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Evaluation of the effect of Milner-Fenwick video-based education and teach-back on knowledge acquisition in atrial fibrillation patients

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Dedication

Without the love and constant support from my husband, my son, and my parents, I would not have been able to complete this project or the DNP program. We have sacrificed and missed fun outings in order to carve out the time to complete this degree. Thank you for supporting my need to read, write papers, and take exams while we are trying to go on vacation! For my parents who instilled the need for education in me at a very early age, I am eternally grateful. Without them, this would not be possible. This is for my son, Alex, who has seen his parents follow their dreams and knows there are no limits for his.

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Abstract

PURPOSE: The purpose of this study was to evaluate if video education impacts knowledge acquisition and health literacy in patients with atrial fibrillation.

METHODS: This study employed a descriptive, pretest-posttest single site comparative design. Baseline health literacy was assessed before video education was completed using the Atrial Fibrillation Knowledge scale. Health literacy regarding atrial fibrillation was again assessed for the same participants immediately after video education was completed and again in 7 to 10 days through the use of the Atrial Fibrillation Knowledge scale and teach-back questions.

RESULTS: There was no statistical significance found when comparing scores before and after video education intervention, although knowledge acquisition did increase at each point in time. However, important clinical pearls were discovered. The majority of the participants had undergone a pulmonary vein ablation, and despite this the baseline health literacy mean score was only 63% at immediate teach-back.

CONCLUSION: While the video education intervention did not result in statistically significant differences in health knowledge in relation to atrial fibrillation patients, important clinical information was discovered in this study. Mean scores from teach-back show that patients are not as literate about their disease as health care providers may believe. This indicated that even patients who have had subspecialized cardiology care with an electrophysiologist and extensive patient teaching were not as literate about their condition as health care providers may believe. Other mediums may need to be combined with video education for better results. Patients should be given information on watching the videos at home for repeated viewing.

Introduction to Final DNP Project

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Introduction

Health literacy impacts health outcomes more than socioeconomic status, race, or age (Griffey et al., 2015). Atrial fibrillation represents a chronic disease with significant morbidity and mortality, yet many patients with the disease do not fully grasp its impact on their health, such as stroke risk, or need for self-care (Reading et al., 2017). In a study conducted by Xu et al. (2010), in patients undergoing a complex catheter ablation more than half of the participants were unable to answer questions correctly about their disease. Recent guidelines have been updated to reflect the need for risk factor modification. In fact, weight loss is a class I recommendation for reducing atrial fibrillation burden. Other risk factors that may need attention include hypertension, sleep apnea, and the use of tobacco and alcohol (January et al., 2019).

Self-management of atrial fibrillation has been shown to reduce hospitalizations and prevent complications associated with atrial fibrillation. Increasing health literacy is essential in creating self-care behaviors (Kaufman et al., 2017). The purpose of this study is to determine baseline atrial fibrillation knowledge and to assess if video education is an effective medium for increasing health literacy and knowledge acquisition.

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Background and Literature Review

According to the World Health Organization, health literacy is the "cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand, and use information in ways which promote and maintain good health" (World Health Organization [WHO], 2009, para. 1). Poor health literacy impacts health more than socioeconomic status, race, and age. This leads to poor medication compliance, increased readmissions, and increased healthcare utilization when compared to health literate counterparts with similar chronic diseases (Griffey et al., 2015). It has been shown that patients with atrial fibrillation have inadequate health literacy in relation to their disease, risks of the disease, and medications used to treat the disease (Reading et al., 2017). In a study completed by Reading et al., (2017) approximately one in five participants were deemed health illiterate and McCabe et al. (2008) found over half were unaware of the associated stroke risk with atrial fibrillation.

Patients with atrial fibrillation are a significant burden to the United States healthcare system costing around $26 billion per year in the United States. This equates to an increase of $8,700 per patient with this diagnosis compared to those without it. Hospital admission rates are also double for those with atrial fibrillation (American Heart Association/American College of Cardiology/Heart Rhythm Society [AHA/ACC/HRS], 2014). Atrial fibrillation is associated with increased mortality, up to twice as high in women. Thirty percent of ischemic stroke patients have atrial fibrillation, and it is a major contributor to depressed mood and decreased quality of life (Kirchhof et al., 2016). In addition, rate control strategies in atrial fibrillation are aimed at reducing the risk of tachycardia induced cardiomyopathy and subsequent heart failure (AHA/ACC/HRS, 2014).

One evidence-based solution to the widespread health illiteracy in this patient population is the use of educational videos to teach patients about atrial fibrillation, related therapies, and consequences. The Agency for Healthcare Research and Quality has recommended teach-back as an effective way to increase knowledge acquisition and retention, thus improving health literacy. Teach-back is a technique in which the patient restates information provided by the healthcare provider allowing the healthcare provider to gauge how well the patient understood the material (Agency for Healthcare Research and Quality [AHRQ], 2017). Teach-back has been an effective tool in reducing heart failure and total joint replacement readmissions, as well as, increased appropriate inhaler use in COPD patients (Centrella-Nigro & Alexander, 2017). In a study by Yeung et al. (2017) medication adherence was increased when patients were given flashcards and videos about their medication compared to those receiving usual care. Patients also reported increased understanding and satisfaction with their care (Yeung et al., 2017). According to Albert, Buchsbaum, and Li (2007) other positive effects of video-based education in heart failure patients include increased adherence to recommendations, requests for written health information, decreased calls to the provider, and fewer symptoms when assessed at the three months follow up visit. However, there were no differences between the group receiving video education when compared to those receiving usual care for hospitalizations, emergency room visits, or ambulatory care visits (Albert, Buchsbaum, & Li, 2007). While these studies were not conducted in patients with atrial fibrillation, the sample populations had similar chronic conditions and these solutions may also be effective in the atrial fibrillation population. Utilizing the proposed intervention of teach-back and health education videos about atrial fibrillation is expected to increase health literacy reducing morbidity and mortality in this patient population.

This intervention and evaluation are important in determining the baseline health literacy in the atrial fibrillation patient population at the Gill Heart Institute. In addition, it is important to determine if atrial fibrillation education videos are an effective teaching medium. These measures are imperative because guidelines have been updated to reflect the need to address risk factors and educate patients on their disease (Kirchhof et al., 2016). Self-care is critical for patients with atrial fibrillation to prevent significant morbidity and mortality. Stroke risk is reported to be five times as high in this population as the general population. Heart failure occurs three times as often, while dementia and mortality are doubled (AHA/ACC/HRS, 2014).

Theoretical Framework

The theoretical framework for this project is Pender's Health Promotion model. The model is based on assumptions that describe factors influencing an individual's investment in self-care and factors that are influential in this process. Pender's model examines the interaction between individuals and the environment in which they live; the environment influences behavior and vice versa. As individuals change and self-regulate, their environment also changes, as do their interactions with others (Alligood & Marriner Tomey, 2010). The model also ascertains that individuals are more likely to engage and commit in behaviors that they feel confident and rewarded by participating, receive support from their significant other, and achieve a sense of positivity with the behavior. Peers and health care providers represent strong behavioral influencers that may push an individual's behavior in a positive or negative direction. Factors that are detrimental to positive behavioral changes include perceived road blocks to success, poor commitment strategies, and competing demands. In short, the model postulates that individuals that are supported, engaged, committed and positively reinforced by

environmental and human forces are successful in behavior modification and health promotion ("Health Promotion Model," 2016).

This project focused on knowledge acquisition and health literacy in patients with atrial fibrillation. Health promotion is an important component to prevent complications from this disease. Patients with atrial fibrillation need to practice self-care; therefore, education on the disease is critical. Self-care encompasses medication adherence, adoption of necessary lifestyle modifications, and recognizing the need to call a provider for help with symptom or medication side effect management (Mohsenipoua et al., 2016). The assumptions of the Health Promotion model are applied to this project as atrial fibrillation patients must adjust their actions to promote personal wellness. Advanced practice nurses are essential components of the environment in which patients with atrial fibrillation reside and provide disease specific education and treatment.

Purpose and Objective

Atrial fibrillation is a common cardiac arrhythmia originating in the atria causing chaotic and insufficient atrial contractions. This disorder has a distinctive irregular ventricular response on electrocardiogram and is responsible for significant morbidity and mortality (AHA/ACC/HRS, 2014). Estimated to occur in about eight percent of Kentuckians over 65 (Center for Medicare Services, 2015) and about one to two percent worldwide (Hendriks, Crijns, Tieleman, & Vrijhoef, 2013), atrial fibrillation is responsible for almost half a million hospitalizations per year and is more common in persons of European descent. This disorder is also more prevalent as the population ages and those with atrial fibrillation have more hospital admissions than those without (AHA/ACC/HRS, 2014).

Risk factor modification is the cornerstone of atrial fibrillation prevention and consists of optimal blood pressure and glycemic control, maintenance of a healthy weight, and addressing

non-cardiac modifiable risk factors such as sleep apnea (Jacob, 2017). The morbidity associated with atrial fibrillation should also be addressed by ensuring appropriate anticoagulation strategies are in place for stroke prevention (Rolls, Obamiro, Chalmers, & Bereznicki, 2017) and controlled ventricular rates to avoid tachycardia induced cardiomyopathy and heart failure (Cutugno, 2015).

However, despite the risks associated with atrial fibrillation, the disease remains relatively unheard of by the public and even those who carry the diagnosis may have very little understanding of their disease and its associated risks (Lane & Barker, 2015, McCabe, Schad, Hampton, & Holland, 2008). One recent study by Obamiro et al. (2018) found that patients on warfarin had higher knowledge levels about self-management when compared to those on a new oral anticoagulant, such as rivaroxaban. This was thought to be related to increased knowledge required to self-manage on warfarin and the increased health care encounters to monitor warfarin. However, even those on warfarin only demonstrated an average knowledge score of 73% (Obamiro, Chalmers, Lee, Bereznicki, & Bereznicki, 2018). Another study determined that low health literacy was associated with less awareness of being diagnosed with atrial fibrillation meaning patients with the disease did not recognize they had atrial fibrillation (Reading et al., 2017). Teach-back is effective tool for educating patients with chronic diseases resulting in increased compliance with medications, correctly using medications, and decreasing hospital readmissions (Centrella-Nigro & Alexander, 2017).

Specific Aims

The purpose of this project was to evaluate changes in health literacy and knowledge acquisition after watching Milner-Fenwick video-based education. Evaluation was completed using teach-back and administration of the Atrial Fibrillation Knowledge scale. Patients with

atrial fibrillation presenting to the Gill Heart Institute were enrolled in the study and completed a baseline Atrial Fibrillation Knowledge scale. Disease specific videos were shown, and immediate teach-back was performed using open ended questions. A follow up phone call utilizing the same teach-back questions was scheduled and completed within 7 to 10-days following the intervention to assess the sustained effect on health literacy. In addition, the Atrial Fibrillation Knowledge scale was administered immediately following the video delivery and again at the 7 to 10-day follow up call.

The specific aims were:

AIM 1: To assess changes in health literacy after watching Milner-Fenwick educational videos and receiving provider education on atrial fibrillation comparing results immediately post intervention and at the 7 to 10-days post-clinic phone call in patients diagnosed with atrial fibrillation at the Gill Heart Institute.

AIM 2: To assess changes in knowledge acquisition by using the Atrial Fibrillation Knowledge scale before the intervention, after the intervention, and at the 7 to 10-day post clinic phone call.

There is very little consensus on the best modality to educate atrial fibrillation patients (Lane & Barker, 2015). Low health literacy contributes to poor self -management techniques (Kaufman et al., 2017) and overall worse outcomes (Reading et al., 2017). Therefore, determining effective interventions to educate atrial fibrillation patients about their disease and areas of focus is especially important in this population.

Methods

Setting: The study was conducted at the Gill Heart Institute in Lexington, KY. The mission of UK Healthcare and the Gill Heart Institute is to provide evidence-based patient centered care with a focus on research and advanced technology.

Design: This study examined the baseline health literacy of atrial fibrillation patients before video education. After video education and again in 7 to 10-days, knowledge acquisition was assessed by using the Atrial Fibrillation Knowledge scale with a pretest posttest design. Teach-back was used to assess health literacy using a posttest only design immediately after video education and again at the 7 to 10-day phone call.

Sample: The sample was obtained by reviewing currently scheduled clinic patients for inclusion criteria. Those patients meeting criteria were recruited at the time of their visit by the primary investigator. Data collection took approximately 3 months. Inclusion criteria included any diagnosis of atrial fibrillation regardless of classification or length of time since diagnosis and age over 18. Excluded from the study were those younger than 18, currently incarcerated, or without a diagnosis of atrial fibrillation. Twenty participants were enrolled; however, six patients did not answer the phone at the mutually agreed upon scheduled time. At least two attempts were made to contact the participants.

Procedures: Institutional Review Board approval was obtained and Jami Kyle, practice manager, agreed to allow enrollment in the clinic. Patients were recruited and consented by the primary investigator at the time of their visit if they met inclusion criteria. After obtaining informed consent, the primary investigator administered The Atrial Fibrillation Knowledge scale, video education, and administered the knowledge scale again following video education. After video education, the primary investigator asked and scored teach- back questions providing

reinforcement of correct answers. Prior to leaving the clinic visit, the primary investigator and patient agreed upon a date and time for the follow up phone call. Seven to 10-days following clinic visit, the primary investigator called the patient at the agreed upon time and administered the Atrial Fibrillation Knowledge scale and the teach-back questions. Correct answers were provided, and teaching was completed for incorrect answers. Overall, the primary investigator administered the Atrial Fibrillation Knowledge scale before video education, after video education, and at the 7 to 10-day phone call (3 points in time) and delivered the teach- back questions after the video education and at the 7 to 10-day phone call (2 points in time). Records have been stored in a locked drawer located in a locked office in the clinic. After data collection was completed, records were de-identified prior to sending to the statistician. A key outlining the codes for de-identification is stored on a password protected computer in a password protected worksheet. Following analysis of the data, the data have been de-identified for reporting purposes.

Aim 1: To assess changes in health literacy after watching Milner-Fenwick educational videos and receiving provider education on atrial fibrillation. The assessment compared scores immediately following the video intervention and again at the 7 to 10-days post-clinic phone call in patients diagnosed with atrial fibrillation at the Gill Heart Institute.

Outcome Measures (See table 1)

Health literacy was determined by using oral teach-back on seven questions in which answers are explicitly provided in the videos. These were scored as correct or incorrect based on the primary investigator's interpretation of the patient's answer. Reinforcement of correct answers was provided at both the clinic visit and follow up phone call for best clinical care. There were seven total questions, each with between 2 and 4 short answer responses. A

summary score was calculated representing the total number of questions answered correctly (potential range 0-22) and converted into a percentage. Answers that did not apply to specific patients were not counted in the denominator. For example, those patients that were not on anticoagulant medications were not scored for the questions pertaining to this. The questions are listed in Appendix A.

Aim 2: To assess changes in knowledge acquisition by utilizing the Atrial Fibrillation Knowledge scale before the intervention, after the intervention, and 7 to 10-days post intervention (potential range 0-11). The questions are listed in Appendix B.

Outcome Measures (See table 1)

Questions on the Atrial Fibrillation Knowledge scale (Hendricks et al., 2013) are focused on general disease knowledge and not specific to patient characteristics. This scale was created in Europe and was slightly modified to better fit the patient population of the study setting. The scale consists of 11 questions. A summative score was calculated to reflect the number of correct responses (potential score 0-11) and converted into a percentage. This tool measured knowledge before video presentation, directly following video presentation, and 7 to 10-days after the clinic visit.

Data Analysis

Descriptive statistics, means and standard deviation for continuous variables and frequency distributions for categorical variables, were used to summarize patient demographics (Table 2). In addition, time since diagnosis (in years) and CHA_2DS_2-VASc score were reported using means and standard deviations, while frequency distribution was used to summarize classification of atrial fibrillation and prior history of pulmonary vein isolation (Table 2). Changes in health literacy (as measured by teach-back questions) were evaluated using the

paired samples t-test (Table 3). Changes in the Atrial Fibrillation Knowledge scale scores were analyzed using repeated measures analysis of variance (ANOVA) (Table 4). All data analysis was conducted using SPSS, version 24, with an alpha level of .05 throughout. The primary investigator for this project delivered the Atrial Fibrillation Knowledge questionnaire pre- video, post video, and at the 7 to 10-day phone call (3 points in time) presented the videos and asked teach-back questions immediately following the video intervention and at the 7 to 10-day phone call (2 points in time). The statistician employed by the department completed the data analysis.

Results

Sample Characteristics

A total of 20 patients were interviewed in the Gill Heart and Vascular clinic. The mean age was 59.3 years (SD=12.4; see table 2) years with the majority being Caucasian (95%) and male (80%). Most of the participants were classified as having paroxysmal atrial fibrillation (65%) and had undergone a prior pulmonary vein ablation (65%). There were no patients that were classified as having permanent atrial fibrillation. The mean CHA_2DS_2-VASc was 2.1 (SD=1.5) and the majority of the patients were anticoagulated (75%). CHA_2DS_2-VASc score has a potential range of 0 to 9 with increased stroke risk for higher numbers. The mean time since diagnosis 3.6 years (SD=3.1). New oral anticoagulation medications, such as rivaroxaban and apixaban, were used 50% of the time. About 60% of the participants were not treated with an antiarrhythmic drug, but the majority of those that were had amiodarone prescribed (60%). Most of the participants were on rate control medications (85%) and the medication of choice was a beta blocker (70%).

Comorbidities were also assessed. The majority of the participants had hypertension (70%). Coronary artery disease was present in only 10% of the sample; diabetes was also

uncommon occurring in only 20% of the sample. Systolic heart failure was present in 35% of the sample, but a systolic heart failure admission was the initial encounter leading to the diagnosis of atrial fibrillation in some of the participants.

There was no change in knowledge acquisition despite video education and provider reinforcement (See table 4). The average percent correct at initial assessment was 78% (SD= 0.2). Immediately after the video the percent correct increased slightly to 80% (SD=0.1) and finally to 85% (SD=0.1) at the one-week phone call. There was no change in health literacy after the intervention (see table 3). After the initial teach-back session the mean score was 64% (SD=0.1) and after the phone call intervention the mean score did not significantly change at 60% (SD=0.1). Neither outcome reached statistical significance.

Discussion

While the results were not statistically significant, valuable clinical information has been gained. Initially it was thought that those patients undergoing a pulmonary vein ablation would have increased knowledge about their disease. This is due to several reasons. Predominantly, the patients that undergo atrial fibrillation ablation have been tried on at least one antiarrhythmic drug, are symptomatic with their disease, and have been seen by an electrophysiologist for an extensive visit prior to the procedure. The procedure requires general anesthesia, an overnight hospital stay, and carries some morbidity risk. For these reasons, it was thought that this population may have increased knowledge about their disease.

The questions used for teach-back were deliberately taken from the list provided by Milner-Fenwick as these were specifically addressed in the videos. There were challenges in using these questions due to scoring correct answers. Several questions had more than one right answer and some questions did not pertain to all participants. This required individually

changing the denominator of the equation to fit each patient in order to calculate an accurate percentage score.

Using the iPad on mobile tables for video education was convenient in the ambulatory setting. However, multi-modality education materials may have been more effective. The videos are accessible via the internet from any computer. Perhaps, knowledge acquisition and health literacy would have been higher if patients were given a pamphlet with instructions on accessing the videos from home in addition to viewing them in clinic. One study used this method combined with flash cards with positive results (Yeung et al., 2017). Furthermore, a single educational intervention has not been shown to lead to knowledge acquisition or increase health literacy (Magnani et al., 2018). In addition, tailored printed material written at an appropriate reading level may have supplemented video education resulting in more positive outcomes.

Finally, it was observed, although not measured, that most patients attended the clinic visit alone. It is unclear if family attendance at these visits and participation in the video education would have increased health literacy. Shahriari et al. (2013) found that family support increased self-care behaviors in heart failure patients. However, Koirala et al. (2018) found mixed evidence in their integrative review on health failure and self-care. Social support resulted in increased adherence to pharmacological regimens in patients with adequate health literacy, but adherence was unchanged in those with limited literacy. However, those with limited health literacy who had social support in the form of a trusted partner did show increased adherence to medications when compared to other types of social support (Johnson, Jacobson, Gazmararian, & Blake, 2010). Lower social support has been correlated with lower health literacy in patients with coronary artery disease (De Melo Ghisi, Da Silva Chaves, Britto, & Oh,

2018). Although results are mixed, it stands to reason that patients presenting to the ambulatory cardiology clinic may have increased knowledge acquisition of atrial fibrillation if they attend the visit with a trusted confidant.

Finally, other limitations to the study included using a broad category of participants, only requiring the diagnosis of atrial fibrillation to be included. Perhaps, focusing on newly diagnosed patients or those planning for catheter ablation may have yielded different results. The sample size was relatively small, and the study was conducted in a single center, making it difficult to generalize the results.

Conclusion

In conclusion, health literacy is an important component to self-care. Viewing video education at a single point in time is not an effective method of increasing knowledge acquisition and health literacy in the atrial fibrillation population. This study provided valuable insights describing poor health literacy in atrial fibrillation patients regardless of where they are along the trajectory of atrial fibrillation management. Patients undergoing complex catheter ablations were no more literate than their counterparts. Multi-modality learning is needed in today's complex adaptive healthcare systems. Future directions include developing creative methods to teach and continually reinforce important concepts of atrial fibrillation management, self-care strategies, and treatment options. Further research includes developing multi-modality education materials targeted at self-care for the atrial fibrillation patient. In addition, social support and its role in health literacy in this population is not well researched.

Appendix A

Teach-back Questions

Understanding Atrial Fibrillation:

1. Why must you be treated for atrial fibrillation
    - Serious complications can develop
    - Can cause a stroke
    - Can cause the heart to be weak

Treating Atrial Fibrillation

1. What is the goal of treating atrial fibrillation?
    - Restoring the heart's natural rhythm
    - Controlling the heart rate
    - Preventing blood clots that could cause a stroke
    - Relieve symptoms
2. What medications are you taking for atrial fibrillation?
    - Antiarrhythmics-propafenone, dofetilide, flecainide, sotalol, amiodarone
    - Rate control medications-beta blockers, calcium channel blockers, digoxin
    - Blood thinning medications-warfarin, dabigatran, rivaroxaban, apixaban
3. Besides medication, what other options might be available to treat your atrial fibrillation?
    - Electrical cardioversion
    - Ablation (pulmonary vein ablation vs AV node ablation)
    - Pacemaker after AV node ablation or due to rate control medications
    - MAZE procedure

Living with Atrial Fibrillation:

1. What lifestyle changes might help manage your atrial fibrillation?
    - Control heart disease risk factors
    - Avoid alcohol, tobacco, and caffeine
    - Follow medications instructions
2. What precautions must you take if you are on an anticoagulant medication?
    - With warfarin, tell doctor about any new meds
    - Dietary restrictions with warfarin
    - Avoid cutting yourself
3. When should you call 911 or call your healthcare team?
    - Abnormal bleeding signs (blood in urine/stool, hematemesis)
    - Palpitations, dizziness, SOA, fatigue, edema

Appendix B

Atrial Fibrillation Knowledge scale questionnaire

1. What are factors known to trigger atrial fibrillation?
    a. An allergy to grass, house dust, animals
    b. Alcohol
    c. Loud noises
2. Why is it important to take my medication for atrial fibrillation as directed by my provider?
    a. Because that is what I was told to do
    b. To prevent problems caused by a heart rhythm problem, like a stroke
    c. To prevent a heart attack
3. If atrial fibrillation is found in a patient who has no complaints, the patient needs to go to the hospital immediately.
    a. True
    b. False
    c. Unsure
4. What is atrial fibrillation
    a. A heart disease in which the heart cannot pump blood well to the whole body
    b. A problem with the blood which causes blood clots
    c. A problem with the heart rhythm causing the heart to contract irregularly
5. Why are blood thinners needed in some patients with atrial fibrillation?
    a. To prevent the risk of blood clots which can cause a stroke
    b. To make the blood flow more easily through the body
    c. To prevent fluid retention
6. Why do patients on blood thinners need to be careful with drinking alcohol?
    a. Alcohol increases fluid retention in the body and causes the blood to be too thin
    b. Alcohol causes a blockage in the blood vessels and slows blood flow to the heart
    c. Alcohol increases the effect of the blood thinning medication
7. Atrial fibrillation is a rare condition
    a. True
    b. False
    c. Unsure
8. Atrial fibrillation is risky in those patients that do not have symptoms
    a. True
    b. False
    c. Unsure
9. Which answer below is a true statement about atrial fibrillation and physical exertion?
    a. It is important for atrial fibrillation patients to rest to maintain normal heart rates
    b. Patients with atrial fibrillation cannot work
    c. It is important to exercise normally within personal limits
10. Which statement is true?
    a. Atrial fibrillation is life threatening because it can cause a heart attack
    b. Atrial fibrillation is harmless
    c. Atrial fibrillation is harmless if the right medications are taken
11. What is the purpose of the Coumadin or warfarin clinic?
    a. To monitor blood clotting and the dose of Coumadin or warfarin taken each day
    b. To determine if atrial fibrillation is present at the time of the visit
    c. To determine if the patient needs to continue taking blood thinners long term

Table 1. List of variables by category

List of Variables per Category	
Category	Variables/Measure
Age	Age of participant in years
Race	Caucasian, African-American, Asian, Other
Sex	Male, Female
Comorbidity	Hypertension, Diabetes, Coronary disease, Systolic Heart Failure
Time since diagnosis	Measured in years
Classification of atrial fibrillation	Paroxysmal, persistent, long-standing persistent, permanent
Previous pulmonary vein ablation	Yes/No
CHA_2DS_2-VASc score	Whole numbers
Antiarrhythmic Drug	Yes/No
Type of antiarrhythmic drug	Amiodarone, dofetilide, propafenone, Flecainide, Dronedarone
Oral anticoagulation (OAC)	Yes/No/Not indicated
Type of OAC	Warfarin, New OAC (rivaroxaban, apixaban), aspirin
Rate control drugs	Yes/No
Type of rate control	Beta blocker, calcium channel blocker, digoxin

Table 2. Demographic and clinical characteristics of the study sample (N=20)

	Mean (SD) or Percent
Age	59.3 (12.4)
Race	
Caucasian	95%
African-American	5%
Sex	
Male	(80%)
Female	(20%)
Hypertension	70%
Diabetes	20%
Coronary disease	10%
Systolic Heart Failure	35%
Time since diagnosis	3.6 years (3.1)
Classification of atrial fibrillation	
Paroxysmal	65%
Persistent	25%
Long-standing persistent	10%
Permanent	0%
Previous pulmonary vein ablation	65%
CHA_2DS_2-VASc score	2.1 (1.6)
Antiarrhythmic Drug	
Yes	40%
No	60%
Type of antiarrhythmic drug	
Amiodarone	60%
Dofetilide	30%
Propafenone	5%
Flecainide	5%
Dronedarone	0%
Oral anticoagulation (OAC)	
Yes	75%
No	20%
Not indicated	5%
Type of OAC	
Warfarin	30%
NOAC	50%
Aspirin	20%
Rate control drugs	
Yes	85%
No	15%
Type of rate control	
Beta Blocker	70%
Calcium Channel Blocker	10%
Digoxin	5%

Table 3. Paired samples statistics for percent of correct items following teach-back (n=*14)

	After video education *Mean* (SD)	At the 7-10 day phone call *Mean* (SD)	*p*
Percent correct	63.5% (12.1%)	60.4% (10.6^)	.27

*Note: Analysis is based on those with complete data at both time points

Table 4. Assessment of the Atrial Fibrillation Knowledge Scale over time

	Before video education *Mean* (SD)	In clinic after video education *Mean* (SD)	At the 7-10 day phone call *Mean* (SD)	*p*
Knowledge Acquisition	0.78	0.80	0.85	.32

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