatic materialization of CI. The primary care practice now uses the BIMS tool to screen all patients 45-years and older yearly during annual physicals or AWW. This primary care practice is seeking to identify and influence intangibles such as morale when it comes to starting the conversation about ADRD and creating momentum in regards to early recognition of ADRD.

The adaptation of early, routine cognitive screening within this practice allows for patients to have better treatment options and access to care that would not otherwise be possible because of delayed cognitive evaluations. When the healthcare provider establishes a reality about ADRD, it allows the patient to prioritize their health. Healthcare providers have a responsibility to define reality for their patients. If early, routine cognitive screening is obsolete in the primary care setting, then healthcare providers are unable to actualize a potential reality for patients, thus not advocating for patients to reach their full potential.

This primary care practice is empowering patients by providing resources and encouraging personal responsibility for achieving excellent health. Early, cognitive screening is compelling to patients who are fearful of their unknown cognitive status and has the potential to motivate patients to be more proactive.

**Limitations**

There are limitations to this pilot study that influence generalizability and necessitate further scrutiny. First, the sample size (N=47) was small, and because of this, there was limited ethnic and racial diversity. There were a small number of men in the sample size compared to women 32% to 68%, respectively. The results may not be generalizable and should be considered for future studies. Second, because this was a convenience sample and the only participants that were excluded from the study were people younger than 45-years old and people with existing neurocognitive disorders, there is the potential that participants were screened during an acute illness. Participant's BIMS score could be affected by infection, anxiety related to their reason for a healthcare visit or inadequate rest related to their acute illness. Third, this pilot study did not take into account the influence of participant's state of mind or undiagnosed psychiatric disorders. Lastly, the staff's perceived stigma of ADRD can behave as a bias. The uncertain nature of ADRD and fundamental factors such as access and availability of neuropsychiatry expertise can produce timidity amongst healthcare providers in future studies. Therefore, staff bias should be assessed before initiating screening. Future studies must show how taking a proactive approach can alleviate future burdens of ADRD.

**Future Recommendations**

It is crucial to establish and utilize clinical algorithms within the primary care setting that support the improved recognition of root causes (i.e., depression, thyroid dysfunction, or polypharmacy) for CI. When healthcare providers identify the root cause, they are no longer just treating the symptoms of CI. This pilot study



sought to demonstrate the potential for developing an algorithm by carrying out a chart audit before the screening. The chart audit consisted of assessing for these modifiable risk factors: BMI, PHQ-2, FBG, serum sodium, BUN, creatinine, TSH, vitamin B-12, vitamin D, serum estradiol, FSH, polypharmacy, and specific drug classes associated with CI.

Increasing awareness of circumstantial factors is essential so that the incidence, presentation, and long-term outcomes of ADRD can be modified. This study makes one deliberate that if standardized screening is part of a protocol within the primary care setting that is performed annually, then the healthcare provider will be able to identify hidden clues of early CI or even MCI. Early detection can lead to the creation of a database that allows for healthcare providers and researchers to describe and specify cases such as potentially reversible CI, progressive ADRD, or even CI in young adults. Lastly, this pilot study encourages continued evidence-based research that examines early screening and early detection of risk factors for ADRD.

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## Appendix A

### IRB Approval Letter



Office of Academic Research  
Institutional Review Board  
Gregory Hall, room 456  
PO Box 24708  
West Palm Beach, FL 33416-4708  
(561) 803-2463

May 27, 2019

Alexandria Watkins  
School of Nursing – DNP Program  
Palm Beach Atlantic University  
PO Box 24708  
West Palm Beach, FL 33416-4708

Dear Ms. Watkins:

The Project Category III<sub>inc</sub> proposal that you have submitted, *Should Cognition be the Sixth Vital Sign?*, has been granted approval by the Institutional Review Board of Palm Beach Atlantic University.

**Date of Approval: 05-27-2019**  
**Date of Expiration: 05-27-2020**

The approval period is for one year. After that time, an extension may be requested. You are responsible for complying with all stipulations described under the Code of Federal Regulations 45 CFR 46 (Protection of Human Subjects). This document can be obtained from the Office of Academic Research web site or at the following address:

<https://www.hhs.gov/ohrp/regulations-and-policy/regulations/45-cfr-46/index.html>

It is the responsibility of the Principal Investigator to notify the PBA IRB of any proposed changes regarding the work described within the submitted protocol. The Principal Investigator agrees that no such changes will be implemented until approved by the IRB, except where absolutely necessary to eliminate apparent immediate hazards to individuals. You are to provide the committee with a summary statement. Please send us a statement to request an extension, for reporting changes, or reporting the completion of your study. Good luck with your project!

Warmest regards,

  
David M. Compton, Ph.D.  
Chair, IRB

Cc: Dr. Jill Shutes  
Dr. Tina Dochniak

## Appendix B

### Brief Interview of Mental Status (BIMS) Tool

Date: \_\_\_\_\_

#### Brief Interview for Mental Status (BIMS)

Ask patient: *"I am going to say three words for you to remember. Please repeat the words after I have said all three. The words are sock, blue and bed. Now tell me the three words"*.

Number of words repeated after first attempt:

0.None       1.One       2.Two       3.Three

After the patient's first attempt, repeat the words using cues (*"sock, something to wear, blue, a color; bed, a piece of furniture"*). You may repeat the words up to two more times

Temporal orientation (orientation to month, year and day)

Ask patient, *"Please tell me what year it is right now"*.

- 0. Missed by > 5 years, or no answer
- 1. Missed by 2-5 years
- 2. Missed by 1 year
- 3. Correct

Ask patient, *"What month are we in right now?"*

- 0.Missed by >1 month, or no answer
- 1. Missed by 6 days to one month
- 2. Accurate within 5 days

Ask patient, *"What day of the week is today?"*

- 0. Incorrect, or no answer
- 1. Correct

Recall:

Ask patient, *"Let's go back to the earlier question. What were the three words that I asked you to repeat?"*, If unable to remember a word, give cue (*"something to wear", "a color", "a piece of furniture"*) for that word.

Able to recall "SOCK"  0.No – could not recall     1.Yes, after cue     2.Yes, NO cue required

Able to recall "BLUE"  0.No – could not recall     1.Yes, after cue     2.Yes, NO cue required

Able to recall "BED"  0.No – could not recall     1.Yes, after cue     2.Yes, NO cue required

SCORE:

Key: 0 – 7 = severe impairment    8 – 12 = moderately impaired    13 – 15 cognitively intact

## Appendix C

### Outside of Educational Pamphlet

#### Words to Know

##### Alzheimer's Disease

A disease that damages communication among brain cells and causes nerve cells in the brain to die. These changes make it hard for a person to remember things, think clearly, and use good judgement. The symptoms begin slowly and get worse over time.

##### Familial Alzheimer's Disease (FAD)

A type of early-onset Alzheimer's disease. It is caused by a permanent change in one or more genes passed down from a parent to a child.

##### Genes

Structures in a body's cells that are passed down (inherited) from a person's birth parents. They carry information that determines person's traits and keep the body's cells healthy.

##### Risk Factor

Anything that increases the chance of developing a disease. Risk factors can be related to a person's genes, lifestyle, and environment. A genetic risk factor is a change or difference in a gene that raises a person's risk of getting a disease.

##### Clinical Trial

A research study to find out if a new treatment is safe and effective. Healthy people and people with Alzheimer's disease can choose to take part in clinical trials.

National Institute on Aging, 2016

#### Alzheimer's Research Resources

##### Alzheimer's Prevention Registry

Phone: 1-888-786-7259

Email: [info@endALZnow.org](mailto:info@endALZnow.org)

Website: [www.endalznow.org](http://www.endalznow.org)

The Alzheimer's Prevention Registry unites researchers with people interested in taking part in Alzheimer's studies.

##### Brain Health Registry

Email: [info@brainhealthregistry.org](mailto:info@brainhealthregistry.org)

Website: [www.brainhealthregistry.org](http://www.brainhealthregistry.org)

This registry includes people age 18 and older who are interested in promoting healthy brain function through prevention of brain disease, disorders, and injuries.

##### Dominantly Inherited

##### Alzheimer Network (DIAN)

Phone: 1-844-342-6397

Website: [www.dian-info.org](http://www.dian-info.org)

This international partnership seeks adult volunteers for research to understand a rare form of Alzheimer's disease caused by a specific gene mutation.

##### GeneMatch

Phone: 1-888-786-7259

Email: [info@endALZnow.org](mailto:info@endALZnow.org)

Website: [www.endalznow.org/genematch](http://www.endalznow.org/genematch)

Part of Alzheimer's Prevention Registry, GeneMatch identifies healthy volunteers age 55 to 75 who want to take part in Alzheimer's research based in part on their genetic background.

## Implementing the '6<sup>th</sup> Vital Sign' Into Primary Care



Photo Courtesy of: American Heart Association News, 2017

Alexandria Watkins, RN MSN

Doctor of Nursing Practice  
Student

Inside of Educational Pamphlet

**Examples of Normal Aging  
vs  
Mild Cognitive Impairment  
(MCI)**

NORMAL AGING	POSSIBLE MCI
Occasionally misplacing things but remembering their location later.	Misplacing things more often, and having difficulty retracing steps.
Forgetting an appointment but remembering it later.	Forgetting important dates and events that one used to easily remember.
Occasionally taking a wrong turn when driving.	Having trouble driving to a place that one knows well.
Making an occasional error when balancing a checkbook.	Finding it harder to concentrate or perform calculations.
Needing some help at times to program a microwave or a television recording.	Having difficulty following instructions or steps in a manual.
Sometimes having words on the tip of one's tongue.	Losing one's train of thought in the middle of a conversation.
Making a bad decision once in a while.	Showing poorer judgement with money, such as giving too much to a telemarketer.

MISSIONAD, 2018 (www.missionAD.com)

You can take these steps to keep your brain as healthy as possible.

**These Steps Include:**

- Exercise regularly
- Stop Smoking
- Avoid drinking a lot of alcohol
- Eat a healthy diet that is rich in Fruits & Vegetables
- Keep Blood Pressure & Cholesterol at healthy levels
- Control Type II Diabetes
- Maintain a healthy weight
- Spend time with family & friends
- Get help for depression
- Get plenty of sleep
- Keep your mind active

**Mentally exercise by playing games, crossword puzzles, reading books, doing memory training using a computer, and doing other mental activities may help preserve mental function.**

**Talk with your healthcare provider if you or someone close to you sees changes in your memory or thinking.**

National Institute on Aging, 2016

**Where Can I Get More Information?**

**Alzheimer's Disease Education and Referral (ADEAR) Center**

Phone: 1-800-438-4380  
Email: [adear@nia.nih.gov](mailto:adear@nia.nih.gov)  
Website: [www.nia.nih.gov/alzheimers](http://www.nia.nih.gov/alzheimers)

**The ADEAR Center provides information on:**

- Diagnosing Alzheimer's Disease
  - Treating Alzheimer's Symptoms
  - Caring for the Person with the Disease
  - Meeting the needs of Caregivers
  - Finding Lon-Term Care for the Person with Alzheimer's
  - Taking part in Alzheimer's Disease Research
- ADEAR staff can refer you to local and national resources. The Center is a service of the National Institute on Aging, part of the Federal Government's National Institute of Health (NIH).*

**Alzheimer's Association**

Phone: 1-800-272-3900  
Email: [info@alz.org](mailto:info@alz.org)  
Website: [www.alz.org](http://www.alz.org)

*The Alzheimer's Association is a nonprofit organization offering information and support services to people with Alzheimer's disease and their caregivers and families. The Alzheimer's Association also sponsors research. Call or visit its website to find out where to get help in your area. You can also sign up with TrialMatch to get information on research studies that might be right for you.*