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# Evidence-Based Intervention to Improve Health Literacy among Older Adults with Newly Diagnosed Atrial Fibrillation

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# EVIDENCE-BASED INTERVENTION TO IMPROVE HEALTH LITERACY AMONG OLDER ADULTS WITH NEWLY DIAGNOSED ATRIAL FIBRILLATION

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## Abstract

**Background and Significance:** Atrial fibrillation (AFib) is the most common arrhythmia encountered in the healthcare setting. As of 2018, approximately 6.1 million people in the United States were living with AFib which is projected to increase to 12.1 million by 2030. Older adults are at higher risk of developing AFib and its complications. AFib is a chronic condition that requires targeted patient education by healthcare providers in different healthcare settings. Patient's low health literacy regarding the condition is a significant barrier to therapy adherence. Given the high rate of poor health literacy among individuals newly diagnosed with AFib and adverse outcomes associated with it, improving health literacy in this population is significant. **Purpose:** This project aimed to increase the health literacy of older adults newly diagnosed with AFib in Nevada. **Methods:** A convenient sample of newly diagnosed AFib patients that included English and Spanish speakers were recruited from an outpatient Cardiology clinic and an acute care hospital, both located in Las Vegas, Nevada. The data on demographic characteristics, health literacy, attitudes, and confidence on AFib knowledge and its management were collected using Qualtrics®. Participants scanned a QR code to take the test on their phones. A tablet was available for those who did not have a smart phone. The COVID-19 protocol was followed as required. Data were collected pre and post educational intervention. A pamphlet was provided with key points of the presentation at the end of the session. Dependent *t*-test for matched pairs was used to analyze the mean difference in health literacy pre- and post-intervention. **Results:** The project found statistically significant improvement in participants' health literacy on AFib. Total sample size was 27, primarily English-speaking White males, with less than Bachelor degree. There was a statistically significant difference between pre-test and post-test health literacy scores [$t(25) = 6.59$, $p < 0.001$]. The mean score of knowledge increased

from13.42 (3.45) to 17.69 (0.55) after the educational intervention. A statistically significant improvement was noted post-intervention in confidence and attitudes using the Wilcoxon signed-rank test. For evaluation of the intervention, the majority of the participants either agreed or strongly agreed that the intervention was organized and appropriate and increased their knowledge about their condition. **Conclusion:** The educational presentation was beneficial in improving patient's knowledge regarding AFib and its management. Future research should evaluate improved health literacy over time and its impact on quality of life, treatment adherence, and hospitalization rates. **Implications for Nursing Practice:** Patient's knowledge of AFib and its management is essential for treatment effectiveness. Given that patients had significant less health literacy about their condition, it is important that educational interventions like this project be implemented among newly diagnosed AFib patients during their hospital stay. Although long term impact of this type of intervention was not measured, it may improve medication adherence and lower hospitalization and healthcare costs to treat AFib related complications among older adults.

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# Chapter I

## Background

Atrial fibrillation (AFib) is a condition affecting the upper two chambers (atria) of the heart, which causes disruption in the blood flow and decreases cardiac output (American Heart Association [AHA], 2016). It affects hemodynamic stability and, if left untreated or mismanaged care can increase the risk of blood clots (Dalteg et al., 2017), stroke, and heart failure (AHA, 2016). Older adults are at greater risk of AFib and its complications (AHA, 2016). Furthermore, lack of knowledge related to medical terminology, symptom management, and the importance of medication adherence can exacerbate AFib and its complications among this population (Aronis et al., 2017; Chesser et al., 2016). This risk is high among Hispanic older adults (AHA, 2016). Health literacy is defined as the ability to obtain, process, and utilize health information to make appropriate healthcare choices (Centers for Disease Control and Prevention [CDC], 2020). Thus, improving health literacy is a fundamental step toward successful self-care, treatment adherence, and improved quality of life for newly diagnosed AFib patients (Aronis, 2017).

## Problem and Significance

The prevalence of AFib in the United States (US) ranges between 2.7 million and 6.1 million, and it is projected that this number will increase to 12.1 million by 2030 (CDC, 2020). Individuals older than 65 are at increased risk of developing AFib. It is estimated that nine percent of adults older than 65 have AFib in the US (Healthline, 2018). More specifically, in Nevada, 6.6 percent of people older than 65 had AFib in 2017, a steady increase from 5.9 percent in 2009 (Healthy Southern Nevada, 2019). Besides, more than 450,000 hospitalizations and an estimated 158,000 deaths occur due to AFib in the US every year (CDC, 2020). Compared to

non-Hispanic whites, Hispanic older adults with AFib have higher morbidity and mortality rate (Formiga et al., 2016; Ugowe et al., 2018).

One in every seven strokes is attributed to AFib (CDC, 2020) and it is also considered an independent risk factor for death (American Journal of Managed Care [AJMC], 2017). Severe consequences of uncontrolled AFib such as blood clots, heart attack, heart failure, and stroke (National Heart, Lung, and Blood Institute [NIH], 2019) can increase healthcare costs. AFib costs the healthcare system in the US approximately $26 billion every year. Compared to non-AFib patients, AFib patients have double the rate of hospitalizations with single visits costing them about $8,705 (AHA, n.d.). AFib readmission rate is approximately 14%, and it is associated with significant increases in healthcare costs (Tripathi et al., 2019).

Low health literacy contributes to decreased awareness of AFib diagnosis (Reading et al., 2017a). It has been associated with reduced self-care and poor treatment adherence in patients with cardiovascular disease taking oral anticoagulation therapy (Cabellos-Garcia et al., 2018). Studies have shown that newly diagnosed individuals with AFib lack the knowledge to make appropriate decisions regarding their health (McCabe et al., 2017). McCabe et al. (2017) conducted a study of 180 participants and found that roughly one-third of the individuals were not able to recognize common symptoms of AFib, and half of them were not able to recognize when to seek care. The majority had poor understanding and lacked the confidence to make informed decisions and to seek help when symptoms of AFib presented.

Among Hispanics with AFib, lack of health literacy has been associated with adverse outcomes (Kabra, 2015). An estimated 41 percent of Hispanics have low health literacy (Jacobs et al., 2017). According to the American College of Cardiology (ACC, 2020), data regarding

clinical trials for Hispanics with AFib are inconsistently reported or under-reported, thus more efforts should be made to increase these groups' consistency and participation.

Health education has been associated with significantly decreased complications in patients with AFib (Palm et al., 2020). Targeted and meticulous patient education may improve the disease's self-management including medication adherence and the ability to utilize health information to prevent adverse outcomes, which may reduce healthcare costs. Health literacy in AFib patients has significant positive associations with medication adherence (Obamiro, 2018; Rolls et al., 2017) and improved quality of life (Guhl et al., 2020). Health literacy related to AFib is essential because patients have to make complex therapeutic choices to manage the disorder and to understand potential medication side effects (Aronis, 2017). A study showed that adequate adherence to oral anticoagulants for individuals with AFib was associated with lower risks of severe stroke and higher probabilities of recovery (Yamashiro et al., 2019).

Studies of Hispanics with AFib are limited. Some researchers found that stroke and death risks were higher in blacks and Hispanics than whites in patients 65 and older with newly diagnosed AFib (Kabra et al., 2015). Additionally, Erfe et al. (2017) found that Spanish-speakers with a recent history of stroke who were not provided with professional medical interpreters were less likely to receive stroke education and be considered for rehab. Conversely, an education session in Spanish for heart failure patients that included the teach-back method and written instructions to report symptoms of heart failure exacerbation found that participants demonstrated improved ability to communicate the symptoms and manage the disease (Esquivel et al., 2019).

Given the high rate of poor health literacy among individuals newly diagnosed with AFib and adverse outcomes associated with it, it is important to promote health literacy in this

population to reduce recurrent hospitalizations and healthcare costs, disability, and premature death.

**Purpose**

The purpose of this Doctor of Nursing Practice (DNP) project was to increase the health literacy of older adults newly diagnosed with AFib in Nevada. It included developing, implementing, and evaluating educational materials on signs, symptoms, complications, and management of AFib.

# Chapter II

## Literature Review

This chapter presents an extensive literature review. An examination of several databases was conducted in search of studies published within the last five years. The Cumulative Index of Nursing and Allied Health Literature (CINAHL), Cochrane Database, and Google Scholar were searched using a mix of the following terms: health literacy and knowledge deficits in patients diagnosed with AFib; health literacy related to AFib signs and symptoms; AFib and poor medication adherence, or increased hospital readmissions, or incidence of stroke, or heart failure; AFib treatment outcomes with improved health literacy; interventions to improve health literacy, and education focused on improving health literacy in Hispanics.

### AFib Signs, Symptoms, and Complications

AFib is a quivering or irregular heartbeat that causes blood to stagnate in the atria (AHA, 2016). Signs and symptoms associated with AFib are palpitations, lightheadedness, shortness of breath, chest pain, dizziness, syncopal episodes, and exercise intolerance (CDC, 2020). A decreased cardiac output causes these symptoms due to the atria failing to pump blood effectively. The uncoordinated heart rate and rhythm can increase the myocardial workload as a compensatory mechanism for the decreased blood volume, which can eventually lead to heart failure (National Heart, Lung, and Blood Institute [NIH], 2019). Concomitantly, blood in the atria stagnates, increasing the risk of developing blood clots that can inadvertently dislodge and travel to the brain, causing a stroke (NIH, 2019). AFib complications can be prevented with lifestyle changes and adherence to the prescribed medications and treatment regimen and can be attainable with appropriate knowledge and understanding of AFib management (AHA, 2016).

## Health Literacy

Health literacy is the ability to obtain, process, and utilize health information to make appropriate healthcare choices (CDC, 2020). It is positively correlated with increased anticoagulant adherence in patients with AFib (Smet et al., 2018). Healthcare providers play a significant role in helping patients obtain an adequate understanding of AFib, cope with the new diagnosis, and increase motivation to participate in effective self-management (McCabe et al., 2015).

Poor health literacy has been associated with an increased incidence of unexpected healthcare use within one month after discharge in individuals with heart failure (Cox et al., 2017). Similarly, low health literacy is predominant in hospitalized patients and is associated with additional needs that place the patient at increased risk of re-hospitalization (Boyle et al., 2017). Many researchers describe health literacy as an independent risk factor of hospital readmissions (Bailey et al., 2015). Kennedy (2017) reported that high-quality education sessions improved health literacy and decreased readmission rates. Researchers have consistently associated low health literacy with increased hospital readmissions, poor quality of life, and anxiety (de Melo Ghisi et al., 2018). Thus, health literacy is essential to improve patient outcomes.

Hispanic adults older than 60 years old have an increased risk of poor health outcomes, in part, due to potential language barriers and inability to navigate the healthcare system (Key, 2019). Mechanisms that can improve health outcomes among these groups are health literacy screening (Key, 2019) and education sessions focused on improving health literacy. Soto Mas et al. (2017) found that basic adult measures such as the Test of Functional Health Literacy in Adults (TOFHLA) can improve health literacy among Spanish-speakers. Brunk et al. (2015)

found that patient-centered educational approaches for self-management for Hispanic adults with a chronic disease and low health literacy improves health literacy and self-care.

**Assessment Instruments**

To improve the health literacy of AFib patients, it is important to address: AFib-related terminology, AFib-related complications, the importance and need of long-term medication adherence, potential complications of anticoagulants, and the importance of symptom monitoring. The Jessa Atrial Fibrillation Knowledge Questionnaire (JAKQ) has been used to assess AFib-specific health literacy. It has been evaluated in different studies to test knowledge of AFib in patients who have the condition (Desteghe et al., 2016; Desteghe et al., 2018). It includes questions related to AFib, its treatment, and disease self-management (Desteghe, 2016). The JAKQ is an effective tool for delivering personalized AFib-specific education, which can measure the change in patient's knowledge related to their condition before and after an educational intervention (Desteghe, 2018). The JAKQ scale was chosen for this project because it is designed for both outpatients and inpatients. Its items are closely related to the DNP project (Tam et al., 2019). The tool has a high internal consistency with a Cronbach's alpha of 0.803 (Desteghe et al., 2018).

Other scales used to measure health literacy are The Atrial Fibrillation Knowledge, Attitude, and Perceptions Questionnaire. It was developed to measure the level of understanding of AFib and its treatments among patients with AFib (Hoe et al., 2019) in the inpatient setting (Tam, 2019). The tool has an acceptable internal consistency with a Cronbach's alpha level of 0.71 (Hoe, 2019); and The Knowledge of Atrial Fibrillation and Stroke Prevention questionnaire (KAFSP-Q) developed to determine and improve patient's knowledge of AFib and stroke to increase adherence (Mohamed et al., 2017). This tool has a high internal consistency with a

Cronbach's alpha level of 0.83 (Mohamed, 2017) and it is mainly used in the outpatient setting (Hoe, 2017).

**Health Literacy and Selfcare**

There is a positive relationship between health literacy and selfcare behaviors in patients with chronic disease (RobatSarpooshi et al., 2020; Tsuchihashi-Makaya et al., 2018). Individuals with poor health literacy are less likely to understand their AFib diagnosis (Reading et al., 2017b) and, consequently, may not be able to manage their condition. Kaufman et al. (2018) conducted a study where newly diagnosed patients participated in a short education session. They found that about half of the patients understood the advantage of using oral anticoagulants after the intervention, and this understanding decreased over the first six months, suggesting a need for continuing patient education (Kaufman, 2018). Increased understanding of AFib can improve patient involvement in their diagnosis, increase medication adherence, and improve outcomes (LaRosa et al., 2019). There is extensive evidence in the literature regarding the significant relationship between health literacy, selfcare, and improved outcomes for patients with chronic diseases (Awoke et al., 2017; Matsuoka et al., 2016; Zou et al., 2017), thus, assessment of health literacy and disease knowledge should be priority when planning patient-centered care for AFib.

The ability to interpret health information to make appropriate healthcare decisions and describe signs and symptoms are components of health literacy that can help improve self-care (Riegel, 2018). The promotion of adequate self-care behaviors can potentially assist patients to effectively manage their AFib. Self-care activities such as maintaining an active life-style, controlling high blood pressure, smoking cessation, keeping cholesterol and triglycerides at a

healthy range, in addition to medication adherence may improve the life-style of patients with AFib (Rakhshan et al., 2019).

## Chapter III

## Theoretical Framework

The conceptual framework adopted for this DNP project is the Self-Care Deficit Theory by Dorothea Orem (2001). This theory's basis is that all individuals want to care for themselves and have a good quality of life. This theory has three parts: Theory of self-care, theory of self-care deficit, and theory of nursing systems. This project will use theories of self-care and self-care deficits. This project is based on the theoretical assumptions that people should care for themselves, they need knowledge of their health problems, and nursing intervention is necessary when adequate care is not achieved (Orem, 2001).

1. People should care for themselves: Self-care is the cornerstone for the successful management of chronic diseases. Individuals should be able to practice activities to help maintain or improve their health and wellbeing, manage the disease, and prevent complications. Self-care activities include medication adherence, diet, exercise, recognizing signs and symptoms that need immediate attention, and maintaining regular doctor appointments.
2. People need knowledge of their health problems for self-care: Health maintenance and promotion require the patient's understanding of their self-care practices. If patients do not understand the necessary health information related to their chronic disease, they cannot take the necessary actions or make appropriate healthcare decisions.
3. Nursing intervention is needed: Low health literacy contributes to decreased awareness of AFib diagnosis (Reading et al., 2017a) and has been associated with reduced self-care and poor treatment adherence in patients with cardiovascular disease (Cabellos-Garcia et al., 2018). Nursing interventions through individualized, patient-centered education can

help individuals understand their condition and guide them in implementing self-care behaviors needed to improve quality of life, reduce complications, and minimize frustrations.

Low health literacy among AFib patients has shown to cause deficits in healthcare. Guided by the principles of Orem's theory, this project implemented an education session among newly diagnosed AFib patients to provide them knowledge of their health problem and methods of self-care. The core elements of the intervention were focused on self-care activities such as healthy eating, smoking cessation, regular exercise as permitted, and weight management; second, self-care monitoring, which involves self-observation for the recognition of signs and symptoms of AFib and stroke as they occur; and third, self-care management, involves the ability to react to impending signs and symptoms and adherence to pharmacological therapies (Riegel et al., 2017).

# Chapter IV

## Project Methods

The purpose of this DNP project was to increase the health literacy of older adults newly diagnosed with AFib. To achieve this goal, patients diagnosed with AFib within the past 12 months in Southern Nevada were provided with education on knowledge and management of AFib. This chapter describes the project's methodology, as well as needs assessment, ethical considerations, organizational support, project planning, and threats and barriers.

### Need Assessment and Organizational Support

As a clinician working in a critical care unit for the past five years, the author identified a need to improve the health literacy of patients living with AFib. Moreover, the author consulted with a Cardiologist, who works in a Cardiology clinic and the director of quality improvement for an acute care hospital where this project was conducted. They recognized the importance of this project and agreed to support the author in its implementation.

### Ethical Consideration

The author obtained approval through the Biomedical Institutional Review Board (IRB) at the University of Nevada, Las Vegas prior to implementing the project (see Appendix C). The patients provided their informed consent before participating in the project. Participation was voluntary and confidential. The identity of the participants was protected through the use of the Qualtrics® survey by enabling anonymized responses. The participants were able to leave the survey at any time during the process. In addition to improving their knowledge of AFib and its management, there was a monetary incentive to participate. The participants received a $25 Amazon gift card upon completing the survey, which was appropriate for the time and effort of

the participants. This support was possible with the support of the University of Nevada, Las Vegas School of Nursing DNP Student Project award.

## Design, Setting, and Sample

This project utilized a pre-posttest intervention design. A pre-posttest intervention design was appropriate for this project to measure a change in the participants' health literacy. An online data collection software, Qualtrics®, was used to collect data anonymously and to provide the educational intervention.

This project was implemented at a Southern Nevada Cardiology Clinic and various departments for the inpatient facility where AFib patients receive oral or intravenous pharmacological therapy during their AFib exacerbation. Although Hispanics are recognized to be at increased risk of AFib complications due to low health literacy, these facilities are located in a low Hispanic population area thus, the sample did not include as many Hispanic as desired. The project was advertised by distributing printed flyers with a short project description and a QR code to participate (see Appendix B) at the recruiting facilities. Patients were recruited from new patient consultations or established patients at the cardiology clinic and any patient in the inpatient facility that met inclusion criteria. The population of interest for this project included adults 60 years and older newly diagnosed with AFib in the past 12 months. To be eligible to participate, the interested patients should be able to read and write in English or Spanish. Exclusion criteria included adults 59 years and younger and those diagnosed with AFib longer than 12 months.

## Project Planning

After receiving IRB approval from UNLV, permission to implement this project was obtained from the recruiting facilities. The hospital staff and clinic cardiologist advertised the

project to their patients. Due to outpatient clinic dynamics and COVID restrictions, patients that met criteria would not have another appointment for a minimum of three months. Upon receiving their verbal consent, the cardiologist at the outpatient clinic provided the participants with the required forms and allowed them to take the survey. The cardiologist was not involved in the project apart from obtaining verbal consent. If the participants had any questions regarding the project or the education session, they were directed to the printed flyers, in which they could find the authors' email address. For the inpatient facility, the author received an email from the critical care manager several times per week regarding the number of AFib patients that were admitted to the hospital at the time, without the patients' identifying information. Given the patient's stay is longer at the hospital, there was a chance for the author to implement the project the same day information was received in the email. The educational intervention was implemented after formal informed consent was signed and demographic information and a pre-test health literacy data were collected. Informed consents were only collected electronically. Any information that would identify the patient was not collected.

**Data Collection**

Data were collected over nine weeks. The participants took the survey independently on their phones or using the presenter's tablet. The author was not present in the room while the participants completed the survey as several of them expressed to have this preference. The author waited outside the room. The tablet was beneficial for the inpatient facility as many of the participants did not have their phone available or were out of battery. At the outpatient facility, the cardiologist provided the interested participants the forms and the gift cards after her appointment with them, however, it was made clear that any questions regarding the project were to be directed to the author of the project. The author visited the cardiology clinic weekly and

provided the cardiologist with forms and three amazon gift cards every week. If more forms or gift cards were needed, the author would visit the clinic accordingly.

## Intervention

The evidence-based educational intervention to increase health literacy on AFib was provided in an online format. The educational intervention, created by the author, included evidence-based practice content that focused on the description of AFib, signs, symptoms, complications, the importance of medication adherence, the potential side effects of anticoagulants, and the importance of self-care and keeping their appointments with the healthcare provider. The educational intervention was embedded as part of the Qualtrics® survey, where the participants viewed the presentation after completing the pre-test questionnaires. The post-test was presented following the presentation. Participants were provided with handouts that contained key points from the educational session (see Appendix D) to reinforce the knowledge of AFib and its management post-intervention.

## Measures

### *Demographic Characteristics*

Demographic characteristics of the participants were collected prior to the intervention, which included gender (male, female, and non-binary), age in years, race (Hispanic or Latino, White, African American, Asian/Pacific Islander, Native American/American Indian, and other), and highest degree or level of education completed (less than high school, high school, vocational training, associate degree, bachelor's degree, master's degree, and doctoral degree). Health status was captured by: Do you define your overall health as: 5 = Excellent, 4 = very good, 3 = good, 2 = fair, and 1 = poor. (See Appendix A). To screen for newly diagnosed AFib patients, question on when they were diagnosed with AFib was also included.

### *Health Literacy*

The principal measure of this project was health literacy. Data on health literacy was collected both pre-and post-test. The Jessa Atrial Fibrillation Knowledge Questionnaire (JAKQ), consists of 15 multiple choice and true/false questions to measure AFib specific health literacy and medication management (Desteghe, 2019). A total of nine questions were adapted from the JAKQ scale and were used for this project. The remaining six questions focused on Warfarin, an oral anticoagulant that is no longer recommended by the American Heart Association and the American College of Cardiology to be prescribed for most patients with AFib (Healthline, 2021), thus, questions on warfarin that were part of JAKQ were not included on this project. The JAKQ scale has a high internal consistency with a Cronbach's alpha level of 0.803 (Desteghe, 2018). (see Appendix A). The pre- and posttest consisted of five multiple-choice and ten true/false knowledge-based questions.

### *Attitudes and Confidence*

Data on the confidence and attitudes of the participants regarding the management of their condition was also collected before and after the educational intervention. Attitudes and confidence regarding their ability for self-management were evaluated with a self-developed five-attitude and three-confidence-based questions on a 3-point Likert scale. For the question, do you keep your appointments with your doctor for routine healthcare?, the 3-point Likert scale included yes, sometimes, or no. For the question, I take my medications as prescribed, the 3-point Likert scale included never, sometimes, or always. For the question, when you have experienced symptoms of atrial fibrillation, how likely are you to tell your healthcare provider about the symptom on your next visit?, the 3-point Likert scale included not likely, somewhat likely, or very likely. A 7-point Likert scale question, how often do you perform physical

activities (e.g., walking, jogging, yoga, etc.)? included daily, 3-5 times a week, twice a week, once a week, once a month, inconsistently, or I do not perform any physical activities.

The three questions for confidence, how confident are you that you can follow the treatment plan you have been given?, how confident are you that you can monitor your condition routinely?, and how confident are you that you can recognize changes in your health if they occur?, the 3-point Likert scale included not confident, somewhat confident, or very confident.

### *Evaluation of the Intervention*

Nine intervention evaluation questions were part of the questionnaire and participants provided their answers at the end of the survey via Qualtrics (See Appendix A). The evaluation questions permitted participants to rank if the presentation was clear and organized, met their needs and expectations, teaching methods and content were appropriate for newly diagnosed AFib patients, the content was presented in an organized manner, education session increased their knowledge of AFib, confidence regarding making better health decisions after the education session, and if the presenter was knowledgeable in the content area.

## Data Analysis

After completing the project, the data were exported from the Qualtrics® survey into Statistical Package for Social Sciences (SPSS), a software for statistical analysis. Frequency for categorical variables such as gender, race, sex, and mean with standard deviation (SD) for continuous variables such as age were obtained. The change in health literacy score from pre to post-test was analyzed using a dependent *t*-test for matched pairs. The Wilcoxon signed-rank test was used to examine the change in ordinal data of participants' attitudes and confidence regarding their ability for self-management of AFib before and after the intervention.

## Threats and Barriers

Threats and barriers were considered prior to and during the process of the intervention phase. The first threat to this project was missed participant opportunities. Numerous issues with the IRB approval and Qualtrics® survey delayed the project by a few months and led to missed opportunities with interested participants at both facilities. The next threat to this project was the COVID-19 pandemic. Facility access was permitted for the inpatient facility, but it was restricted for the outpatient facility, thus, the project had to be modified for the outpatient clinic (see project planning for more information). Moreover, a decline in AFib patients was observed at the inpatient facility during the influx of COVID-19 patients during the first two weeks of the project implementation. A small number of individuals who met criteria refused to participate due to fear of exposure to COVID-19. The author ensured social distancing and appropriate measures such as masks, hand washing, and tablet disinfecting before and after each recruitment at every encounter. Another barrier to this project was participants not completing the educational intervention entirely as they were allowed to skip questions. At the inpatient facility, a total of eight participants were excluded from the project due to age. These individuals were between the ages of 47 and 59, but diagnosed with AFib within the last four months. An initial foreseen barrier was the possibility of a lack of active participation and communication from the staff members for identification, initial recruitment, and communication with the author to initiate the intervention. However, this was eliminated as a barrier due to active participation from these facilities.

## Chapter V

The main focus of this chapter was results and discussion. The successes, strengths, limitations, potential for sustainability, dissemination, and the summary are described.

## Results

### Demographics

Of the 29 participants, 27 completed the entire project and were utilized for data analysis. Two participants started the survey but did not complete 90% of the data or missed the post-test survey completely and were not included for the analysis. The greatest percentage of participants for this study were male (74.1%), Whites (62.3%), and those with associate degrees (33.3%). Almost half of the participants defined their overall health as good (44.4%). Mean age of participants was 65 years and the majority were diagnosed within the last six months (59.26%). Only five participants took the survey in Spanish. The participants' demographics is presented in the table below (see Table 1).

**Table 1.**

***Descriptive Statistics (N = 27)***

| **Variables** | **Frequency (%)** | **Mean (SD)** |
|---|---|---|
| **Language** | | |
| English | 22 (81.5%) | |
| Spanish | 5 (18.5%) | |
| **Age** (Range: 60-78) | | 65(5.11) |
| **Gender** | | |
| Male | 20 (74.1%) | |

| | |
|---|---|
| Female | 7 (25.9%) |
| **Race** | |
| Hispanics/Latino | 6 (22.2%) |
| White | 17 (63%) |
| African American | 3 (11.1%) |
| Asian/Pacific Islander | 1 (3.7%) |
| **Level of Education** | |
| Less than high school | 2 (7.4%) |
| High school | 5 (18.5%) |
| Vocational training | 5 (18.5%) |
| Associate degree | 9 (33.3%) |
| Bachelor's degree | 5 (18.5%) |
| **Health** | |
| Poor | 2 (7.4%) |
| Fair | 7 (25.9%) |
| Good | 12 (44.4%) |
| Very good | 6 (22.2%) |
| **First Diagnosed with Atrial Fibrillation** | |
| 0 to 6 months ago | 16 (59.26%) |
| 7 to 12 months ago | 11 (40.74%) |

Note: SD= Standard Deviation.

**Health Literacy**

Patient knowledge regarding AFib and its management was measured with an adapted 15-item Jessa Atrial Fibrillation Knowledge Questionnaire (JAKQ). The change in patient knowledge was measured using a dependent *t*-test for matched pairs. There was a statistically significant difference between pre-test and post-test health literacy mean scores [$t(25) = 6.59$, $p < 0.001$]. The mean score of knowledge increased from13.42 (3.45) to 17.69 (0.55) after the educational intervention (see Table 2).

**Attitudes**

The change in patients' attitudes was measured using the Wilcoxon signed-rank test. A statistically significant improvement in attitudes was noted post-intervention with all but one question (see Table 2). The question that did not show statistically significant change can potentially reveal participants' interest in maintaining their provider appointments more so if they have experienced symptoms.

**Confidence**

The change in patient's confidence was measured using the Wilcoxon signed-rank test. A statistically significant improvement in confidence was noted post-intervention in all three questions (see Table 2).

**Table 2.**

***Change in Mean Health Literacy, Attitudes and Confidence Scores Before and After Intervention***

| **Variables N= 26** | **Pre-Test Mean (SD)** | **Post-test Mean (SD)** | **Test statistic t-test** | **P-value** |
|---|---|---|---|---|
| Health Literacy | 13.42 (3.46) | 17.69 (0.55) | 6.59* | <0.001 |
| **Wilcoxon Ranked Test** | | | **Z-test** | |
| Keep appointments with provider for routine healthcare | 1.7 (0.45) | 1.96 (0.19) | 2.65 | <0.01 |
| How often perform physical activities | 2.85 (2.12) | 4.65 (0.94) | 3.57 | <0.001 |
| Take medications as prescribed | 1.56 (0.51) | 1.93 (0.39) | 2.89 | <0.01 |
| Likely to tell HCP about symptoms on on next visit | 1.96 (0.19) | 2.00 (0.00) | 1.000 | >0.05 |
| Confidence can follow treatment plan | 1.30 (0.72) | 2.00 (0.00) | 3.58 | <0.001 |
| Confidence can monitor condition routinely | 1.22 (0.70) | 1.69 (0.47) | 2.83 | <0.01 |
| Confidence can recognize changes in health | 1.41 (0.64) | 1.85 (0.37) | 2.68 | <0.01 |

Note: *t-test otherwise Wilcoxon signed-rank test (z-test) for ordinal data
SD = Standard Deviation

**Evaluation of Educational Intervention**

The survey included nine evaluation questions in a 5-point Likert scale format. Each participant was able to evaluate the educational intervention following the post-test. The majority of the participants either agreed or strongly agreed that the intervention was organized and appropriate and increased their knowledge about their condition (see Table 3).

**Table 3.**

***Evaluation of the Intervention***

| **Objectives**<br>**N = 27** | **Agree**<br>**n(%)** | **Strongly Agree** |
|---|---|---|
| The presentation was clear and organized | 7 (25.9) | 20 (74.1) |
| The presentation meets expectations | 11 (40.7) | 16 (59.3) |
| Teaching methods appropriate for new AFib patients | 7 (25.9) | 20 (74.1) |
| Content was appropriate for new AFib patients | 8 (29.6) | 19 (70.4) |
| Content was presented in clear and organized manner | 8 (30.8) | 18 (69.2) |
| Education session increased knowledge regarding AFib and its management | 24 (88.9) | ------- |
| After this session, can make better decisions regarding AFib management | 14 (51.9) | 13(48.1) |
| The education session met my needs | 10 (37) | 17 (63.0) |
| The presenter demonstrated knowledge in the area | 4 (14.8) | 22 (81.5) |

## Discussion

This project found statistically significant improvement in participants' health literacy following the educational intervention. This finding suggested that the individuals that

participated in this study had limited knowledge regarding AFib. These findings are similar to previous studies on improving health literacy (Brunk et al., 2015; Kaufman et al., 2018). Education sessions focused on improving health literacy can improve selfcare, medication adherence, health outcomes and decrease readmission rates among individuals with chronic disease (Key, 2019).

There were improvement in confidence and attitudes regarding the management of AFib among participants after the intervention. Guided by the principles of Orem's self-care theory, the educational intervention for newly diagnosed AFib patients in Nevada provided participants with knowledge of their health problem and methods of self-care. Participants' scores on their confidence and attitudes regarding self-care significantly improved from pre- to post-test. Selfcare attitudes regarding keeping appointments with their provider, how often they perform physical activities, take medications as prescribed, confidence that they can follow a treatment plan, monitor their condition routinely, and recognize symptoms if they occur are all part of selfcare. This improvement in confidence and attitudes signifies that participants are better prepared to manage their condition. Participants were likely to tell their healthcare provider about their symptoms on future visits and thus, this questions did not show significant improvement pre and post-test which may signify that individuals are more likely to keep their appointments with their providers if they have experienced symptoms but no significant research was found in the literature to compare this finding.

The successful implementation and findings of this project have potential to improve patient outcomes, including reducing the risk of ischemic stroke, improving quality of life, and reducing re-hospitalizations. A single targeted educational session significantly improved participants' health literacy of AFib. Additional education interventions may be needed to

strengthen this effect. Further research is warranted to evaluate the impact on long-term adherence and improvement in quality of life. This study supports providing AFib education to newly diagnosed patients through an educational intervention with a pre and post-test format. However, there is a lack of such interventions in healthcare settings. The evaluation of the intervention suggests that participants in Nevada found the intervention beneficial and were agreeable that it increased their knowledge of AFib and improved their confidence and attitudes regarding self-management of this condition.

**Strengths**

The cardiology clinic and the hospital setting provided excellent support for the intervention. These settings were advantageous for participant recruitment. It was not difficult to find patients at these facilities and the majority were willing to participate in this project. The majority of participants were recruited from the inpatient setting. The clinic's staff and cardiologists, especially one of the nurse practitioners offered significant assistance for the implementation of this project. Moreover, the hospital staff, including the registered nurses, critical care manager, and the cardiac navigator from the quality department were also in full support of this project. The director of the critical care unit at the hospital and the nurse practitioner at the clinic communicated with the author every week. The nurse practitioner at the clinic and the cardiac navigator at the hospital conducted daily reviews for potential participants.

Although the intervention was delayed for approximately three months due to issues with IRB approval and the Qualtrics® platform, once it began, it was carried out successfully. Participant recruitment was completed without major challenges. Participants received a $25 Amazon gift card as an incentive to participate. Several participants in the inpatient setting did

not have a working phone during their hospital stay, thus, having a tablet readily available was helpful.

This study also supports the literature that online methods are beneficial to provide education and increase the knowledge of newly diagnosed AFib patients. This is important now more than ever due to the COVID-19 limitations regarding social distancing and in-person interactions with patients in different healthcare facilities. The online method has the potential to reach larger numbers of patients when compared to in-person education. Additionally, the online format is available for unlimited viewing. Several patients in the hospital requested a link to the PowerPoint presentation, which can be found on the YouTube platform.

**Limitations**

The sample size, although small, was adequate for this project. However, caution should be implemented while generalizing this study's findings to larger populations. Nine newly diagnosed patients in the hospital were between 45-58 years old. These patients expressed interest in participating, but were excluded from the project due to inclusion criteria. Given the number of participants that were excluded from the project due to age, future research should include patients of any age that are potentially at high risk as many individuals were younger than 60 during the implementation of this project. The design of pre and post-test does not include follow-up, so the sustainability of the knowledge gained over time cannot be tested. However, the author is hopeful that healthcare facilities will utilize this intervention to improve their AFib patients' knowledge, confidence, and attitudes. Although there were some limitations, the project was successful in increasing the health literacy among older adults newly diagnosed with AFib in Nevada.

## Potential for Sustainability

As briefly discussed before, the sustainability of knowledge gained over time cannot be tested with this DNP project. However, a pamphlet containing key points of the educational presentation was provided to each participant at the session. AFib patients that participated will be able to refer back to this printout as needed. This will allow for potential sustainability and continual use of knowledge gained from this project as participants can refer back to the pamphlets for a quick review.

The outcomes of this evidence-based project were an increase in AFib health literacy and improved adherence to pharmacological therapies. Future research projects should include a follow-up study to measure the change in participant's knowledge regarding AFib and its management several months after the educational intervention. This plan should be created in collaboration with providers and healthcare staff in different clinics and hospitals to promote the sustainability of the project. One way to measure sustainability is to measure the change in participants' medication adherence and rehospitalization rates. Studies show that targeted patient education interventions with the provision of information pamphlets can significantly improve medication adherence in patients with chronic disease (Taibanguay et al., 2019). Moreover, medication adherence is significantly associated with decreased risk of hospitalization and reduced hospitalization costs (Pednekar et al., 2020). Education is a critical component in chronic disease management. By promoting targeted one-to-one patient education such as this project, patient outcomes, such as medication adherence and hospitalization are expected to improve.

## Dissemination

The project results and data will be made available for viewing at the project sites once the DNP project is completed. As requested, a final report that summarizes the findings and any plans for presentations or publications will be provided to Universal Health Services (UHS) which operates the inpatient hospital. A hard copy of the final version will be provided to the cardiology clinic. Moreover, this project will be presented at the Nevada Nurses Association and it will count as continuing education (CE) for nurses who attend.

## Summary

This project was developed to increase the health literacy of older adults newly diagnosed with AFib within the past 12 months through an evidence-based educational intervention. This evidence-based intervention was beneficial in improving the participants' AFib health literacy in Nevada. It also improved their attitudes and confidence level for self-management of the disease. Further study is needed to examine long-term impact of such intervention.

## Appendix A

1. Which language do you prefer to take the following test?
    a. English
    b. Spanish
2. What is your age? (in years)
3. What gender do you identify as?
    a. Male
    b. Female
    c. Non-binary
4. Please specify your race
    a. Hispanic or Latino
    b. White
    c. Black or African American
    d. Asian/Pacific Islander
    e. Native American or American Indian
    f. Other
5. What is the highest degree or level of education you have completed?
    a. Less than high school
    b. High school
    c. Vocational training
    d. Associate degree
    e. Bachelor's degree
    f. Master's degree

g. Doctoral degree

6. Do you define your overall health as:
    a. Poor
    b. Fair
    c. Good
    d. Very good
    e. Excellent
7. Do you keep your appointments with your doctor for routine healthcare?
    a. Yes
    b. Sometimes
    c. No
8. How often do you perform physical activities (e.g. walking, jogging, yoga, etc.)?
    a. Daily
    b. 3-5 times a week
    c. 2 times a week
    d. Once a week
    e. Once a month
    f. Inconsistent
    g. I do not perform any physical activities
9. I take my medications as prescribed.
    a. Never
    b. Sometimes
    c. Always

10. When you have symptoms, how likely are you to tell your healthcare provider about the symptom on your next visit?
    a. Not likely
    b. Somewhat likely
    c. Very likely
11. In general, how confident are you that you can follow the treatment plan you have been given?
    a. Not confident
    b. Somewhat confident
    c. Very confident
12. In general, how confident are you that you can monitor your condition routinely?
    a. Not confident
    b. Somewhat confident
    c. Very confident
13. In general, how confident are you that you can recognize changes in your health if they occur?
    a. Not confident
    b. Somewhat confident
    c. Very confident
14. When were you first diagnosed with atrial fibrillation? (Provide month and year).

**Pre-test**

1. AFib is a condition where the heart beats irregularly and often faster than normal
    a. True
    b. False
2. AFib is not always accompanied by symptoms
    a. True
    b. False
3. AFib can cause blood clots which can lead to stroke (cerebral infarction)
    a. True
    b. False
4. What is the normal pulse rate?
    a. Less than 60 beats per minute
    b. 60 to 100 beats per minute
    c. More than 100 beats per minute
    d. Do not know
5. Atrial fibrillation symptoms may include (select all relevant answers)
    a. Palpitation
    b. Fatigue
    c. Chest pain
    d. Shortness of breath
    e. All of the above
6. The following factors can trigger atrial fibrillation exacerbation
    a. Stress

b. Anxiety

c. Infection

d. All of the above

7. The symptoms listed below are the symptoms of stroke

    a. Numbness or weakened part of a limb

    b. Difficulty speaking

    c. Loss of balance

    d. Vision impairment

    e. All of the above

8. The risk of getting a stroke is higher in atrial fibrillation than in other diseases

    a. True

    b. False

9. Patients with AFib should always take their blood thinners even if they do not feel AFib

    a. True

    b. False

10. Blood thinners are often prescribed for patients with AFib in order to prevent the development of blood clots in the heart, which can lead to stroke

    a. True

    b. False

11. Possible side effects of blood thinners are the occurrence of bleedings and longer bleeding times in case of injuries

    a. True

b. False

12. There is no risk of bleeding with anticoagulants

    a. True

    b. False

13. You may be at higher risk of bleeding if you take your anticoagulants with:

    a. Aspirin

    b. Advil

    c. Tylenol

    d. A and B

14. For patients taking novel anticoagulants (e.g. Eliquis), it is important to take their blood thinner at the same time every day

    a. True

    b. False

15. When AFib patients taking novel anticoagulants (e.g. Eliquis) have forgotten to take their blood thinner, they can still take that dose, unless the time until the next dose is less than the time after the missed dose

    a. True

    b. False

**Post-test questions**

1. After this presentation, I will keep my appointments with my doctor for routine healthcare?

    a. Yes

    b. Sometimes

    c. No

2. After this presentation, I will take my medications as prescribed.
    a. Never
    b. Sometimes
    c. Always
3. AFib is a condition where the heart beats irregularly and often faster than normal
    a. True
    b. False
4. AFib is not always accompanied by symptoms
    a. True
    b. False
5. AFib can cause blood clots which can lead to stroke (cerebral infarction)
    a. True
    b. False
6. What is the normal pulse rate?
    a. Less than 60 beats per minute
    b. 60 to 100 beats per minute
    c. More than 100 beats per minute
    d. Do not know
7. Atrial fibrillation symptoms may include (select all relevant answers)
    a. Palpitation
    b. Fatigue
    c. Chest pain

d. Shortness of breath

8. The following factors can trigger atrial fibrillation exacerbation

    a. Stress

    b. Anxiety

    c. Infection

    d. All of the above

9. The symptoms listed below are the symptoms of stroke

    a. Numbness or weakened part of a limb

    b. Difficulty speaking

    c. Loss of balance

    d. Vision disorder

    e. All of the above

10. The risk of getting a stroke is higher in atrial fibrillation than in other diseases

    a. True

    b. False

11. Patients with AFib should always take their blood thinners even if they do not feel AFib

    a. True

    b. False

12. Blood thinners are often prescribed for patients with AFib in order to prevent the development of blood clots in the heart, which can lead to stroke

    a. True

    b. False

13. Possible side effects of blood thinners are the occurrence of bleedings and longer bleeding times in case of injuries
    a. True
    b. False
14. There is no risk of bleeding with anticoagulants
    a. True
    b. False
15. You may be at higher risk of bleeding if you take your anticoagulants with:
    a. Aspirin
    b. Advil
    c. Tylenol
    d. A and B
16. For patients taking novel anticoagulants (e.g. Eliquis), it is important to take their blood thinner at the same time every day
    a. True
    b. False
17. When AFib patients taking novel anticoagulants (e.g. Eliquis) have forgotten to take their blood thinner, they can still take that dose, unless the time until the next dose is less than the time after the missed dose
    a. True
    b. False

**Additional questions**

1. After this education session, when you have symptoms, how likely are you to tell your healthcare provider about the symptoms on your next visit?
    a. Not likely
    b. Somewhat likely
    c. Very likely
2. After this education session, how confident are you that you can follow the treatment plan you have been given?
    a. Not confident
    b. Somewhat confident
    c. Very confident
3. After this education session, how confident are you that you can monitor your condition routinely?
    a. Not confident
    b. Somewhat confident
    c. Very confident
4. After this education session, how confident are you that you can recognize changes in your health if they occur?
    a. Not confident
    b. Somewhat confident
    c. Very confident
5. After this education session, how often do you plan to perform physical activities (e.g. walking, jogging, yoga, exercise, etc.)?

a. Daily

b. 3-5 times a week

c. 2 times a week

d. Once a week

e. Once a month

f. Inconsistent

g. I do not plan to perform any physical activities

**Evaluation**

1. The presentation was clear and organized?

    a. Strongly agree

    b. Agree

    c. Neither agree nor disagree

    d. Disagree

    e. Strongly disagree

2. The presentation meet my expectations

    a. Strongly agree

    b. Agree

    c. Neither agree nor disagree

    d. Disagree

    e. Strongly disagree

3. Were the teaching methods (e.g. handouts, presentation) appropriate for patients newly diagnosed with atrial fibrillation?

    a. Strongly agree

b. Agree

c. Neither agree nor disagree

d. Disagree

e. Strongly disagree

4. The content was appropriate for patients newly diagnosed with atrial fibrillation?

    a. Strongly agree

    b. Agree

    c. Neither agree nor disagree

    d. Disagree

    e. Strongly disagree

5. The content was presented in a clear and organized manner

    a. Strongly agree

    b. Agree

    c. Neither agree nor disagree

    d. Disagree

    e. Strongly disagree

6. The education session increased my knowledge regarding atrial fibrillation and its management.

    a. Strongly agree

    b. Agree

    c. Neither agree nor disagree

    d. Disagree

    e. Strongly disagree

7. By attending this education session, I believe I can make better decisions regarding my atrial fibrillation management
    a. Strongly agree
    b. Agree
    c. Neither agree nor disagree
    d. Disagree
    e. Strongly disagree
8. The education session met my needs
    a. Strongly agree
    b. Agree
    c. Neither agree nor disagree
    d. Disagree
    e. Strongly disagree
9. The presenter demonstrated knowledge and expertise in the content area?
    a. Strongly agree
    b. Agree
    c. Neither agree nor disagree
    d. Disagree
    e. Strongly disagree

**Appendix B**


ATRIAL FIBRILLATION
What You Need To Know
You have been diagnosed with atrial fibrillation within the last 12 months, you are 60 years or older, and you can speak English or Spanish...
Then you may be able to participate in a research study!
Purpose/benefits
Improve your knowledge of atrial fibrillation and its management
You will be compensated for your time
Please scan the QR code to participate in this study
Covid-19 precautions will be fully implemented!
If you are interested or have any questions contact us today!
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# Appendix C

UNLV

**ORI-HS, Exempt Review**
**Exempt Notice**

**DATE:** December 6, 2021

**TO:** Nirmala Lekhak
**FROM:** Office of Research Integrity - Human Subjects

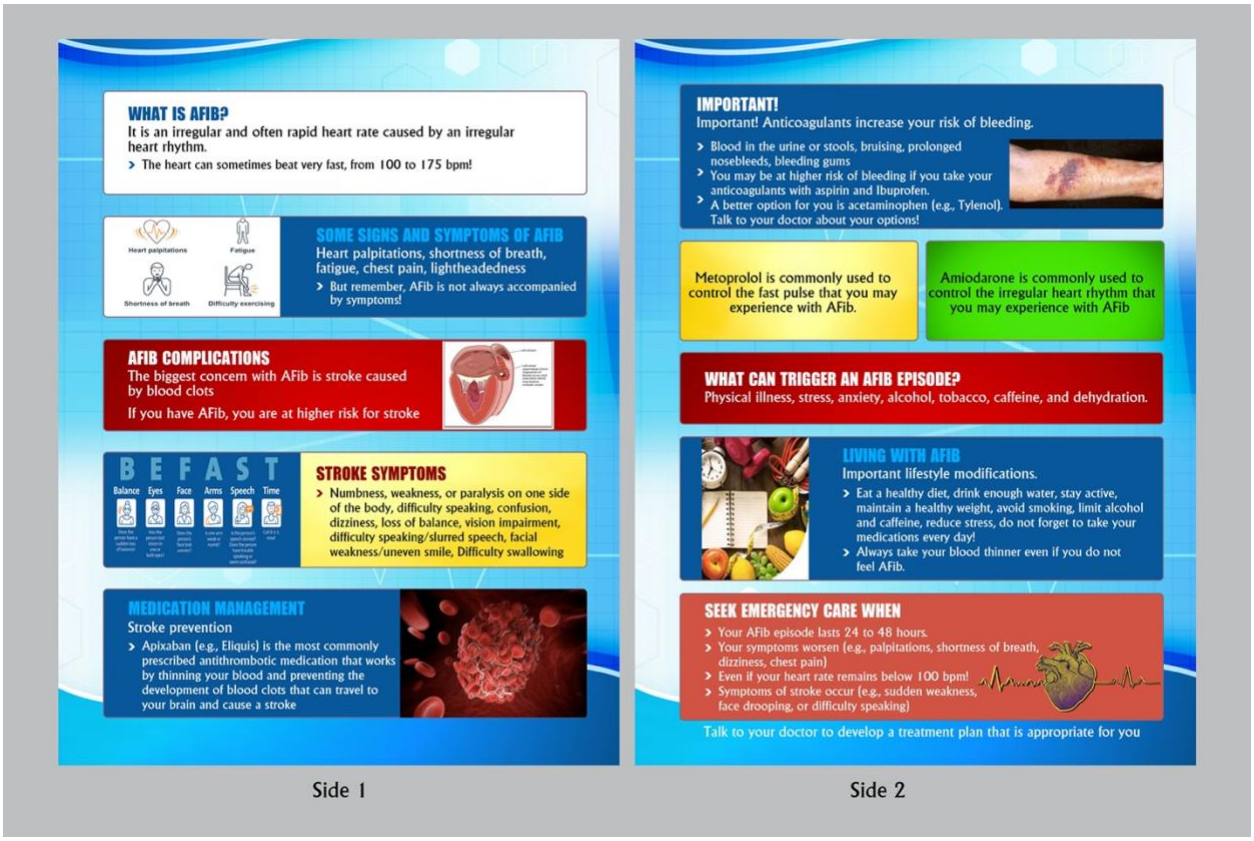
**PROTOCOL TITLE:** UNLV-2021-54 DNP Project:Evidence-Based Intervention to Improve Health Literacy Among Older Adults with Newly Diagnosed Atrial Fibrillation
**SUBMISSION TYPE:** Initial

**ACTION:** Exempt
**REVIEW DATE:** December 6, 2021
**REVIEW TYPE:** EXEMPT
**REVIEW CATEGORY:** Category 3.(i)(A). Research involving benign behavioral interventions in conjunction with the collection of information from an adult subject through verbal or written responses (including data entry) or audiovisual recording if the subject prospectively agrees to the intervention and information collection.
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

This memorandum is notification that the protocol referenced above has been reviewed as indicated in Federal regulatory statutes 45CFR46.101(b) and deemed exempt under Category 3.(i)(A). Research involving benign behavioral interventions in conjunction with the collection of information from an adult subject through verbal or written responses (including data entry) or audiovisual recording if the subject prospectively agrees to the intervention and information collection.
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

**PLEASE NOTE:**
Upon final determination of exempt status, the research team is responsible for conducting the research as stated in the exempt application reviewed by the ORI – HS, which shall include using the most recently submitted Informed Consent/Assent and recruitment materials.

# Appendix D




Side 1 Side 2

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**Curriculum Vitae**

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## EDUCATION

- Doctor in Nursing Practice May 2022 - University of Nevada, Las Vegas.
  - Dean's Honor List
- Bachelor of Science in Nursing May 2017 - University of Nevada, Las Vegas.
  - Dean's Honor List

## PRESENTATIONS

- DNP Project: "Evidence-Based Intervention to Improve Health Literacy Among Older Adults with Newly Diagnosed Atrial Fibrillation". April 2022

## AWARDS

- School of Nursing Differential Fee Graduate Scholarship $1,000 2020-2022
- Tony & Renee Marlon Scholarship $5000 2022
- UNLV "DNP Student Project Award" $1,192 2022

## EMPLOYMENT HISTORY

- Summerlin Hospital Las Vegas, NV 2017-Present
  Registered Nurse: Monitoring vital signs in critically ill patients, ECG interpretation, assessment, documentation, IV medications, PEG tubes, central line dressing changes, Foley catheter insertion, IV drips initiation and monitoring (e.g., amiodarone, heparin), recognizing changes in patient condition and intervening accordingly, care for ventilated patients including oral care, tracheostomy care, TPN administration, oral and in-line suctioning, post cardiac catherization care.
- Veterans Home Boulder City, NV 2015-2016
  Certified Nursing Assistant: Record and monitor vital signs, assist residents with activities of daily living such as feeding, bathing, toileting, and dressing, observe and report changes in residents' condition or behavior, turn and reposition according to protocol.
- Lakeview Terrace Boulder City, NV 2014-2015
  Caregiver: Assist residents with activities of daily living such as bathing, toileting, grooming, and dressing, transfer to and from activities, serve meals.
- Right at Home Boulder City, NV 2012-2014
  Caregiver: One to one care and supervision of clients with illnesses such as dementia and terminal cancer. Assist with activities of daily living such as bathing, dressing, and meal preparation.

## LICENSES

- Nevada Registered Nurse #RN94300 Expiration Date 05/202 2017 – 2023

## CERTIFICATIONS

- Advanced Cardiovascular Life Support 2017 - May 2022
- Basic Life Support 2015 - 2023
- Certified Nurse Assistant 2011 - 2016

## LANGUAGES

- English: Fluent
- Spanish: Fluent

## VOLUNTEER EXPERIENCE

- Anchor's up Animal Rescue/dog foster 2013 - 2015
  Dog foster, interstate transport, transport to clinics
- Animal help Alliance foster/transporter 2014 - 2017
  Dog foster, interstate transport, transport to clinics
- Res-q-me animal rescue foster/volunteer 2014 – 2018
  Dog foster, interstate transport, transport to clinics
- Senior Center of Boulder City – once a month 2012 – 2014
  Assistance with writing cards or notes, help with getting meals, assistance with activities