

IMPLEMENTING A CULTURALLY APPROPRIATE DEMENTIA SCREENING TOOL FOR  
FILIPINO PATIENTS

UNIVERSITY OF HAWAI'I AT MĀNOA NANCY ATMOSPORA-WALCH SCHOOL OF  
NURSING

A DOCTOR OF NURSING PRACTICE PROJECT SUBMITTED TO THE GRADUATE  
DIVISION OF THE UNIVERSITY OF HAWAI'I AT MĀNOA IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF NURSING PRACTICE

AUGUST 2023

By Cesar "CJ" Salmasan Macadangdang, Jr.

Dissertation Committee:  
John Casken, Chairperson  
Ray Romero  
Frankie Hale

Keywords: Language barrier, MMSE, Filipino, Dementia

## Abstract

**Problem Statement:** Over an eight-week period for Filipino patients with limited English proficiency (LEP) who speak a Filipino language (Ilokano or Tagalog), does using a culturally appropriate linguistic version of the Mini-Mental State Examination (MMSE) in an outpatient neurology clinic caring for Filipino patients change patients' diagnostic score for cognitive impairment, compared to the English version's score?

**Purpose:** To increase the accuracy of cognitive impairment diagnosis. The wide-reaching purpose was to ensure that culturally appropriate screenings are done in outpatient neurological clinical settings.

**Methods:** Clinicians administered the MMSE in English and the Ilokano or Tagalog language. MMSE scores were collected via chart review by the DNP student.

**Results:** MMSE scores generally improved after administering the MMSE in English and then asking questions in Ilokano or Tagalog from incorrect responses of the English MMSE. There was a total of nine patients ( $n = 9$ ) aged 69 to 92 years old ( $\bar{x} = 81.4$ ;  $M = 84$ ). Of the nine patients, seven patients took both English MMSE and Ilokano MMSE or Tagalog (two patients did not take the English version *and* a Filipino language version).

**Discussion:** The use of Ilokano and Tagalog screening tools would best serve clinical practices throughout the state due to the population comprising many people with Filipino ancestry. Due to the small number of subjects in this project, further investigation, particularly the impact of various languages represented by the various cultures in Hawai'i, would help in understanding and potentially alleviating language barriers.

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## Implementing a Culturally Appropriate Dementia Screening Tool for Filipino Patients

Dementia is a gradual disruption in cognition that leads to a loss of independent function (Ljubenkov & Geschwind, 2016). According to the World Health Organization, there are approximately 55 million people with dementia worldwide (WHO, 2021). Furthermore, WHO predicts there will be 78 million people with dementia by 2030 and 139 million by 2050 (WHO, 2021). An early diagnosis of dementia allots time for the patient and loved ones to prepare and accommodate (physically, mentally, emotionally, and financially) for the entire course of the disease especially while the patient is still cognitively present (Rasmussen & Langerman, 2019). Patients with mild-to-moderate dementia may be able to have a good quality of life with access to appropriate treatments and resources (Rasmussen & Langerman, 2019).

Mental status evaluation is integral in the clinical assessment of neurological patients. The Mini-Mental State Examination (MMSE) is a screening tool frequently utilized by healthcare professionals to detect cognitive impairment in seniors, specifically attention, memory, and language functions (Siqueira, Hagemann, Coelho, Santos, & Bertolucci, 2019). The MMSE comprises of five sections: orientation, registration, attention and calculation, recall, and language (Folstein, Folstein, & McHugh, 1975). The MMSE was created in the English language but has subsequently been adapted into various language versions for use throughout the world. For example, the Dementia Society of the Philippines developed an adapted MMSE in Ilokano and Tagalog (Ligsay & Dominguez, 2002).

The MMSE is a validated diagnostic tool for dementia. For example, a meta-analysis of 15 community studies showed an MMSE score of 24 as a cutoff for “normal” resulted in a sensitivity of 0.85, meaning 85% of people with dementia onset are likely to be correctly identified with the MMSE while 15% would be incorrectly classified as not having dementia or

having a false negative result (Trivedi, 2017). Additionally, it has a specificity of 0.90, or 90% of subjects would be correctly identified as *not* having dementia (Trivedi, 2017).

### **Needs Assessment**

A needs assessment in an outpatient neurology clinic with a substantial Filipino patient population demonstrated the need for a culturally and linguistically appropriate screening tool for cognitive impairment. The DNP student conducted observations of patient interactions and had in-person interviews with the neurologist and clinic staff members. Westshore Neurology is a neurology clinic located in Waipahu, O`ahu, Hawai`i and it is led by Dr. Ray Romero, a board-certified neurologist with over 40 years of experience, with support from clinic staff members. Dr. Romero determined this DNP Project's focus on mitigating language barriers by using an MMSE in Ilokano and Tagalog to be feasible and culturally competent to help the Filipino patient population in screening cognitive impairment.

Currently, the screening tools at this clinic are in English. When a majority of Filipino patients speak to the neurologist and staff, they speak in one of the Filipino languages and/or English. When MMSEs were done in English with elderly patients of Filipino ancestry, there were occurrences in which the patients did not fully understand the questions that may be due to their limited English proficiency (LEP).

In Hawai`i, approximately 25.1% of the state's population is Filipino (Hawaii Department of Business, Economic Development and Tourism, 2012, p. 6). Approximately 18.8% of these Filipinos were 65 years of age or older. There were 54,005 people who primarily spoke Ilokano at home in Hawai`i and 58,345 people who primarily spoke Tagalog at home in Hawai`i (Hawaii Department of Business, Economic Development and Tourism, 2016, p. iii). These statistics demonstrate the necessity for the MMSE translated into Filipino languages to



mitigate language barriers that could otherwise inaccurately diagnose dementia and its stages of progression.

The project team consisted of the DNP student, content expert (Dr. Romero), clinic staff members (medical assistants), and medical or nurse practitioner (NP) students. All project team members provided input, support, and oversight to ensure the project fulfilled its objectives. The DNP student promoted collaboration by encouraging all stakeholders to participate in the decision-making process.

### **PICOT**

A PICOT (population, intervention, comparison, outcome, and time) statement is the indispensable foundation for a DNP project. The PICOT statement in this DNP project was: Over an eight-week period for Filipino patients with limited English proficiency (LEP) who speak a Filipino language (Ilokano or Tagalog), does using a culturally appropriate linguistic version of the Mini-Mental State Examination (MMSE) in an outpatient neurology clinic caring for Filipino patients change patients' diagnostic score for cognitive impairment, compared to the English version's score?

- Population: Filipino patients with LEP who speak a Filipino language (Ilokano or Tagalog)
- Implementation: Implementation of culturally appropriate linguistic version of MMSE
- Comparison: Compare total MMSE scores for one of the Filipino languages (Ilokano or Tagalog) versus English
- Outcome: Change in diagnostic score for cognitive impairment
- Time: Eight-week period

### **Purpose and Objectives**

The purpose of this evidence-based practice (EBP) DNP Project was to increase the accuracy of cognitive impairment diagnosis. The wide-reaching purpose was to ensure that culturally appropriate screenings are done in outpatient clinical settings.

The following objectives were completed within eight weeks in the school semester of Summer 2022:

1. The DNP student introduced this project to the clinic staff and medical/NP students to ensure that everyone present were aware of this project and informed them that they may assist in administering the MMSEs for those who are able to speak both Filipino and English. An instructions sheet was provided with directions on the logistics of this project in the clinic such as how to administer the MMSEs.
2. The clinician (DNP student, neurologist, medical assistant, or medical student) administered the Ilokano and English or Tagalog and English versions of the MMSE to nine Filipino patients.
3. The DNP student reviewed data (scores from both MMSEs) and conducted chart review for each patient.

The project team identified Filipino patients who spoke a Filipino language (Ilokano or Tagalog) who were referred or who had a follow-up appointment for cognitive impairment. If they spoke Ilokano and English or Tagalog and English, the administration of both MMSEs would proceed. The clinician informed the patient and their accompanying family/caregiver that this EBP project is solely for the purpose of helping to complete this DNP project. The clinician asked for consent. If they consented, the clinician proceeded with screening cognitive impairment using the MMSE in English first. The clinician scored the text based on correct

answers provided by the patient. For incorrect answers in English, the clinician then asked the patient the questions in one of the Filipino languages. The scores were adjusted based on the correct answers provided on the MMSE in Ilokano or Tagalog. For example, if the patient originally had a score of 14 in the English MMSE but answered questions in the Ilokano MMSE correctly for an additional gain of 3 points, the adjusted Ilokano MMSE score was 17. Scores were recorded and the completed MMSEs were placed in the patient's chart. Review of the scores and compilation of this data were completed by the DNP student.

### **Framework**

The implementation framework that was used to guide this DNP project was the Iowa Model (Figure 1), and permission for its use was granted (Figure 2). It is commonly used for implementing evidence-based practice (EBP) processes and practice changes (Iowa Model Collaborative, 2017). Following the model for this DNP Project, a clinical issue was identified which was a language barrier for a commonly used screening tool, the MMSE. It was stated to be a priority by the neurologist. Subsequently, an EBP team was formed consisting of the DNP student, neurologist, neurology clinic staff members, and medical or NP students. The DNP student then appraised and synthesized evidence from literature and obtained approval from the DNP Project Committee for implementation.

### **Synthesis of the Evidence**

#### **Evidence Search Method**

The databases utilized to search the literature were PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Google (Figure 3). The following Medical Subject Headings (MeSH) terms were used for the PubMed search: *dementia* and *mental status and dementia tests*. To narrow the search, the term *language* was used. This yielded 41 results

and two articles were relevant. A subsequent search of *Filipinos AND dementia* yielded 34 results and seven articles were relevant. A search of *cultural competence AND healthcare AND language barrier* yielded 212 results after adjusting for the year of publication ranging from 2017 to 2021; four articles were relevant. In CINAHL, the search terms *dementia AND Filipino* were utilized. This yielded 24 results and was narrowed to seven relevant articles. In another search, *MMSE or mini mental state examination AND Ilokano OR Ilokano* were utilized. In Google, searches were conducted using *Hawaii Filipinos census* and *Hawaii Ilokano speakers* and *Hawaii Tagalog speakers*. This yielded three government publications with statistics on the Filipino population and number of Tagalog speakers in Hawai'i.

After removing non-relevant and duplicate articles, a total of 25 articles resulted and were subsequently critically appraised along with the level of evidence using Mosby Elsevier's Level of Evidence (Table 1). It is also referred to as a "hierarchy of evidence" and is used to appraise evidence based on the design, validity, and application to patient care (Ackley, Swan, Ladwig, & Tucker, 2008).

## **Literature Synthesis**

**Language barrier.** The use of a different language among the healthcare team and patient is a barrier to effective communication and affects the patient's health literacy in comprehending one's illness, talking with providers, and navigating the health care system (O'Toole, Alvarado-Little, & Ledford, 2019). Simply put, language barrier is an obstacle to patient-centered care as it decreases both patient and provider satisfaction and communication (Al Shamsi, Almutairi, Al Mashrafi, & Al Kalbani, 2020). It was also found that patients who face language barriers tend to seek more healthcare services and have more adverse events compared to patients with English proficiency (Al Shamsi et al., 2020). To alleviate language

barrier, O'Toole et al. (2019) state that qualified medical interpreters and multilingual written materials (e.g., consent forms and instructions to prepare for surgery or taking medication) are used for patients and families with limited English proficiency.

**Cultural competence.** Cultural competence involves sensitivity, tolerance, curiosity, and an incessant pursuit of cultural knowledge (Henderson, Horne, Hills, & Kendall, 2018). It also involves being mindful of Western norms that may not be consistent with non-Western cultural norms. Henderson et al. (2018) state that cultural competence leads to benefits such as improved health outcomes, perceived high-quality healthcare, satisfaction with healthcare, and adherence to treatment plans.

**Dementia pathophysiology.** There are four subtypes of dementia: Alzheimer's disease (AD), dementia with Lewy Bodies (DLB), frontotemporal dementia (FTD), and vascular dementia (VaD); mixed dementia has a mixed etiology of AD and VaD (Raz, Knoefel, & Bhaskar, 2016). One shared etiology among the subtypes is cerebrovascular dysfunction which includes vascular remodeling and pathologic-induced changes to macro- and microvasculature (Raz et al., 2016). Vascular disease and cerebral hypoperfusion have been linked to injuries to neurons as well as structural and functional brain damage which can lead to cognitive decline (Raz et al., 2016).

**Dementia healthcare costs.** A systematic review found that the annual cost per person with dementia in the United States was about \$48,000.00 (Cantarero-Prieto, Leon, Blazquez-Fernandez, Juan, & Cobo, 2020). The authors further stated that dementia is a "huge economic burden" and that the costs increased in correlation with higher severity of dementia. The estimated total cost in 2021 for health care, long-term care, and hospice services for people aged

65 and older with dementia was about \$355 billion in the United States (Alzheimer's Association, 2021).

**Statistics on Filipinos and dementia.** In a cohort study done in the Philippines, the authors found that 10.6% of subjects over age 60 had dementia and 23.2% of subjects had mild cognitive impairment (Dominguez et al., 2021). In the United States, a cohort study found that dementia incidence was higher in the Filipino-American community compared to other Asian-American subgroups: 17.3 per 1,000 person-years for Filipino-Americans, 14.8 per 1,000 person-years for Japanese-Americans, and 13.7 per 1,000 person-years for Chinese-Americans (Mayeda, Glymour, Quesenberry, & Whitmer, 2017). The authors also reported there was a 20% higher risk of dementia in Filipino-Americans compared to Chinese-Americans.

In Hawai'i, Filipinos represent 14.5% of the population (Hawaii Department of Business, Economic Development and Tourism, 2012). As mentioned earlier, there were 54,005 people who spoke Ilokano at home and 58,345 people who spoke Tagalog at home (Hawaii Department of Business, Economic Development and Tourism, 2012). Data also showed that 18.8% of Filipino adults in Hawai'i were 65 years old or above (United States Census Bureau, 2019). According to the Stanford School of Medicine (2021), there were limited data regarding the prevalence of dementia among elderly Filipino Americans, most likely due to minimal case findings. Sentell et al. (2015) also reported that there were "limited clinical data" on Native Hawaiians and several Asian subgroups: Chinese, Japanese, and Filipino. Lastly, recently a lower mean MMSE score was found for Asian seniors (including Filipinos) compared to Caucasians (Co et al., 2021). This data led to the conclusion that dementia was overlooked, underreported, and potentially underdiagnosed in Filipinos in Hawai'i. In summary, these

statistics show how large the Filipino population is in Hawai'i and reinforces the need for Ilokano and Tagalog translations of the MMSE.

**Effectiveness of MMSE in screening dementia.** As mentioned earlier, Trivedi (2017) summarized a meta-analysis of 15 studies in the community setting and found that the MMSE sensitivity rate was 0.85 and specificity rate was 0.90. Creavin et al. (2016) stated that the MMSE led to a diagnosis at score thresholds of 24 and 25 after adjusting for education level. The authors further added that they supported using the MMSE as part of a diagnostic assessment for dementia but that it should not be the only clinical assessment used to diagnose or exclude the presence of dementia (Creavin et al., 2016).

**MoCA and Mini-Cog.** The Montreal Cognitive Assessment (MoCA) was found to be “a more sensitive tool” for cognitive impairment due to its assessment of executive function and visuospatial abilities (Siqueira et al., 2019). The authors reported that those who had normal scores on the MMSE had lower scores on the MoCA which confirms the MoCA's higher sensitivity in detecting dementia compared to the MMSE. The MoCA has a sensitivity rate of 90% and specificity rate of 87% (Li, Dai, Zhao, Liu, & Li, 2018). The Mini cognitive scale (Mini-Cog) is another cognitive function screening scale that takes just 3 minutes to complete compared to MMSE's 5-10 minutes and MoCA's 10-15 minutes (Li et al., 2018). Mini-Cog has a sensitivity rate of 76% to 99%, and a specificity rate of 89% to 93% (Li et al., 2018). Despite these shortcomings, the MMSE is widely used as a screening tool for research, clinical diagnoses, and to track dementia's progression over time (Creavin et al., 2016; Siqueira et al., 2019). The time-consuming MoCA and brief Mini-Cog can result in the MMSE being the “happy medium” between these two measures such that clinicians can confidently use it to diagnose dementia (R. Romero, MD, personal communication, January 28, 2022).

**MMSE in non-English languages.** There are several adaptations of the MMSE used globally. There are versions in the following languages: Irish (Chaoimh, De Bhaldraithe, O'Malley, MacAodh Bhui, & O'Keeffe, 2015); South Asian languages such as Bengali, Gujarati, Hindi, Punjabi, and Urdu (Tabassum & Jawed, 2010); Japanese, Korean, Chinese, Portuguese, Turkish, Yoruba [Nigeria] (Steis & Schrauf, 2009); and an MMSE in the Philippines that has questions in English with a few Tagalog words (Shim, Yang, Kim, Park, & Kim, 2017). In the Irish MMSE study, it was found that there were higher scores on the Irish MMSE compared to the English MMSE and that Irish speakers who were monolingually Irish-speaking up to 5 years-old fared better on the Irish MMSE compared to the English MMSE (Chaoimh et al., 2015). This demonstrated how the use of a screening tool in a person's primary language may be more accurate due to higher comprehension compared to their second language. Despite efforts in translating MMSEs into different languages, maintaining semantic and content equivalence remains an obstacle (Willgerodt, Kataoka-Yahiro, Kim, & Ceria, 2005).

**Bilingualism and dementia.** In addition, bilingualism is a factor in MMSE scores as it delays the expression of dementia by approximately four years (Mendez et al., 2019; Padilla, Mendez, Jimenez, & Teng, 2016). It was found that bilinguals have worse or lower MMSE scores upon presentation and thus more advanced cognitive impairment. Mendez et al. (2019) suggested that cognitive decline may be compensated by bilingualism.

**Cultural context and socioeconomic factors.** Culture and literacy or education levels are important factors to consider when administering translated MMSEs (Shim et al., 2017; Steis & Schrauf, 2009; Tabassum & Jawed, 2010). Other identified barriers included lack of education, institutional racism, and poor access to and poor provision of services to these population groups (Tabassum & Jawed, 2010). As an example of cultural importance, despite



the predominant international use of the Western calendar, some Asian countries use the lunar calendar with its 24 seasonal divisions (Shim et al., 2017). It is also noteworthy that countries in Southeast Asia do not have seasonal changes so there may not be words like “autumn” or “winter” when asking the MMSE question regarding the patient stating the current season (Shim et al., 2017). To help account for illiteracy or education bias, the Philippines dropped the usual dementia cut-off MMSE score from 23 to 17 for those who obtained only a primary/elementary level of education (Shim et al., 2017). Lastly, Steis and Schrauf (2009) concluded that clinicians and researchers who use the MMSE adaptations need a bilingual assistant to administer the screening.

**Perceptions of dementia.** Asian-Americans and Asian ethnic minorities in Hawai`i have misconceptions about dementia (Liang, Jang, & Aranda, 2021; Suzuki, Goebert, Ahmed, & Lu, 2015). Both studies found that there was a prevailing belief that dementia is a “normal part of aging” and that English as a second language is a factor in perpetuating the stigma of dementia. Both studies concluded the need for culturally-sensitive patient education regarding dementia in Asian communities.

### **Summary of Evidence**

There was limited literature regarding the efficacy of the MMSE identifying dementia in Filipinos. Instead, data and journal articles from various literature searches piece together a puzzle in which information may be inferred upon the Filipino elderly population (Table 2). Despite research that showed MoCA and Mini-Cog being more sensitive in detecting mild cognitive impairment, the MMSE is still a frequently used screening tool for providing an overall measure of cognitive impairment in clinical, research, and community settings (Arevalo-Rodriguez et al., 2015). Also, factors such as culture, literacy, and education levels may factor

into MMSE scores. Due to the limited amount of literature on cognitive screening tools for non-English speakers, there is an opportunity for further investigation and evaluation.

## **Methods**

### **Project Design**

This DNP Project was an evidence-based project as it entailed implementing a culturally appropriate screening tool for screening cognitive impairment in a clinic with a prevalent Filipino patient population.

The DNP student completed the Collaborative Institutional Training Initiative (CITI) training and Health Insurance Portability and Accountability Act (HIPAA) training for research ethics and patient privacy protections, respectively. This DNP project involved an evidence-based project related to use of a translated diagnostic tool at a neurology clinic: administering a common screening tool for dementia in a non-English language. This did not produce new research knowledge and there was no plan to randomize participants or collect personal identifiable data. Therefore, this DNP project did not require IRB application and review (Figure 4).

### **Setting**

This DNP Project was implemented at Westshore Neurology in Waipahu, Hawai'i. Westshore Neurology is a neurology clinic owned and operated by Dr. Ray Romero, a board-certified neurologist with over 40 years of experience. The clinic cares for patients with various neurologic conditions such as dementia, seizures, migraines, neuropathy, and stroke management. There are four patient-visit rooms including two rooms for nerve conduction tests. There are three staff members: an office manager, a medical assistant, and a nerve conduction technician. There are also medical students and nurse practitioner (NP) students who are assigned there for their clinical rotations.

The project involved the following clinicians who administered the MMSEs: the DNP student, content expert, medical assistant, and medical/NP students. This project required clinicians who could speak Ilokano, Tagalog, and English as they verbally asked the questions and communicated with the patients.

Minor changes were made for the MMSE in Ilokano and Tagalog for ease of use (Figure 5). For the Ilokano version, the question “ania nga (kuarto) iti ayan tayo?” [“what room are we in?”] was removed as patients and family members were not usually notified of the “number” designation for the room they were in. For the Tagalog version, “kalye” [street] was changed to “estado” [state] due to the street name not being deemed as common knowledge.

### **Participants**

The participants were Filipino patients with LEP who spoke Ilokano or Tagalog and English, and who were established patients or were being seen at the clinic for a new consultation (i.e., newly referred patients) and were referred by their primary care provider for cognitive impairment. The patients who were administered with both MMSEs were notified of this project beforehand and if they consented, the clinician(s) proceeded.

### **Intervention**

The intervention was implementation of a culturally appropriate screening tool in the outpatient clinical setting. In this case, administering the MMSE in the Ilokano or Tagalog language. This intervention was implemented by the following steps:

1. The DNP student made a combined, front-and-back page MMSE with both original MMSE (that is already used in the clinic) and the Ilokano or Tagalog MMSE made by the Dementia Society of the Philippines (Figure 6). 100 copies (75 Ilokano copies and 25 Tagalog copies) were placed in a binder with a “sign-in” sheet in the same filing bin

where the current screening tools are located. The clinician or staff member “signed-in” the patient’s name and date as compliant with HIPAA. This sheet was used to track patient’s charts on chart review by the DNP student.

2. The DNP student described the project to the clinic staff and clinicians.
3. The clinic staff identified Filipino patients with LEP who spoke Ilokano or Tagalog. They recorded the date and patient’s name before taking one copy out of the binder.
4. Before administering the MMSEs, the clinician obtained consent from the patient/caregiver if they were agreeable to proceed with administering both MMSEs. The clinician explained that this was part of a DNP project to assess if the patient will do better in Filipino or English, and that the neurologist is also encouraging Filipino patients to do both to see what difference there is between doing both versions.
5. The clinician asked the listed questions at the top: “What is the highest level of education the patient obtained?”; “when did the patient immigrate to the United States?”; “how long has the patient been speaking Filipino?” Then, the clinician proceeded with administering the MMSE in English first then the MMSE in one of the Filipino languages (on the back of that two-sided paper). The clinician scored based on the answers the patient provided.
6. If the clinician was unable to speak or communicate in Ilokano or Tagalog, the neurologist or medical assistant administered the Ilokano or Tagalog questions that were originally incorrect in the English version. The adjusted MMSE score was calculated based on the number of correct answers given in the Filipino version.

## **Data Collection**

Cognitive impairment is difficulty with memory, learning, concentration, and judgment (CDC, 2011, p. 1). It is graded from “mild” to “severe” with “mild” involving cognitive changes while having the ability to do activities of daily living; “severe” involves inability to live independently. Furthermore, it is caused by dementia, stroke, traumatic brain injury, and developmental disability (CDC, 2011, p. 2). Cognitive impairment was measured by using the MMSE. For the Ilokano and Tagalog versions, the MMSE is from the Dementia Society of the Philippines’ adaptation. The original (English) version was already provided by the neurology clinic. Both were used for the double-sided MMSE to be used for this DNP Project.

For implementation of the DNP Project, there were 100 copies (75 Ilokano copies and 25 Tagalog copies) of the double-sided MMSE inside a binder with a sign-in sheet on the front for the clinician to record the date of administration and the patient’s name for chart review purposes. The clinician took one double-sided MMSE from the designated binder (one binder had the Ilokano version and another binder had the Tagalog version). The clinician told the patient that s/he would administer the MMSE: one in English. Then any incorrect questions that they made in the English version would be asked in the Filipino language they primarily use. The clinician asked each question on the MMSE and subsequently scored the patient’s response.

The clinician placed both MMSEs in the patient’s charts. The DNP student viewed the sign-in sheet, retrieved the patient’s chart, and then recorded the scores of both Filipino and English MMSE obtained from each patient without recording any patient information, and typed the scores on a spreadsheet. Upon chart review and consultation with the neurologist, the DNP student recorded the official diagnosis (e.g., “Alzheimer’s Disease Stage 3”). The DNP student recorded the results on a secured spreadsheet with no patient identifiers using the University of Hawai’i at Manoa’s Google@UH Drive system. All data that were collected were stored in a

secured Google Drive located within the University of Hawai'i at Manoa's Google@UH Drive system. Data uploaded and downloaded from Google Drive was automatically encrypted in transit between Google Drive and the web browser using the TLS protocol. All files uploaded to Google@UH Drive were encrypted while stored on Google's servers. Data was stored in the author's secured file folder that uses file encryption and was accessible only with dual-authentication identification password protection.

### Analysis

Scores from the MMSE were collected via chart review and analyzed. Trend analysis was used to identify changes in scores i.e., if there was an increase, decrease, or no change from using the MMSE in English to using the MMSE in a Filipino language).

### Results

This DNP project demonstrated that MMSE scores generally improved after administering the MMSE in English and then asking questions in Ilokano or Tagalog that have been answered incorrectly when they were asked in English. There was a total of nine patients ( $n = 9$ ) aged 69 to 92 years old ( $\bar{x} = 81.4$ ;  $M = 84$ ). Of the nine patients, seven patients took both English MMSE and Ilokano MMSE or Tagalog (Patients 1A and CPM took only the English version of the MMSE).

**Table 3**

*MMSE in Ilokano and English*

Patient Serial Sequence #	Age and Gender	English MMSE score	Ilokano MMSE score	Previous visit English MMSE score
1A*	77F	---	11	16
3A	92M	15	17	New patient

\*For Patient 1A, MMSE was only administered in Ilokano.

**Table 4***MMSE in Tagalog and English*

<b>Patient Serial Sequence #</b>	<b>Age and Gender</b>	<b>English MMSE score</b>	<b>Tagalog MMSE score</b>	<b>Previous visit English MMSE score</b>
Clinic-provided MMSE (CPM)	84F	---	25	Mini-cog 3/5
1B	78M	28	30	Mini-cog 4/5
2B	73M	0	9	Mini-cog 0/5
3B	88F	10	11	Mini-cog 0/5
4B	85F	15	15	Mini-cog 0/5
5B	69M	29	30	New patient
6B	87F	24	26	Mini-cog 2/5

Note: "---" means that no information was provided by the patient; in the absence of previous MMSE score, the most recent Mini-cog score was recorded instead

**Table 5***Ilokano Patient Demographics*

<b>Patient Serial Sequence #</b>	<b>Highest Level of Education</b>	<b>Year Immigrated to USA</b>	<b># of Years speaking Ilokano and English</b>	<b>Dx (per Dr Romero)</b>
1A	6th grade Philippines	1974	77 Ilokano; unsure for English	AD 5
3A	High school Philippines	1984	92 Ilokano; "decades" for English	Late onset AD

Note: "AD" is Alzheimer's Disease

**Table 6***Tagalog Patient Demographics*

<b>Patient Serial Sequence #</b>	<b>Highest Level of Education</b>	<b>Year Immigrated to USA</b>	<b># of Years speaking Tagalog and English</b>	<b>Dx (per Dr Romero)</b>
Clinic-provided MMSE (CPM)*	---	---	---	PD w/ dementia
1B	College in Philippines (economics)	1950s	78 Tagalog; 70 English	AD 2 or 3
2B	Elementary school in Philippines	2008	73 Tagalog; 0 English	AD 5
3B	High school Philippines	1980	88 Tagalog; 82 English	AD 4

4B	High school Philippines	---	---	AD 6
5B	College in Philippines	1973	69 Tagalog; 69 English	MCI
6B	---	---	---	AD 4

\*For the "Clinic-provided MMSE [CPM]", the clinician used the clinic's copy of the MMSE in English but verbally asked the questions in Tagalog.  
Note: "---" means that no information was provided by the patient; "PD" is Parkinson's Disease

There were the following caveats in data collection. For Patient 1A in Table 3, the MMSE was only administered in Ilokano. Therefore, no score in English was obtained. For the "Clinic-provided MMSE [CPM]" in Table 3, the clinician used the clinic's copy of the MMSE in English but verbally asked the questions in Tagalog. Therefore, no score in English was obtained. For the data with "---" in Table 6, the clinician did not ask the patient these questions, so no data or information was obtained.

The purposes of this DNP Project were to increase the accuracy of cognitive impairment diagnosis and to ensure that culturally appropriate screenings were done in outpatient clinical settings. The former was difficult to assess but the latter was fulfilled. It was not the scope of this project and the DNP student to make a diagnosis. Therefore, it was difficult to determine an increase in accuracy of cognitive impairment diagnosis, but the data demonstrated that MMSE scores generally increased after asking questions in the patient's native language. As to the second purpose, this was achieved by the administration of seven MMSEs in a Filipino language.

The objectives were fulfilled but there were adjustments made after encountering an obstacle. The original aim of this project was to *fully* complete both MMSEs (one in English and one in Ilokano or Tagalog) but it was discovered by the DNP student that this was time-consuming especially for the clinic which sees approximately 30 patients a day. Dr. Romero suggested that clinicians administer the English MMSE first and that the questions the patient answered incorrectly would be the only questions asked in Ilokano or Tagalog. The adjusted score would then be tallied. This approach was then implemented and the Ilokano MMSE and



Tagalog scores reflect these adjusted scores. The thought is that since the patients already answered correctly in English, it would be repetitious to go through the entire MMSE again so it would be beneficial to re-ask the incorrect English questions in their native language instead. This agrees with the objective of this project to mitigate language barriers.

### **Discussion**

Though the needs assessment showed the need for more Ilokano MMSE compared to Tagalog MMSE, there were seven Tagalog patients compared to two Ilokano patients in this DNP Project. In Tables 2 and 3, the score from English MMSE to Ilokano or Tagalog MMSE increased (Patients 3A, 1B, 2B, 3B, 5B, and 6B) and did not change (Patient 4B). This shows that previously asked questions in the English MMSE with incorrect responses were generally answered correctly in the Ilokano or Tagalog MMSE. In particular, Patient 2B had a score of “0” on the English MMSE and a score of “9” on the Tagalog MMSE. This may be due to the severity of his dementia (he has a diagnosis of Alzheimer’s Disease Stage 5 [see Table 5]) but his ability to answer some questions in the Tagalog MMSE correctly most likely points to a language barrier. Regarding the obstacle in quantifying an increase in the accuracy of a diagnosis, this example may exhibit the prevention of misdiagnosis of his AD into a later stage such as AD 6 or AD 7. Yet, this is just one case.

As the literature mentioned, education level was another factor. Patients 1B and 5B (Table 5) were the only patients who finished college in the Philippines and obtained the highest scores (30/30) out of all the patients in this project. Their diagnoses were also the least severe of all patients: AD 2 or 3 and mild cognitive impairment (MCI), respectively (Table 5).

There were several limitations to the project. The administration of two MMSEs during the visit was time-consuming and affected the clinic’s flow which led to the aforementioned

changes. The changes in the protocol introduced the “adjusted MMSE scores” so there was no asking of all questions on the MMSEs in the Filipino language; it was implied that since they answered correctly in English that they would answer correctly in the Filipino language, but this was purely an assumption. Also, the clinicians’ interpretation of the answers may have affected the scores as no standardized answer sheet was provided. Therefore, the scores of each question were at the discretion of the clinician. Regarding audibility, there might have been some patients with impaired hearing (presbycusis) due to advanced age. The wearing of surgical masks by the clinician also could have made the patient mishear or misinterpret the questions leading to incorrect responses.

The project relates to DNP essentials by predominantly advocating Essential II (Organizational and Systems Leadership for Quality Improvement and Systems Thinking) and Essential VII (Clinical Prevention and Population Health for Improving the Nation’s Health). Essential II was demonstrated by using translations of a common cognitive screening tool as a quality improvement to overcome language barriers in the Filipino patient population. Essential VII was also promoted by advocating for the population health of the elderly of Filipino heritage. The role of the APRN is to accurately assess, diagnose, treat, and ensure patient-centered care by accommodating the patient’s cultural values and needs which includes using proper language interpretation or translation services.

### **Conclusion**

Language is an important factor to consider when assessing a patient. It is invariably the essence of communication and comprehension. Screening tools like the MMSE are useful at leading towards a diagnosis and enhancing such tools by mitigating language barriers, especially in diverse populations, is appropriate in promoting best practice which this project demonstrated.

The use of Ilokano and Tagalog screening tools would best serve outpatient clinical practices throughout the state due to the population consisting of many people with Filipino ancestry. For the clinician who speaks a Filipino language, it would be easier and efficient to read off the screening tool instead of trying to translate from the English version *ad lib*.

Implications of these findings include further investigation into the role of language barriers in healthcare, particularly the impact of various languages represented by the various cultures in Hawai`i. The unique conglomeration of the state population is appropriate for studying the influence of language related to health literacy and outcomes. “Health” may be interpreted differently by non-Western cultures which may lead to a wide array of insight by the people of Hawai`i. For example, many people believe that there is a pill for everything but many fail to realize that prevention is just as important as actual treatment. Therefore, patient education in a way that is mindful of the patient’s background and constructing words and sentences into what would be motivational for the patient would be ideal. This may be done by addressing the patient’s needs or concerns and having open, culturally appropriate discussions about their health.

The Filipino people are a tenacious and humble folk who often, at the expense of their own health, serve the needs of others before themselves. Immigrants from the Philippines mostly move to Hawai`i to labor through more than one job to earn money to send to their families back to the homeland. Their limited English proficiency does not hinder them from their self-sacrificing service to other people. We are witnesses to their diligence and perseverance in many professions such as retail, healthcare, housekeeping, and landscaping. For all that they go through, hopefully screening for diseases in their native languages—something trivial yet with large implications—provide some sort of comfort and a sense of familiarity. For

a disease like dementia that is debilitating and exhausting for all people involved, the patient and their family may find some contentment in being assessed by healthcare professionals who can communicate in the patient's native language and understand their culture.

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## Appendix A

## The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

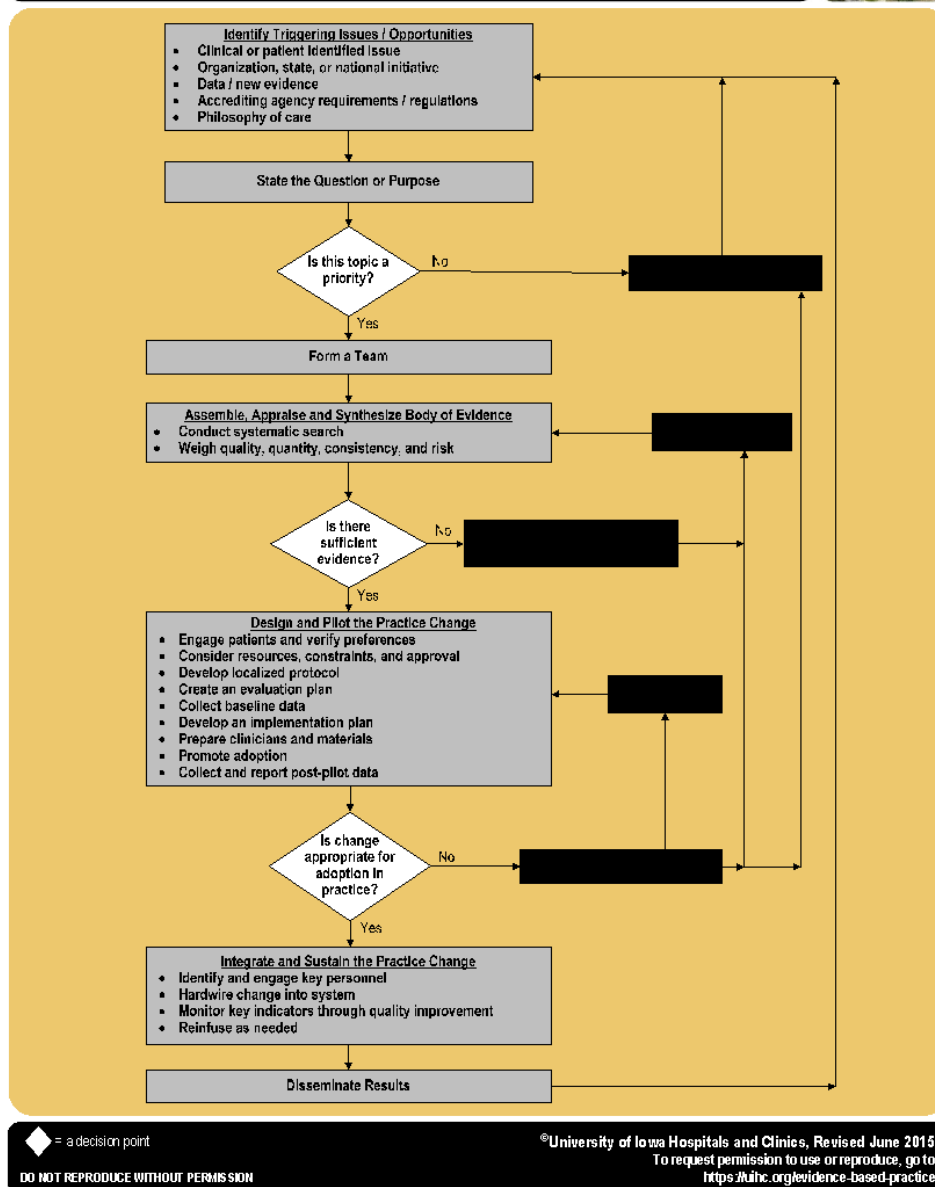





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*Appendix B*

Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care  

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*Figure 2.* Email regarding permission for use of The Iowa Model.

Appendix C

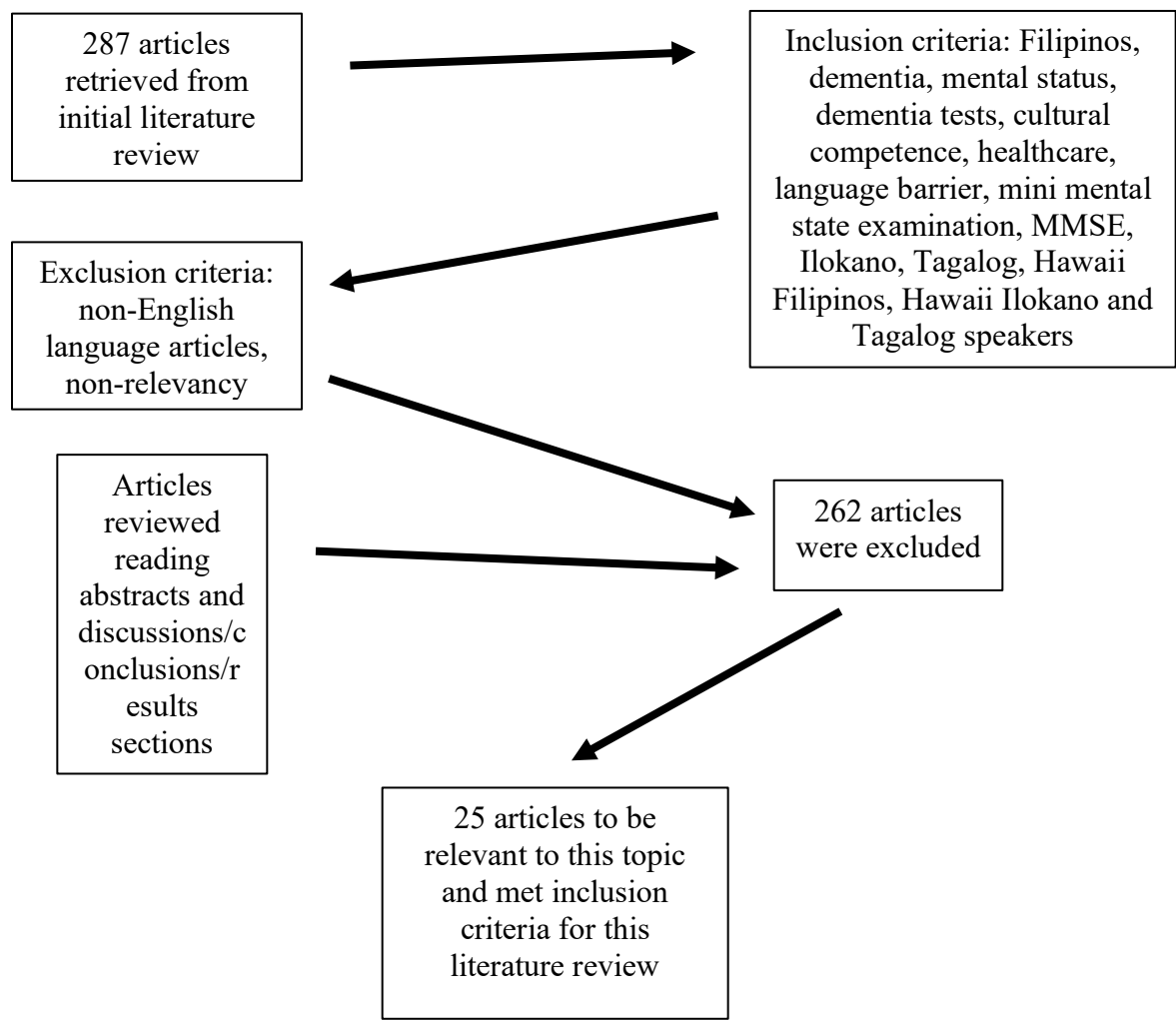


Figure 3. Literature Review Flow Diagram

## Appendix D

Table 1.

*Mosby Elsevier's Level of Evidence and Number of Relevant Articles*

<b>Mosby Elsevier's Level of Evidence</b>	<b>Number of Articles (Total of 25)</b>
<b>Level I:</b> Systematic review or meta-analysis of RCTs	7
<b>Level II:</b> Experimental design (RCT)	0
<b>Level III:</b> Quasi-experimental design	2
<b>Level IV:</b> Case-controlled, cohort, longitudinal studies	5
<b>Level V:</b> Correlation studies	0
<b>Level VI:</b> Descriptive studies	4
<b>Level VII:</b> Authority opinion or expert committee reports	1
<b>Other:</b> Performance improvement, case reports, literature review, etc.	6

## Appendix E

Table 2.  
Literature Matrix Table

Author and Date	Focus/Purpose	Stated Method	Sample Description	Main Findings
Arevalo-Rodriguez et al., 2015	To determine the diagnostic accuracy of the MMSE at various thresholds for detecting individuals with baseline MCI who would clinically convert to dementia in general, Alzheimer's disease dementia or other forms of dementia at follow-up.	Level I: Systematic Review	1569 MCI patients from 11 studies	<p>The review did not find evidence of the MMSE being the sole tool that may be used in identifying MCI patients who could develop dementia—a set of tests rather than just one tool may be more successful.</p> <p>Clinicians may conduct additional and comprehensive assessments. The authors suggest future studies being done to observe the MMSE's ability to track the progression of dementia at different stages.</p>
Cantarero-Prieto, Leon, Blazquez-Fernandez, Juan, & Cobo, 2020	To determine the overall cost of dementia care.	Level I: Systematic Review	26 studies	<p>The annual cost per person with dementia in the United States is €42,898.65 or about \$48,000.00. The authors further state that dementia is a “huge economic burden” and that the costs increase the higher the severity of dementia.</p>

<p>Chaoimh, De Bhaldrathe, OMalley, MacAodh Bhui, &amp; O’Keeffe, 2015</p>	<p>To examine the test performances of Irish and English language versions of the MMSE in a bilingual older hospital population in Ireland.</p>	<p>Level III: Quasi-experimental design</p>	<p>134 subjects</p>	<p>The authors found that bilinguals have improved executive functions e.g., problem solving although they have also been shown to experience more tip-of-the-tongue retrieval failures and generate fewer items on verbal fluency tasks competition perhaps because of competition or interference between their language systems. Also, language barriers between staff and patients create difficulties in communication and assessment in healthcare especially for cognitive testing which relies heavily on verbal skills.</p>
<p>Creavin et al., 2016</p>	<p>To determine the diagnostic accuracy of the MMSE at various cut-points for dementia in people aged 65 years and over in community and primary care settings who had no previous screening for dementia.</p>	<p>Level I: Systematic Review</p>	<p>28 studies in the community setting; 6 studies in primary care</p>	<p>The MMSE aids a diagnosis of dementia in low prevalence settings but should not be used in isolation to confirm or exclude disease.</p>

Dominguez et al., 2021	To encourage governments to develop national dementia plans especially in developing countries. In this study, they directly assessed the incidence of dementia, disability adjusted life years (DALYs), and cost of care among community-dwelling Filipino elderly.	Level IV: Cohort Study	748 subjects	The crude incidence rate was 16 cases per 1,000 person-years (pyr) with 17 per 1,000 pyr for females and 14 per 1,000 pyr for males. Based on this incidence, the authors predict 220,632 new cases in 2030, 295,066 in 2040, and 378,461 in 2050. Disease burden was at 2,876 DALYs per 100,000 persons. The economic burden per patient was around Php 196,000 annually (i.e., ~4,070 USD, or 36.7% of average family annual income in the Philippines).
Hawaii Department of Business, Economic Development and Tourism, 2012	To provide data on the percentage of Filipinos based on Hawai'i's total population.	Other: Government Report	N/A	In Hawai'i, there are 342,095 Filipinos and part-Filipinos. Approximately 25.1% of the total state population is Filipino. Approximately 18.8% of people with Filipino ancestry who are 65 years old and above.
Hawaii Department of Business, Economic Development and Tourism, 2016	To provide data on the number of Filipino/Tagalog speakers in Hawai'i.	Other: Government Report	N/A	There are 329,000 non-English speakers. There are approximately 58,000 Tagalog speakers in Hawai'i.



<p>Henderson, Horne, Hills, &amp; Kendall, 2018</p>	<p>To analyze the consequences of cultural competence: satisfaction with care, the perception of quality healthcare, better adherence to treatments, effective interaction and improved health outcomes.</p>	<p>Other: Literature Review</p>	<p>26 articles</p>	<p>Cultural competence involves sensitivity, tolerance, curiosity, and an incessant pursuit of cultural knowledge. It also involves a “high level” of moral reasoning which is the cognitive process in figuring the right or wrong ethical decision especially when current moral reasoning is based on Western norms that may not be consistent with non-Western cultural norms. Cultural competence leads to improved health outcomes, perceived quality healthcare, satisfaction with healthcare and adherence to treatment.</p>
<p>Li, Dai, Zhao, Liu, &amp; Li, 2018</p>	<p>To compare the Mini-Cog and MMSE in screening patients for MCI in a neurological outpatient department.</p>	<p>Level IV: Cohort Study</p>	<p>229 subjects</p>	<p>The Mini-Cog was superior to MMSE in identifying MCI patients. Mini-Cog was less affected by age and education level than MMSE. The Mini-Cog assessment was short (3–4 minutes) and easily accepted by the patients. Mini-Cog could be more suitable for application in the outpatient department in primary hospitals.</p>

Liang, Jang, & Aranda, 2021	To analyze the prevalence and predictors of three stigmas about AD (e.g., normal process of aging, family embarrassment, and social avoidance) using a sample of Asian Americans representing diverse ethnic groups (Chinese, Asian Indian, Korean, Vietnamese, Filipino and other Asians) and a broad age range (18-98).	Level VI: Descriptive Study (Survey)	2,609 respondents	The prevalence of stigmatizing beliefs about AD is varied across ethnicities. Those who were of advanced age, male gender, low education, and limited English proficiency increased the odds of reporting one or more stigmatizing beliefs about AD. There are several AD-related misconceptions which reinforces the need for culturally sensitive AD education in Asian communities.
Mayeda, Glymour, Quesenberry, & Whitmer, 2017	To compare dementia incidence among four Asian-American subgroups and Whites	Level IV: Cohort Study	8,384 Chinese; 4,478 Japanese; 6,210 Filipino; 197 South Asian; 206,490 Whites	Dementia incidence is higher in the Filipino-American community compared to other Asian-American subgroups: Chinese (13.7/1,000 person-years), Japanese (14.8/1,000 person-years), Filipinos (17.3/1,000 person-years), and lower among South Asians (12.1/1,000 person-years)

<p>Mendez, Chavez, &amp; Akhlaghipour, 2019</p>	<p>To evaluate the effects of bilingualism on the emergence of Alzheimer's clinical syndrome.</p>	<p>Level III: Quasi-experimental design</p>	<p>253 subjects</p>	<p>Bilingualism delays the expression of Alzheimer's clinical syndrome. It was also found that there was frequent reversion to the first learned language. These findings suggest that, among bilinguals, the availability of an L1 [first language] "back-up" either facilitates compensation or masks emergence of the early symptoms of dementia.</p>
<p>O'Toole, Alvarado-Little, &amp; Ledford, 2019</p>	<p>To provide an overview of linguistic and cultural challenges related to patient-provider communication, strategies for effective communication with patients with limited English proficiency, and tips for how to teach these skills to health care providers.</p>	<p>Level VII: Authority Opinion</p>	<p>N/A</p>	<p>The use of a different language among the healthcare team and patient and family is a barrier to effective communication and affects the patient and family's health literacy. Qualified medical interpreters and multilingual written materials (e.g., consent forms and instructions to prepare for surgery or taking medication) should be used for patients and families with limited English proficiency.</p>

<p>Padilla, Mendez, Jimenez, &amp; Teng, 2016</p>	<p>To compare cognitive performance in a more culturally homogeneous cohort of older Spanish-speaking monolingual and Spanish-English bilingual Mexican-American immigrants from the Sacramento Longitudinal Study on Aging.</p>	<p>Level IV: Longitudinal Study</p>	<p>289 Spanish monolingual speakers; 339 Spanish-English bilingual speakers</p>	<p>Bilingualism is associated with modest benefits in cognitive screening performance in older individuals. Thus, the effects of bilingualism should be considered when cognitively screening is performed in aging immigrant populations.</p>
<p>Raz, Knoefel, &amp; Bhaskar, 2016</p>	<p>To summarize the current findings in the field and address the contributions of cerebrovascular, physiologic, and cellular alterations to cognitive impairment in varying dementias.</p>	<p>Other: Comprehensive Review</p>	<p>N/A</p>	<p>There are four subtypes of dementia: Alzheimer's disease (AD), dementia with Lewy Bodies (DLB), frontotemporal dementia (FTD), and vascular dementia (VaD); mixed dementia has a mixed etiology of AD and VaD. One shared etiology among these types is cerebrovascular dysfunction which includes vascular remodeling and pathologic-induced changes to macro- and microvasculature. This results in vascular disease and cerebral hypoperfusion linked to injury to neurons and structural and</p>

				functional brain damage.
Sentell et al., 2015	To compare the rates of inpatients with a dementia diagnosis for disaggregated Asian and Pacific Islanders (Native Hawaiian, Chinese, Japanese, Filipino) vs. White by age group (18-59, 60-69, 70-79, 80-89 and 90+ years) for all adult patients hospitalized in Hawai'i between December 2006 and December 2010.	Level IV: Cohort Study	13,465 patients	Across all age categories, Native Hawaiians had the highest unadjusted rates of inpatients with dementia and were hospitalized with a dementia diagnosis at younger ages than other racial/ethnic groups. In adjusted models compared to Whites. Also, there is "limited data" in Native Hawaiians and the following Asian subgroups: Chinese, Japanese, and Filipino.
Shim, Yang, Kim, Park, & Kim, 2017	To compare the linguistic and cultural variations of the MMSE used in various Asian countries.	Level VI: Descriptive Study	11 adapted MMSEs	Many items may be applicable or comparable with a little modification, for Asian countries. But, attention and calculation and repetition may be incomparable. The lack of consideration of the cultural differences and their influences on the interpretation of the same cognitive test makes cross-cultural studies

				difficult. Some items of MMSE tasks need readjusting.
Siqueira, Hagemann, Coelho, Santos, & Bertolucci, 2019	To contrast the most used screening tools—MMSE and MoCA for early detection of neurocognitive disorder (NCD).	Level I: Systematic Review	51 studies	21 out of 33 studies within the older set suggested that the MoCA is a more sensitive tool for detecting NCD. 37 studies suggested that the MoCA is a more sensitive tool for NCD detection because it assesses executive function and visuospatial abilities. Some individuals who demonstrated normal cognitive function on the MMSE had lower performance on the MoCA.
Stanford School of Medicine, 2021	To identify culture-related health risks in Filipino patients.	Other: Literature Review	N/A	There is limited data regarding the prevalence of dementia among elderly Filipino Americans most likely due to minimal case findings.

<p>Steis &amp; Schrauf, 2009</p>	<p>To compare translations and adaptations of the Mini-Mental State Examination in languages besides English and Spanish.</p>	<p>Level I: Systematic Review</p>	<p>20 studies</p>	<p>Groups may differ in global performance on the same instrument, and different populations may excel in different areas of the same instrument; the design of the original MMSE requires a minimum level of literacy, and results are sensitive to the participant's educational level. Both researchers and clinicians must consider both literacy and educational levels of participants/patients when using the MMSE</p>
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<p>Suzuki, Goebert, Ahmed, &amp; Lu, 2015</p>	<p>To study if Asian ethnic groups in Hawai'i today maintain folk-based beliefs about dementia, have inadequate biomedical understanding of dementia, and differ among each other regarding perceptions of dementia.</p>	<p>Level VI: Descriptive Study (Survey)</p>	<p>71 respondents</p>	<p>Japanese and Chinese respondents in this study held perceptions about dementia that were more consistent with current biomedical understanding compared with their Filipino counterparts. Filipino respondents were less likely than Japanese and Chinese respondents to report that persons with dementia can develop physical and mental problems (97% of Japanese participants and 82% of Chinese participants responded correctly compared with 63% of Filipino participants). Low levels of biomedical understanding of dementia were reflected by all three subgroups of Asians living in Hawai'i with less prominence of folk beliefs compared with prior studies of ethnic minority perceptions. Education did not predict variability in dementia perceptions among the groups.</p>
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Tabassum & Jawed, 2010	To determine the thoughts of psychiatrists in the UK regarding their awareness and usage of adapted versions primarily of the MMSE but also of any other assessment tools for cognitive impairment for South Asian patients.	Level VI: Descriptive Study (Survey)	39 respondents	Some respondents had used adapted versions of the MMSE. However, the majority believed that adapted versions had a wider potential and that both primary and secondary care medical staff would benefit from using them.
Trivedi, 2017	To determine the diagnostic accuracy of the MMSE in the community setting for people aged 65 years and over	Level I: Meta-Analysis	28 studies	MMSE can be used by clinicians and patients as part of the process for evaluating the diagnosis of dementia but results should be considered carefully both in the clinical context as well as the wider context of the individual patient's characteristics such as personality, behavior, and their ability to manage their dementia.
United States Census Bureau, 2019	To provide data on the percentage of Filipinos in Hawai'i who are at least 65 years old.	Other: Government Census	N/A	18.8% of Filipino adults in Hawai'i are 65 years old or above.

## Appendix F



UNIVERSITY  
of HAWAII<sup>®</sup>  
SYSTEM

Office of Research Compliance  
Human Studies Program

August 6, 2021

**MEMORANDUM**

TO: Rick Ramirez, DNP, APRN-Rx, AG-ACNP-BC, FNP-BC, ENP-C, CEN, CPEN  
Doctor of Nursing Practice Program Director and Assistant Professor  
AG-PCNP Specialty Coordinator  
APRN Clinical Course Series Faculty Coordinator  
University of Hawai'i at Mānoa  
School of Nursing and Dental Hygiene

FROM: Victoria Rivera *Victoria Rivera*  
Director, Office of Research Compliance, Human Studies Program  
University of Hawaii

SUBJECT: Doctor of Nursing Practice Program

This memorandum intends to clarify the University of Hawaii (UH), Human Studies Program (HSP) position regarding the quality improvement (QI) project required by the UH School of Nursing and Dental Hygiene's Doctor of Nursing (DNP) Program.

Based on our discussions, students enrolled in the DNP Program are required to complete a QI project in order to meet the *AACN Essentials of Doctoral Education for Advanced Nursing Practice* for this professional degree. According to the AACN guidelines, since this is a practice doctorate, "requiring a dissertation or other original research is contrary to the intent of the DNP. The DNP primarily involves mastery of an advanced speciality within nursing practice."

Therefore, by definition, the DNP quality improvement project required by the UH School of Nursing is not considered human subjects research as defined under federal regulations at 45 CFR 46. To very briefly summarize, *research* is a systematic investigation designed to contribute to generalizable knowledge, and *human subject* means a living individual about whom an investigator conducting research obtains 1) data through intervention or interaction with the individual or 2) identifiable private information. Quality improvement/program evaluation focuses on making judgements about the program, to improve or further develop program effectiveness, and inform decisions about future programming. As part of the DNP program, students are familiarized with the difference between conducting a QI project and a research project.

Given the purpose of the DNP quality improvement project, it is the position of the UH Human Studies Program that these projects are considered "NOT human subjects research" (NHSR) and as such, does not require IRB review. To be clear, this is not a determination of "Exempt" status under 46.101, as these are categories of *research* considered to be exempt from IRB review. Please ensure that DNP students understand that the results of these types of QI projects may be presented or published, but must not be labeled as human subjects research.

Please feel free to contact our office for any questions.

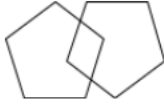
cc: Alice Tse, SODNH Department Chair and Graduate Chair

2425 Campus Road, Sinclair 10  
Honolulu, Hawai'i 96822  
Telephone: (808) 956-5007 • Fax: (808) 956-9150  
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Figure 4. Human Studies Program Memo

## Appendix G

Date: \_\_\_\_\_  
 What is the highest level of education the patient obtained? \_\_\_\_\_  
 When did the patient immigrate to the United States? \_\_\_\_\_  
 How long has the patient been speaking Ilokano: \_\_\_\_\_ years | English: \_\_\_\_\_ years

Maximum Score	Score	START TIME: _____	Notes
		<b>Mini-Mental State Examination (MMSE) in Ilokano</b>	
		<b>Orientation:</b>	
5		Ania nga (petsa) (bulan) (taw-en) (adlaw) (paniempo) itatta?	
5		Ania iti nagan iti daytoy nga hospital wenno pasdek?; Ania nga (kadasaaran); (ciudad/iti) (probinsya/state) (pagilian) iti ayan tayo?	
		<b>Registration:</b>	
3		Manginaganak iti tal-lo a banag. Kalpasan ti panang inagan ko kadakuada, kayat ko nga ulitem. Lagipem no ania dagitoy ta inton madamdama saludsudek tu manen nga inaganam ida. <ul style="list-style-type: none"> <li>• Papel</li> <li>• Lamisaan</li> <li>• Mansanas</li> </ul>	
		<b>Attention and Calculation:</b>	
5		Ispilingem nga pabaliktad iti "I-T-L-O-G"	
		<b>Recall:</b>	
3		Ita ania dagitay banag nga imbagak a lagipem?	
		<b>Language:</b>	
2		<b>Naming:</b> Ania iti tawag daytoy? (show relo/watch; then show lapis/pen)	
1		<b>Repetition:</b> Ulitem man daytoy nga ibagak: NU ADDA NAGA-DALAM, ADAYO ITI PAGTURUNGAM	
3		<b>3-Stage Command:</b> Alaem daytoy a papel iti kanawan nga imam. Ikupin mo iti kaguddua, ket kalpasan na, ibabam iti swelo.	
1		<b>Reading:</b> Basaem iti nakasurat ket ubra-em iti kunana: IKEDEM MO DAYTA MATAM.	
1		<b>Writing:</b> Mangisurat ka iti kumpleto a sarita wenna sentence iti daytoy a papel.: _____	
1		<b>Copying:</b> Place design, pencil, eraser and paper in front of the subject. Say: Kopyaem man daytoy a disenyo.: <div style="text-align: center;">  </div>	
		<b>TIME OF COMPLETION:</b> _____	

**Total score: \_\_\_\_\_ / 30 | Suggested guideline for determining severity of cognitive impairment:**

Mild: MMSE  $\geq$ 21


Moderate: MMSE 10-20

Severe: MMSE  $\leq$ 9

MMSE adapted from Folstein, M.F., Folstein, S.E., & McHugh, P.R (1975)

MMSE in Ilokano from [https://www.dementia.org.ph/wp-content/uploads/2019/03/DSP\\_MMSE\\_Ilokano\\_2016\\_19117225348.pdf](https://www.dementia.org.ph/wp-content/uploads/2019/03/DSP_MMSE_Ilokano_2016_19117225348.pdf)

Date: \_\_\_\_\_  
 What is the highest level of education the patient obtained? \_\_\_\_\_  
 When did the patient immigrate to the United States? \_\_\_\_\_  
 How long has the patient been speaking Tagalog: \_\_\_\_\_ years | English: \_\_\_\_\_ years

Maximum Score	Score	START TIME: _____	Notes
		<b>Mini-Mental State Examination (MMSE) in Filipino/Tagalog</b>	
		<b>Orientation:</b>	
5		Ano pong (taon) (panahon o "season") (petsa) (araw) (buwan) ngayon?	
5		Ano pong (pangalan ng lugar na ito)?; Nasaang (palapag/floor) (estado) (siudad/municipio) (bansa) po tayo ngayon?	
		<b>Registration:</b>	
3		Magsabi ako ng tatlong bagay. Ulitin ninyo ang tatlong ito pagkatapos kong sabihin. Tandaan din ninyo ang mga ito dahil ipapaulit ko ito mamaya. <ul style="list-style-type: none"> <li>• Mangga</li> <li>• Mesa</li> <li>• Pera</li> </ul>	
		<b>Attention and Calculation:</b>	
5		Baybayin o paki-spell ninyo ang salitang "K-A-R-N-E." Pagkatapos, baybayin ninyo ng pabaliktad ang mga letra ng salitang "K-A-R-N-E" (Note: "K-A-R-N-E" may be spelled "C-A-R-N-E")	
		<b>Recall:</b>	
3		Anu-ano yung tatlong bagay na pinatandaan ko sa inyo kanina?	
		<b>Language:</b>	
2		<b>Naming:</b> Ano po ang tawag dito? (show relo/watch; then show lapis/pen)	
1		<b>Repetition:</b> Ulitin ninyo ang sasabihin kong ito: Minikaniko ni Monika ang makina	
3		<b>3-Stage Command:</b> Gawin ninyo ang sasabihin ko: 1) Kunin ninyo ang papel gamit ang inyong kamay 2) Tiklupin sa gitna 3) Ilagay ito sa kandungan/lap.	
1		<b>Reading:</b> Basahin ninyo ito at gawin ninyo ang sinasabi: IPIKIT MO ANG IYONG MATA.	
1		<b>Writing:</b> Magsulat kayo ng isang pangungusap: _____	
1		<b>Copying:</b> Kopyahin ninyo ito: <div style="text-align: center;">  </div>	
		<b>TIME OF COMPLETION:</b> _____	

**Total score:** \_\_\_\_ / 30 | **Suggested guideline for determining severity of cognitive impairment:**

Mild: MMSE ≥21

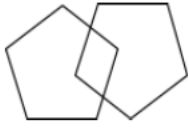
Moderate: MMSE 10-20

Severe: MMSE ≤9

MMSE adapted from Folstein, M.F., Folstein, S.E., & McHugh, P.R (1975)

MMSE in Filipino from <http://www.dementia.org.ph/wp-content/uploads/2020/08/3-MMSE-P.pdf>

Date: \_\_\_\_\_  
 What is the highest level of education the patient obtained? \_\_\_\_\_  
 When did the patient immigrate to the United States? \_\_\_\_\_  
 How long has the patient been speaking Tagalog: \_\_\_\_\_ years | English: \_\_\_\_\_ years

Maximum Score	Score	START TIME: _____	Notes
<b>Mini-Mental State Examination (MMSE) in English</b>			
5		<b>Orientation:</b> What is the (year) (season) (date) (day) (month)?	
5		Where are we? (state) (county) (town/city) (hospital/office) (floor)	
3		<b>Registration:</b> Say the name of 3 unrelated objects clearly and slowly. After I state all 3, you will repeat them. Remember them because I will ask again later. <ul style="list-style-type: none"> <li>• Apple</li> <li>• Table</li> <li>• Penny</li> </ul>	
5		<b>Attention and Calculation:</b> Count backwards by 7 starting from 100 [stop after 5 subtractions; score based on how many correct answers they provide; answers: 93, 86, 79, 72, and 65]. If the patient cannot or refuses serial 7s task, ask patient to spell the word "WORLD" backwards [score based on correct number of letters in order]	
3		<b>Recall:</b> What are the 3 objects I told you to remember? (apple, table, penny)	
2		<b>Language:</b> <b>Naming:</b> What is this? (show wristwatch, then paper)	
1		<b>Repetition:</b> Repeat the following sentence: "No ifs, ands, or buts"	
3		<b>3-Stage Command:</b> 1) take a piece of paper in your right hand; 2) fold it in half; 3) put it on the floor	
1		<b>Reading:</b> Read this sentence and do what it says: CLOSE YOUR EYES.	
1		<b>Writing:</b> Write a sentence: _____	
1		<b>Copying:</b> Copy the following figure: 	
<b>TIME OF COMPLETION: _____</b>			

**Total score: \_\_\_\_\_ / 30 | Suggested guideline for determining severity of cognitive impairment:**

Mild: MMSE  $\geq 21$

Moderate: MMSE 10-20

Severe: MMSE  $\leq 9$

MMSE adapted from Folstein, M.F., Folstein, S.E., & McHugh, P.R (1975)

MMSE in Filipino from <http://www.dementia.org.ph/wp-content/uploads/2020/08/3-MMSE-P.pdf>

*Figure 5.* The MMSEs used for this DNP Project

Appendix H


**MMSE-P Ilokano Response Sheet**  
 Name: \_\_\_\_\_ Age: \_\_\_\_\_ Education (years): \_\_\_\_\_  
 Date of birth: \_\_\_\_\_ Date of testing: \_\_\_\_\_

**Ilokano Version of the Mini-Mental State Examination – Philippines  
 (MMSE-P Ilokano Version)**

This version is an adaptation of the MMSE-P which was validated in 2004\*.  
 Please refer to the general instructions on administration and scoring that accompanies this instrument.

Orientation: Time (1 point per correct answer)	Ania nga petsa itatta? Ania nga bulan itatta? Ania nga taw-en itatta? Ania nga adlaw itatta? Ania nga paniempo itatta?	_____	_____	5
Orientation: Place (1 point per correct answer)	Ania iti nagan iti daytoy nga hospital wemno pasdek? Ania nga kadsaran iti ayan tayoy? Ania nga kuarto iti ayan tayoy? Ania nga ciudad iti ayan tayoy? Ania nga probinsya iti ayan tayoy? Ania nga pagilian iti ayan tayoy?	_____	_____	5
Registration (1 point per correctly repeated word)	Mangnaganaak iti tal-lo a banag. Kaspasan a panang itagay ko kadakuada, kayat ko nga ulitem Lagipem no ania dagitoy ta inton madamdama subabudeck tu manen nga inagatiam ida Papel Lamisaan Mansanas	_____	_____	3
Attention	Ispilngem nga pabaliktad iti "I-T-L-O-G"	_____	_____	5
Recall (1 point per correct answer)	Ita ania dagitay banag nga imbagak a lagipem? Papel Lamisaan Mansanas	_____	_____	3

Version 1.4 November 2016. By the DSP (Dementia Society of the Philippines) and the DSP MMSE Harmonization Group – Ilokano Team (Fr. William, G. Bataad, E. Ong, R. Luad)  
 \*Adapted in 2002

Language: Naming (1 point per correct answer)	Ania iti tawag daytoy? (Relo) Ania iti tawag daytoy? (Ballpen/Lapis)	_____	_____	2
Repetition (1 point)	Ulitem man daytoy nga ibagak: NU ADDA NAGA-DALAM, ADAYO ITI PAGTURUNGAM	_____	_____	1
3-step command (1 point per correct action)	Alaem daytoy a papel iti kanawan nga imam. Ikupin Mo iti kagudha, ket kalpasan na, ibaham iti swelo	_____	_____	3
Reading Comprehension (1 point)	Basarin iti nakasurat ket ubra-em iti kunana Show a laminated sheet with IKEDEM MO DAYTA MATAM written on it.	_____	_____	1
Writing (1 point)	Mangisurat ka iti kompleto a sarita wemnu sentence iti daytoy a papel.	_____	_____	1
Copying (1 point)	Place design, pencil, eraser and paper in front of the subject. Say: Kopyaem man daytoy a disenyo.		_____	1
<b>Total Score</b>				<b>30</b>

Notes / observations:

Version 1.4 November 2016. By the DSP (Dementia Society of the Philippines) and the DSP MMSE Harmonization Group – Ilokano Team (Fr. William, G. Bataad, E. Ong, R. Luad)  
 \*Adapted in 2002

I. Mini-Mental State Examination – Filipino (MMSE-P)  
 1<sup>st</sup> Edition (1975): Marshal F. Folstein, M.D.  
 Translated (2002) By: Antonio Ligasay, M.D.  
 Validated (2002) By: Antonio Ligasay, M.D.  
 Jacqueline Dominguez, M.D.

Orientation to Time (1 point per correct answer)	<b>Maximum score</b> 5	Ano pong petsa ngayon? _____ Ano pong buwan ngayon? _____ Ano pong taon ngayon? _____ Ano pong araw ngayon? _____ Ano pong panahon o "season" ngayon? _____
Orientation to Place (1 point per correct answer)	5	Ano pong pangalan ng lugar na ito? _____ Nasaang palapag/floor po tayoy ngayon? _____ Nasaang kalye po ang lugar na ito? _____ Nasaang ciudad/municipio tayoy ngayon? _____ Nasaang bansa po tayoy ngayon? _____
Registration (1 point per correctly Repeated word)	3	Magsabi ako ng tatlong bagay. Ulitin ninyo ang tatlong ito pagkatapos kong sabihin. Tandaan din ninyo ang mga ito dahil ipapaulit ko ito mamaya. Mangga _____ Mesa _____ Pera _____ (pwedeng ulitin ng hanggang tatlong beses lamang Hanggang maulit ng tama ang tatlong bagay)
Attention	5	Baybayin o paki-spell ninyo ang salitang "K-A-R-N-E" Pagkatapos, baybayin ninyo ng pabaliktad ang mga letra Ng salitang "K-A-R-N-E" _____

(Note: "K-A-R-N-E" may be spelled "C-A-R-N-E")

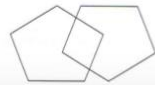
Recall	3	Anu-ano yung tatlong bagay na pinatandaan ko sa inyop kanina? _____ _____ _____
Language (1 point per correct answer)	9	Ano po ang tawag dito? Ituro ang relo (1 point) _____ Ituro ang lapis (1 point) _____ Ulitin ninyo ang sasabihin kong ito. "Minikaniko ni Monika ang makina" (1 point) _____ Sagot: _____  Anong kamay ang ginagamit ninyo sa pagsulat? Sagot: _____ Gawin ninyo ang sasabihin ko. Kunin ninyo ang papel gamit ang inyong kanan/kaliwang kamay. Tiklupin sa gitna (o kalahati) at ilagay ito sa kandungan o lap. (1 point per correct action, total of 3 points) Kinuha ang papel gamit ang tamang kamay. _____ Tinuklip sa gitna ang papel _____ Inilagay sa kandungan _____ Basahin ninyo ito at gawin ninyo ang sinasabi. (1 point) _____ "IPIKIT MO ANG IYONG MATA" Magsulat kayo ng isang pangungusap. (1 point) _____  Kopyahin ninyo ito. (1 point) _____  
<b>Total Score</b>		/ 30

Figure 6. The MMSEs in Ilokano and Tagalog from the Dementia Society of the Philippines. Link: <https://www.dementia.org.ph/dementia-screening-tools/>